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SECTION III.
MODERN INFORMATICS AND MANAGEMENT

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The collection includes abstracts of the international scientific-practical conference "Modern informatics and its teaching methods (MITM2020)", which was held on May 20, 2020 in Andijan.

The international scientific-practical online-Internet conference includes scientific theses in the field of education, which includes the achievements of modern computer science and its teaching methods.

The conference was divided into four sections:

- modern methods of teaching informatics in high and medium education;
- modern informatics and management;
- methods and algorithms for processing information;
- the role of information and communication technologies in preschool education.

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SECTION III. MODERN INFORMATICS AND MANAGEMENT

АВТОНОМ ЭНЕРГИЯ ТАЪМИНОТИ: МУАММОЛАР, ТАРАҚҚИЁТ ПРИНЦИПЛАРИ, ЕЧИМЛАР

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Аннотация: *мақолада автоном энергетика қурилмаларини ишлаб чиқиш масаласи кўриб чиқилган. Резонанс системаларининг ғояси, принциплари баён этилган. Резонанс системалари билан боғлиқ бўлган илмий муаммолар келтирилган.*

Калит сўзлар: *Резонанс системалари, энергетика, Н.Тесла, Д.Смит, озод энергия, ночизиқли система, потенциал энергия, фойдали энергия.*

Аннотация: *В статье рассматривается вопросы разработки систем автономного электрообеспечения. Изложена идея резонансных систем и принцип её функционирования. Предлагается ряд нерешенных научных задач в резонансных системах.*

Ключевые слова: *Резонансные системы, энергетика, Н.Тесла, Д.Смит, свободная энергия, нелинейная система, потенциальная энергия, полезная энергия.*

Annotation: *In article, is discussed questions of the system development autonomous electric provision. The idea of the resonance systems and principle of her operation are Stated. The row of the undecided scientific problems is Offered in resonance systems.*

Key words: *The Resonance systems, energy, N.Tesla, D.Smith, free energy, nonlinear systems, potential energy, useful energy.*

Маълумки энергетика мумаммоси дунё ҳамжамияти олдида турган энг долзарб муаммолардан бири ҳисобланади. Ҳозирда электр энергияси ишлаб чиқишга дунё бюджетининг 1/3 қисми сарф қилинмоқда. Энергия олиш учун ҳар йили миллардлаб тонна ёқилғи ёқилади. Лекин шунга қарамай дунёнинг кўплаб мамлакатларида энергия тақчиллиги сезилмоқда. Энергия тақчиллиги, мамлакатни иқтисодий ривожланишига тўсқинлик қилади. Ишлаб чиқариш корхоналарининг самарадорлигини туширib юборади. Мамлакат ижтимоий ҳаётида ҳам салбий оқибатлар келтириб чиқаради. Иқтисодчилар тили билан айтганда мамлакат “Уй хўжалигига” катта моддий ва маънавий зарар келтиради.

Муаммонинг сабаби, биринчидан дунёда қазиб олинаётган энергия заҳираларини геометрик прогрессия тарзида камайиб бораётганлиги бўлса, иккинчи томондан ривожланаётган мамлакатларда ишлаб чиқариш суръатини тез ўсиши натижасида энергияга бўлаётган талабнинг ортиб бораётганлигидадир. Бундан ташқари ГЭСларни экологияга салбий таъсири,

уларда энергия ишлаб чиқариш жараёнини сув ҳавзаларининг имкониятларига тўғридан – тўғри боғлиқлиги энергетика муаммосини янада чуқурлаштириб юбормоқда.

Ҳозирда энергетика муаммосини ҳал этишни алтернатив вариантлари ишлаб чиқилган. Булар:

- табиий энергия манбааларидан фойдаланган ҳолда электр энергиясини ишлаб чиқариш;
- автоном энергия таъминоти қурилмаларини ишлаб чиқиш.

Биринчи вариант технологияларининг асосий мақсади электр энергиясини ишлаб чиқаришда табиий энергия манбааларидан фойдаланишдан иборат. Масалан: қуёш энергиясидан фойдаланиш, шамол энергиясидан фойдаланиш ва ҳ.к. Бу технологияларнинг ф.и.к. жуда ҳам паст, тан нархи юқори бўлганлигидан амалиётга тадбиқ этиш фақат давлат миқёсида марказлаштирилган ҳолда амалга оширилсагина сарфланган харажатларни улар 10-15 йилда оқлаши мумкин. Бундай энергия таъминоти марказлаштирилган энергия таъминоти деб аталади [7].

Иккинчи вариант технологияларининг асосий мақсади “Уй хўжалиги” учун автоном электр энергиясини ишлаб чиқаришдан иборат. Автоном энергия таъминоти қурилмаларини шартли равишда икки турга бўлиш мумкин: биринчиси механик энергияни электр энергиясига айлантириш орқали энергия олиш қурилмалари; иккинчиси, резонанс системалари ёрдамида электр энергиясини олиш.

Биринчи хил энергия таъминоти қурилмалари ички ёнув двигателларини ишлаш принципига асосланган. Ҳозирда бу хилдаги қурилмаларнинг кўплаб турлари мавжуд. Бензин асосида ишловчи электрогенераторлар, солярка асосида ишловчи электрогенераторлар, табиий газ асосида ишловчи электрогенераторлар ва ҳ.к. Бу қурилмалар устида кўплаб илмий тадқиқот ишлари олиб борилмоқда. Фан ва техниканинг ривожланиши натижасида бу қурилмаларнинг ф.и.к. 60% гача кўтарилган. Лекин бу қурилмалардан фойдаланилган чоғда, биз яна нефть, газ каби энергия ташувчиларга боғланиб қоламиз.

Иккинчи хил электрогенераторлар резонанс системалари асосида қурилади. Резонанс системалари бўйича илмий-тадқиқот ишлари Н.Тесла, Дон Смит, Э.Грэй, Т.Капанадзе, Адамс, Соболева, Алексеенко, Громова, Дональда, Кондрашова, Мотовилова, Мельниченко каби ихтирочи ташаббускорлар томонидан амалга оширилган. Улар томонидан юздан ортиқ патентлар ҳимоя қилинган. Патентлардаги ғояларни амалий тадбиқи сифатида қуйидагиларни кўрсатиш мумкин: лазерли кесиш дастгоҳлари, юқори частотали генераторлар (магнетронлар, платинотронлар, югурувчи тўлқинли лампалар, газли лазерлар, юқори қувватли электромагнитлар ва ҳ.к.), индукцион печлар ва ҳ.к. Ғоялар асосан ишлаб чиқариш жараёнига ва юқори вольтли кучланишлар асосида илмий-изланишлар олиб боришга тадбиқ этилган. Демак, тадқиқотни ким маблағ билан таъминласа унинг муаммолари ҳал этилган. Лекин патентларнинг асосий ғояси, автоном электр

таъминоти қурилмаларини ишлаб чиқиш ғояси, шу кунгача ҳаётга тадбиқ этилмаган. Бунинг сабаблари турлича бўлиши мумкин.

Ҳозирда Интернет саҳифаларида “Озод энергия” рубрикаси остида қатор мақолалар эълон қилинмоқда. “Озод энергия”нинг асосий мазмуни “Уй хўжалиги” учун автоном энергия таъминоти қурилмаларини лойиҳалашдан иборат. Таклиф этилаётган лойиҳаларнинг асосий ғояси Н.Тесла томонидан бундан 150 йил аввал таклиф этилган резонанас системалари ғоясидир [1-6]. Н.Тесладан кейин унинг ғояларини амалиётга тадбиқ этиб қизиқарли натижалар олган тадқиқотчи Дон Смитдир. Дон Смитни айтишича, у ҳозирги имкониятлардан келиб чиқиб Н.Тесла ғояларини янада ривожлантирган. Дон Смит томонидан ёзилган ҳужжатда «Resonate Electrical Power System» у шундай дейди: “Потенциал энергия табиатда доимо мавжуд. У амалий формага айланганда фойдали энергияга айланади. Бу энергия потенциалини билвосита, электромагнит ҳодисалари орқали кузатиш мумкин. Электромагнит ҳодисаларини тутиб олиш ва фойдали энергияга айлантириш мумкин”.

Бу мақолани ночизиқли системаларда таҳлил қиламиз. Ночизиқли системаларда магнит тўлқинларининг структураси кириш энергиясига нисбатан чиқиш энергиясини кучайтириш хусусиятига эга. Масалан: пианино торларида кириш энергияси чиқиш энергиясига нисбатан бир неча марта кам. Чиқиш энергиясини юқорилигига сабаб, торлар орасида резонанас ҳодисасидир. Товуш тебранишлари, бу электромагнит тебранишлари спектрига киради. Демак бундай эффект электромагнит тебранишларида ҳам юз бериши керак.

Фойдали энергия – бу атроф-муҳит потенциалидир. Электр потенциали масса ва тезланишга боғлиқ. Бундан ер массаси ва унинг ҳаракат тезлиги, ерга юқори электр потенциалига эга бўлиш имкониятини беради.

Табиатда доимо атроф-муҳит “Зўриқиши” (возмущение) юз бериб туради. Ер шарида ҳар куни минутига 4000 тадан ортиқ чақмоқ чақади. Уларнинг ҳар бири $1x10^8$ Вольт, 200000 Ампердан электр қувватини беради. Бир кеча-кундузда $57600x10^9$ вольт, $1152x10^9$ ампер электр қувватига тенг.

Қуёш батареялари қуёшдан келаётган электромагнит оқимини доимий ток энергиясига айлантиради. Бу электромагнит оқими тебраниши “Гамма нурланиш” деб аталади. “Гамма нурлари” – бу тебраниш натижаси бўлмиш тўлқин зарбаларидир. Маълумки, ҳар қандай зарба бирор миқдордаги энергияга эга бўлади.

Табиатда икки хил электр мавжуд. Потенциал электр ва фойдали электр. Электр фойдали электрга айланмагунча, у потенциал электр бўлади. Электронлар тебраниши электр потенциалини активлаштиради. Резонанас частота натижасида юзага келадиган электр оқими кучланиши, зарурий энергия ҳажмини беради. Ихтиёрий электромагнит ғалтагига ток берилганда унда электронларнинг айланма ҳаракати юзага келади. Бу ҳаракат фойдали энергия ишлаб чиқариш имкониятини беради.

Юқоридаги мулоҳазалардан келиб чиқиб автоном электр манбаи системасини ишлаб чиқиш мумкин. Бу система трансформатор ва конденсаторлардан ташкил топади. Системада юқори қувватли электромагнит оқимини ташкил этиш мумкин. Бу электромагнит оқимини бошқариб, биз ўзимиз учун зарур бўлган миқдорда электр энергиясини олишимиз мумкин. Керакли миқдорда магнит оқимини ҳосил қилиш учун конденсатордан фойдаланамиз. Конденсатор ва трансформаторнинг бирламчи чулғами биргаликда тебраниш контурини ташкил этиш имкониятини беради. Тебраниш натижасида системадаги электронлар қўзғолади. Тебраниш частотаси қанча катта бўлса, шунча кўп электронлар ҳаракатга келади. Электронларнинг ҳаракат тезлиги шунчалик катта бўладики, натижада системада кучли электромагнит оқими ҳосил бўлади. Электромагнит оқимидан зарурий электр энергия ажратиб олинади.

Электронларни қўзғотишни энг яхши усули бу резонанс ғалтаги ҳосил қилишдир. Резонанс ғалтаги атрофида магнит майдони ва тўлқинлар ҳосил бўлади.

Ғалтакдаги магнит оқимини ва электр токини бир бутун деб тасаввур қилиш мумкин. Бундан электронлар жуфт ҳолда мавжуд бўлади. Чулғамда электронларнинг ўнг томонга айланаётгани кучланишни таъминлайди, чап томонга айланаётгани электр токини таъминлайди. Бу электронлар биргаликда қувватни (Вольт х Ампер = Қувват) беради [1-6].

Бу тезис Н.Тесла томонидан таклиф этилган ва Д.Смит томонидан қувватланган. Бизнинг фикримизча тезис назариётда ҳам, амалиётда ҳам исбот қилинмаган. Тўғри, ток кучи ва кучланиш электронларни ҳаракати туфайли юзага келади. Лекин электронларни жуфт ҳолда бўлиши, ўнг томонга айланаётгани кучланишни, чап томонга айланаётган ток кучини таъминлаши назарий ва амалий исботга эга эмас. Бундан ташқари, улар таклиф этган ғояларни математик модели ишлаб чиқилмаган. Патентларда ва мақолаларда ишлатилган формулаларни асослари етарли эмас. Энг муҳими резонанс системаси элементларининг аниқ ҳисоб-китоби берилмаган. Ташаббускор – ихтирочиларнинг (Т.Капанадзе ва бошқалар) интернет саҳифаларидаги видеофильмлари кўргазмадан бошқа нарса эмас. Чунки уларда илмий асосномалар йўқ.

Лекин шунга қарамай бу буюк тажрибачи (экспериментатор) олимларни фикрини инкор этиб бўлмайди. Бу фикрларни таҳлил этиш, уларни ёки инкор этиш ёки тасдиқлаш бу илмий муаммолардан бири ҳисобланади.

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ZAMONAVIY DASTURLASH TILLARIDAN FOYDALANIB OLIY TA'LIM MUASSASALARIDA TALABALAR KONTINGENTI HISOBINI BOSHQARISH.

Shamsitdinov S.Q., Andijon davlat universiteti, Xakimova M.S. Andijon shahar 15-maktab o`qituvchisi, O'zbekiston.

Annotasiya: *Maqolada talabalar to'g'risidagi va ularning harakatlari to'g'risidagi barcha ma'lumotlarni, shuningdek mijozlar uchun ishlab chiqilgan ilova dasturlarni taqsimlangan ma'lumotlar bazasini yaratish orqali universitet talabalar kontingenti harakatini boshqarish usullari yoritilgan. Amalga oshirilishi rejalashtirilgan dasturiy mahsulot nafaqat turli xil hisobotlarni samarali shakllanishini ta'minlaydi, balki universitet kontingentining harakatini samarali kuzatishga imkon beradi.*

Kalit so'zlar: *taqsimlangan ma'lumotlar bazasi, dasturiy ta'minot, shartli, kontseptual, mantiqiy, fizik modellashtirish, ob'ekt doirasi, ma'lumotlar sxemasi.*

Аннотация: *В статье представлена реализация механизма эффективного программного учета данных о движении контингента вуза за счет проектирования распределенной базы данных студентов, хранящей в себе все сведения о них и их перемещениях. Эксплуатация внедренного программного продукта обеспечит не только оперативное формирование различных отчетов, но и позволит эффективно осуществлять своевременный контроль за движением контингента вуза.*

Ключевые слова: *распределенная база данных, программное обеспечение, условное, концептуальное, логическое, физическое моделирование, объем объекта, схема данных.*

Abstract: *The article presents the implementation of the mechanism of effective program accounting of data on the movement of the university contingent by designing a distributed database of students that stores all the information about them and their movements. The operation of the implemented software product will provide not only the efficient generation of various reports, but will also allow for effective timely monitoring of the movement of the university contingent.*

Keywords: *distributed database, software, conditional, conceptual, logical, physical modeling, object volume, data scheme.*

Taraqqiyotga erishish uchun raqamli bilimlar va zamonaviy axborot texnologiyalarini egallashimiz zarur va shart. Bu bizga yuksalishning eng qisqa yo'lidan borish imkoniyatini beradi. Bugun dunyoda barcha sohalarga axborot texnologiyalari chuqur kirib bormoqda. Yurtimiz Xalqaro axborot kommunikatsiya texnologiyalarini rivojlantirish indeksi bo'yicha 2019 yilda 8 pog'onaga ko'tarilgan bo'lsa-da, hali juda ham orqadamiz. [1]

Zamonaviy hayotni tijorat tashkilotlarida ham, ta'lim muassasalarida ham samarali boshqarishsiz tasavvur qilib bo'lmaydi. Bugungi kunga kelib,

O’zbekiston oliy ta’lim muassasalarida juda ko'p talabalar tahsil olmoqda, ularning har biri haqida shaxsiy ma'lumotlar ta'lim muassasasidagi turli xil ommaviy axborot vositalarida saqlanadi, talabaning universitetga kelishi (o'qishga qabul qilinishi, o'tkazilishi va hokozo) to'g'risidagi ma'lumot, mutaxassislik yoki yo'nalish, tayyorgarlik to'g'risida ma'lumot, ta’lim shakli va o'qitish asoslari va boshqa ko'plab ma'lumotlar shular jumlasidandir. Ushbu ma'lumotlar doimiy yangilanadi va universitetning o'quv bo'limi va ta'lim muassasasining boshqa tarkibiy bo'linmalari tomonidan doimiy ravishda qayta ko'rib chiqilishini talab qiladi. So'nggi ma'lumotlar asosida turli xil hisobotlar tuziladi va shartli harakat kuzatiladi. Hisobot statistikasi O’zbekiston respublikasi oliy va o’rta mahsus ta’limi vazirligiga va sub'ektlarga ma'lumot berish, davlat topshiriqlarini shakllantirish va davlat topshirig'ining bajarilishi to'g'risida hisobot berish, shuningdek bitiruvchilar to'g'risida Bandlik va mehnat munosabatlari vazirligiga ma'lumot berish maqsadida yaratiladi. [2,4]

Universitet talabalari kontingenti xarakati talaba to'g'risidagi ma'lumotlarga ega bo'lgan turli xil protseduralarning bajarilishi tushuniladi. Masalan, talabalarni talabalikka qabul qilish, talabalar safidan chiqarib yuborish, bitiruv, talabalarni tiklash, ularni boshqa joyga o'tkazish, akademik ta’tilga chiqarish shular jumlasidandir. Bitta avlod talabalari faoliyati tugallangach, ularning faoliyati yopiladi va avlod talabalari faoliyati yaratiladi. Universitetda talabalarning taqsimlanishi va tegishli kontingent harakati asosan talabalarning o'qitish shakliga (kunduzgi, sirtqi va maxsus sirtqi) bog'liq. Shuningdek, o'qitishning asosi ham juda muhim mezon hisoblanadi unda davlat granti yoki shartnoma asosida o’qishi hisobga olinadi.

Buxgalteriya hisobiga ta'sir etuvchi omillar soni juda ko'p. Ulardan ba'zilarini sanab o’tamiz:

1) shaxsiy ma'lumotlar, fakultet, mutaxassislik, guruhi, imtiyozi;

2) talabalarni biron bir sababga ko'ra talabalar safidan chiqarish, qayta tiklash va akademik ta’tilga yuborish;

3) talabani boshqa universitetga, boshqa fakultetga yoki boshqa mutaxassislikka o'tkazish;

4) talabalarni bitirishi;

5) talabaning oilaviy holati;

6) stipendiyalar mavjudligi va toifalari;

8) yotoqxonada yashashi.

Ma'lumotlar bilan ishlash samarali bo'lishi tez va sifatli hisobotlar yaratilishi uchun barcha ma'lumotlar elektron ma'lumotlar bazasida (MB) saqlanishi kerak bo’ladi.

Ma'lumot almashishni ta'minlaydigan tarmoq texnologiyalarining tezkor modernizatsiya qilinishi munosabati bilan taqsimlangan ma'lumotlar bazasini boshqarish tizimlari texnologiyasini yaratish maqsadimiz uchun katta qadam bo'ladi. Markazlashtirilgan tizimlardan farqli o'laroq, ular foydalanuvchilarga o'z saytlarida saqlanadigan ma'lumotlarga va turli xil uzoq saytlarda joylashgan ma'lumotlarga kirishga va foydalanishga imkon beradi.

Universitet talabalari kontingenti harakati ma'lumotlar bazasi ko'p foydalanuvchilarning ish rejimini qo'llab-quvvatlashi va turli xil yozuvlarni tayyorlash, o'zgartirish, filtrlash, qidirish va o'chirishga imkon berishlari kerak.

Ma'lumotlar bazasida mavjud bo'lgan ma'lumotlar qat'iy ravishda yangilanishi va dolzarb bo'lishi kerak va har doim quyidagilarni o'z ichiga olishi zarurdir: 1) fakultetlar, kafedralar, guruhlarning nomlari, dars raqamlari. 2) talabalar to'g'risidagi ma'lumotlar (ismi, tug'ilgan sanasi, manzili, jinsi, o'qish shakli va asosi, o'qiyotgan yili, o'qish holati, talabalar soni, asoslari, imtiyozlari, o’zlashtirishi, stipendiyalari toifalari); 3) buyurtmalar to'g'risidagi ma'lumotlar (№, sanasi, turi); 4) talabaning buyruqlari harakati tarixi.

Ma'lumotlar bazasini loyihalash ikki asosiy bosqichdan iborat: mantiqiy va fizik modellash. Mantiqiy dizayn bosqichida talablar to'planadi va ma'lum bir ma'lumotlar bazasini boshqarish tizimidan (DBMS) mustaqil bo'lmagan model ishlab chiqiladi. Fizik modellashtirish bosqichida ma'lum bir MBBT uchun optimallashtirilgan model yaratiladi; aynan shu model amalga oshiriladi.

Ma'lumotlar bazasini yaratish jarayoni quyidagi bosqichlardan iborat:

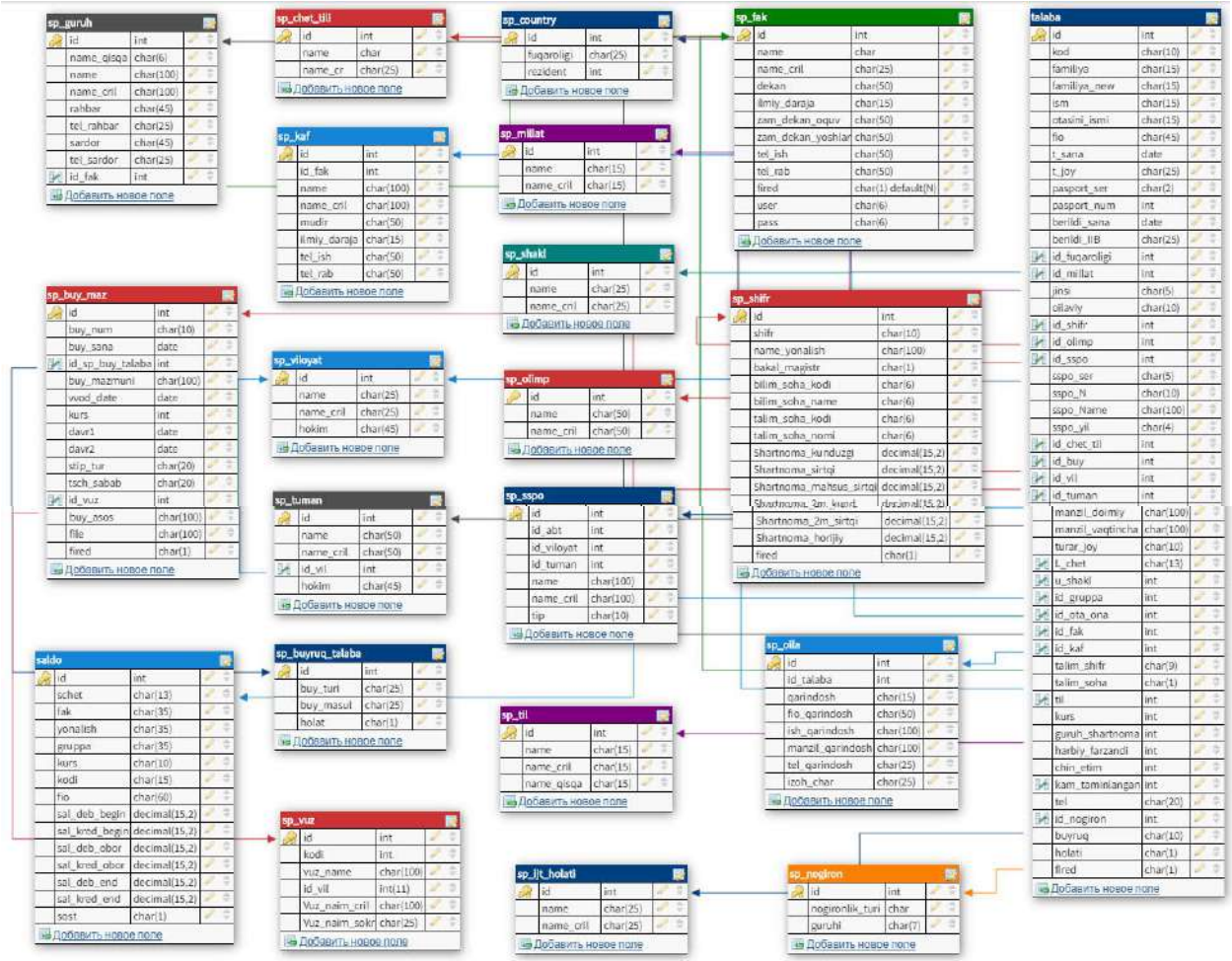
- ma'lumot to'plash;
- ob'ektlarni aniqlash;
- ob'ektlarni modellashtirish;
- har bir ob'ekt uchun ma'lumot turlarini aniqlash;
- munosabatlarni aniqlash;
- normallashtirish;
- fizik modelni o'zgartirish; - ma'lumotlar bazasini yaratish.

Birdan oltigacha bo'lgan bosqichlar mantiqiy modellashtirish bosqichini, qolganlari fizik jihatini tashkil etadi.

Tizim domenini aniqlash va axborot modelini yaratish kontseptual dizayn bosqichining asosiy maqsadi hisoblanadi. Ushbu loyihaning asosiy yo'nalishi universitet talabalari to'g'risidagi ma'lumotlardir.

Kontseptual model bu barcha foydalanuvchilarning ushbu ob’ekt sohasi ma'lumotlar bazasiga qo'yiladigan kontseptual talablari. Shu bilan birga, ishlab chiqaruvchining sa'y - harakatlari asosan ma'lumotlar bazasining kelajakdagi foydalanuvchilariga tegishli ma'lumotlarni tuzishga va ular o'rtasidagi munosabatlarni aniqlashga qaratilishi kerak.

Talabalar kontingenti ma’lumotlar bazasi ierarhik model asosida yaratilib uning ma’lumotlar sxemasi quyidagicha ko’rinishda bo’ladi.



Bu yaratilgan ma’lumotlar bazasini barcha zamonaviy dasturlash tillari yordamida boshqarish mumkin. Bularga PHP, Dephi XE, Python, Ci# dasturlarini misol qilib olishimiz mumkin.

Xulosa qilib aytganda maqolada talabalar va ular to'g'risidagi barcha ma'lumotlarni saqlaydigan hamda foydalanish ushun joriy qiladigan ma'lumotlar bazasini, shuningdek mijozlar uchun ishlab chiqilgan ilova dasturini yaratish orqali universitet kontingenti harakati to'g'risidagi ma'lumotlarni samarali dasturiy hisobga olish mexanizmi amalga oshirilgan. Usbu mexanizm asosida universitet kontingentining harakatini samarali o'z vaqtida kuzatishga imkon beruvch dastur yaratish bosqichlari yoritib berilgan.

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THREAT MODELS OF THE INTERNET OF THINGS

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Annotation. *In this paper given threat models of the internet of things. Moreover their characteristics are described.*

Key words*: External attacker, Spoofed, altered, or replayed routing information, Selective forwarding, Black hole/Sink hole Attack, Sybil attacks,Wormholes, HELLO flood attacks, Acknowledgement spoofing.*

In the ideal world, a secure routing protocol should guarantee the integrity, authenticity, and availability of messages in the presence of adversaries of arbitrary power.

Outsider versus insider attacks: The outsider attacks are made from nodes which do not belong to a WSN. External attacker has no access to most cryptographic materials in WSN. The insider attacks are made from nodes that are in WSN. The inside attacker may have partial key material and the trust of other sensor nodes. Inside attacks are much harder to detect. The majority of outsider attacks against sensor network routing protocols can be prevented by simple link layer encryption and authentication using a globally shared key. The Sybil attack is no longer relevant because nodes are unwilling to accept even a single identity of the adversary. The majority of selective forwarding and sinkhole attacks are not possible because the adversary is prevented from joining the topology.

Passive versus active attacks: A passive attack is a sensor network attack in which a system is monitored and sometimes scanned for open ports and vulnerabilities. An active attack is a sensor network exploit in which a hacker attempts to make changes to data on the target or data en route to the target.

Mote-class versus laptop-class attacks*:* In mote-class attacks, an adversary attacks a WSN by using a few nodes with similar capabilities as that of network nodes. In laptop-class attacks, an adversary can use more powerful devices like laptop, etc. and can do much more harm to a network than a malicious sensor node.

The broadcast nature of the wireless communication is a simple candidate for eavesdropping. In most of the cases various security issues and threats related to those we consider for wireless ad hoc networks are also applicable for wireless sensor networks. These issues are well-enumerated in some past researches and also a number of security schemes are already been proposed to fight against them. However, the security mechanisms devised for wireless ad hoc networks could not be applied directly for wireless sensor networks because of the architectural disparity of the two networks. While ad hoc networks are self-organizing, dynamic topology, peer to peer networks formed by a collection of mobile nodes and the centralized entity is absent;

Most network layer attacks against sensor networks fall into one of the following categories:

- Spoofed, altered, or replayed routing information
- Selective forwarding
- Black hole/Sink hole Attack
- Sybil attacks
- Wormholes
- HELLO flood attacks
- Acknowledgement spoofing

In the descriptions below, note the difference between attacks that try to manipulate user data directly and attacks that try to affect the underlying routing topology.

Spoofed, altered, or replayed routing information. The most direct attack against a routing protocol is to target the routing information exchanged between nodes. By spoofing, altering, or replaying routing information, advesaries may be able to create routing loops, attract or repel network traffic, extend or shorten source routes, generate false error messages, partition the network, increase end-to-end latency, etc.

Selective forwarding. Multi-hop networks are often based on the assumption that participating nodes will faithfully forward received messages. In a selective forwarding attack, malicious nodes may refuse to forward certain messages and simply drop them, ensuring that they are not propagated any further. A simple form of this attack is when a malicious node behaves like a black hole and refuses to forward every packet she sees. However, such an attacker runs the risk that neighboring nodes will conclude that she has failed and decide to seek another route.

Black hole/Sink hole Attack. In a sinkhole attack, the adversary's goal is to lure nearly all the traffic from a particular area through a compromised node, creating a metaphorical sinkhole with the adversary at the center. Because nodes on, or near, the path that packets follow have many opportunities to tamper with application data, sinkhole attacks can enable many other attacks (selective forwarding, for example). Sinkhole attacks typically work by making a compromised node look especially attractive to surrounding nodes with respect to the routing algorithm.

The Sybil attack. In a Sybil attack, a single node presents multiple identities to other nodes in the network. The Sybil attack can significantly reduce the effectiveness of fault-tolerant schemes such as distributed storage, dispersity and multipath. It may be extremely difficult for an adversary to launch such an attack in a network where every pair of neighboring nodes uses a unique key toinitialize frequency hopping or spread spectrum communication, for example. Routing, and topology maintenance. Sybil attacks also pose a significant threat to geographic routing protocols. It is only reasonable to expect a node to accept but a single set of coordinates from each of its neighbors, but by using the Sybil attack an adversary can "be in more than one place at once.

Wormhole attacks. In the wormhole attack, an adversary tunnels messages received in one part of the network over a low latency link and replays them in a

different part. The simplest instance of this attack is a single node situated between two other nodes forwarding messages between the two of them. However, wormhole attacks more commonly involve two distant malicious nodes colluding to understate their distance from each other by relaying packets along an out-of-bound channel available only to the attacker.

HELLO flood attack. Many protocols require nodes to broadcast HELLO packets to announce themselves to their neighbors, and a node receiving such a packet may assume that it is within (normal) radio range of the sender. This assumption may be false: a laptop-class attacker broadcasting routing or other information with large enough transmission power could convince every node in the network that the adversary is its neighbor. For example, an adversary advertising a very high quality route to the base station to every node in the network could those nodes sufficiently far away from the adversary would be sending packets into oblivion. The network is left in a state of confusion. A node realizing the link to the adversary is false could be left with few options: all its neighbors might be attempting to forward packets to the adversary as well. Protocols which depend on localized information exchange between neighboring nodes for topology maintenance or flow control are also subject to this attack. An adversary does not necessarily need to be able to construct legitimate traffic in order to use the HELLO flood attack. She can simply re-broadcast overhead packets with enough power to be received by every node in the network. HELLO floods can also be thought of as one-way, broadcast wormholes. Note: “Flooding” is usually used to denote the the epidemiclike propagation of a message to every node in the network over a multi-hop topology. In contrast, despite its name, the HELLO flood attack uses a single hop broadcast to transmit a message to a large number of receivers. Hello Flood Attack is introduced in. This attack uses HELLO packets as a weapon to convince the sensors in WSN. In this sort of attack an attacker with a high radio transmission (termed as a laptop-class attacker in) range and processing power sends HELLO packets to a number of sensor nodes which are dispersed in a large area within a WSN. The sensors are thus persuaded that the adversary is their neighbor. As a consequence, while sending the information to the base station, the victim nodes try to go through the attacker as they know that it is their neighbor and are ultimately spoofed by the attacker

Acknowledgement spoofing. Several sensor network routing algorithms rely on implicit or explicit link layer acknowledgements. Due to the inherent broadcast medium, an adversary can spoof link layer acknowledgments for “overheard” packets addressed to neighboring nodes. Goals include convincing the sender that a weak link is strong or that a dead or disabled node is alive. For example, a routing protocol may select the next hop in a path using link reliability. Artificially reinforcing a weak or dead link is a subtle way of manipulating such a scheme. Since packets sent along weak or dead links are lost, an adversary can effectively mount a selective forwarding attack using acknowledgement spoofing by encouraging the target node to transmit packets on those links.

ПАРАМЕТРЫ ПРОЦЕССА НАПЛАВКИ ДЕТАЛЕЙ В СРЕДЕ ЗАЩИТНЫХ ГАЗОВ

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Аннотация: *В тезисе рассматривается параметры процесса наплавки деталей в среде защитных газов, анализируется и даются рекомендации по определению их значений.*

Annotation: *In the thesis, the parameters of the process of surfacing parts in a protective gas environment are considered, analyzed and given recommendations for determining their values*

Ключевые слова. *Наплавка, защитные газы, наплавочный ток, полярность, напряжение дуги, проплавление, термическая зона, трещинообразования, теплосодержательность дуги, шаг наплавки, смещение с зенита и вылет электродной проводки.*

Keywords. *Surfacing, shielding gases, surfacing current, polarity, arc voltage, penetration, thermal zone, cracking, heat content of the arc, surfacing, displacement from the zenith and departure of the electrode wiring.*

Эксплуатационные свойства наплавленных поверхностей деталей машин в среде защитных газов во многом определяется технологическими параметрами процессе наплавки.

Известно, что процесс наплавки эта совокупность определенных физических и электрических явлений. При этом основными параметрами процесса наплавки в среда защитных газов является величина тока, напряжения и его полярность, диаметр электродной проволки, скорость подачи электродной проволки и его вылет, шаг наплавки и смещения электрода [1].

С технологической точки зрения стабильность процесса наплавки должна обеспечить получения наплавленного слоя с неизменными свойствами. При этом процесс считается стабильным если электрические и тепловые характеристика его соответствует определенным значениям и не изменяется во времена. Поэтому технологически стабильный процесс наплавка, в среде защитных газов при заданном значение наплавочного тока обеспечивается при постоянной скорости подачи электродной проволки постоянном его вылете и неизменной настройки напряжения наплавочной дуги.

Наплавку в защитных газах необходимо вести на постоянном токе обратной полярности. Так как постоянный токе обеспечивает устойчивое и стабильное горение дуга и позволят при наплавке деталей использовать обратную полярность. Это обеспечивает концентрацию тепла на электродной

проволке и тем самом снижают тепловую погрузку на наплавляемый деталь. При этом величина силы наливочного тока определяется диаметром электродной проволки, его скорости подачи и вылетом. С повышением силы тока увеличивается глубина проплавление основного металла, ширина и высота наплавленного валика, а также производительность процесса.

На практике силу наплавочного тока определяется путем использования следующим эмпирической зависимости

$$J = 110d\text{э} + 10d_{\text{э}}^2$$

где dэ-диаметр электродной проволки.

Однако в этой зависимости, не учитывается его корреляция со скоростью подачи электродной проволки и его вылетом.

При наплавке деталей машин необходимо стремится к минимальной глубине проплавление основного металла. Это позволяет уменьшить деформацию деталей и зону термического влияние, а также снизить трещина образования в наплавленном металла.

Вторым важнейшим параметром процесса наплавки является напряжения дуги. Увеличение напряжение приводить к возрастанию длины дуги, что способствует к повышению его подвижности и теплосодержателносте. При этом растет ширина валика, а глубина проплавления остается практически постоянной. Напряжение дуги связана с силой тока и его чрезмерное увеличения приводить к разбрызгиванию наплавленного металла. Его значения в практике наплавочных работ обычно принимают в пределах 20-35В.

Стабильность процесса наплавки с хорошим формированием покрытия при наплавке можно получить только в определенном диапазоне силы тока и напряжение дуги.

Влияние скорости наплавки на формирование валика не одинокого. При малых скоростях увеличивается ширина наплавленного валика и глубина проплавления основного металла. Чрезмерное его увеличения приводить к отклонение дуги, что уменьшает объем расплавленного металла и может привести к не провару. Скорость наплавки зависеть от силы тока и величины наплавленного металла, и его значение можно определить из следующей зависимости

$$V_H = \alpha_H * J/G$$

где α_H- коэффициент наплавки, *г/А*ч;*

G-масса наплавляемого металла, г.

Скорость подачи электродной проволока является производной от сила тока и его плотности, а также от диаметра электродной проволоки

Шаг наплавки зависеть также от диаметра электродной проволкы, скорости его подачи и диаметра наплаванной детали.

Вылет электродной проволки влияет на формирования валика и чем больше вылет проволки, тем больше она нагревается из-за увеличения электрического сопротивления. Она будет плавится быстрее, однако при этом уменьшается глубина проплавления основного металла. Значить изминая вылет электродной проволки можно регулировать глубину проплавления.

При наплавке цилиндрических деталей, особенно небольших диаметров возникает трудности по удержанию расплавленного металле на его поверхности. Его величина в основном зависеть от диаметры наплавленной детали.

Значение шага наплавки, вылет электродной проволки и смешение его с зенита при наплавочных работах определяется априорно в пределах

$$S = 3 \div 6\text{мм}, \qquad l = 10 - 25\ \text{мм} \quad \text{и} \quad e = 3 \div 8\ \text{мм}$$

При наплавке деталей очень важное значение имеет выбор электродною проволку. При этом материал электродной проволки должно устанавливается исходя из материала наплавленной детали, его твердости и условия работы, а его диаметр от толщине наплавляемого металла.

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ЭЛЕКТРОН ДАРСЛИКЛАРНИ ТАЪЛИМ ЖАРАЁНИДА ҚЎЛЛАШ ИМКОНИЯТЛАРИ

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Аннотация: *Мақолада замонавий ахборот технологияларининг мультимедиа воситаларидан фойдаланган ҳолда таълим беришнинг янги босқичига, электрон дарсликларни таълим жараёнида қўллаш имкониятларига ва уларни яратиш ҳаражатларини аниқлаш технологияларига тўхталиб ўтдик.*

Таянч иборалар: *электрон дарслик, мультимедиа, гиперматн, гипермедиа*

Аннотация: *В статье мы остановились на новом этапе обучения с использованием современных информационных технологий, мультиме-дийных инструментов, возможностях использования электронных учебников в учебном процессе и технологии определения стоимости их создания.*

Ключевые слова: *электронный учебник, мультимедиа, гипертекст, гипермедиа*

Abstract: *In the article, we stopped at a new stage of training using modern information technologies, multimedia tools, the possibilities of using electronic textbooks in the educational process, and the technology for determining the cost of their creation.*

Keywords: *electronic textbook, multimedia, hypertext, hypermedia*

Бозор иқтисодиёти ва илмий-техникавий тараққиёт мамлакатимиз ижтимоий-иқтисодий хаётининг барча сохаларига ахборот технологияларини жадал кириб боришига олиб келди. Замонавий ахборот технологияларининг тез суръатлар билан ривожланиши ва ҳаётга кириб бориши, электрон дарсликлар, яъни ўқитувчисиз ўқитиш технологиясини жорий этиш ва ишлаб чиқиш билан боғлиқ бўлган фаолият сохасини ривожлантирмоқда [1].

Электрон дарслик (ЭД) яратиш воситаларини қуйидагича таснифлаш мумкин:

- дастурлаш алгоритмик тиллари;
- оммавий қўлланишга мўлжалланган инструментал воситалар;
- мультимедиа воситалари;
- гиперматн ва гипермедиа воситалари;

Дастурлаш алгоритмик тилларида тузилган электрон дарсликларнинг хусусиятлари:

- интерфейснинг хилма хиллиги (ранг палитраси, интерфейс, ЭД структураси, материалнинг тақдим этилиши ва ҳ.к.);
- янгилаш ва назорат қилиб боришнинг мураккаблиги;
- қўп вақт ва меҳнат сарфи;
- машина имкониятларига мос ЭД яратиш имконяти.

Оммавий қўлланишга мўлжалланган инструментал воситалар малакали дастурчи бўлмаган фойдаланувчилар учун ЭД яратишга хизмат қилади.

Бундай воситалар ёрдамида ЭД ларни лойиҳалаш қуйидаги имкониятларни беради:

- ЭД структурасини шакллантириш;
- матнни киритиш, таҳрирлаш ва форматлаш (матн таҳрирловчи);
- статик иллюстратив қисмини тайёрлаш (график таҳрирловчи);
- динамик иллюстратив қисмини тайёрлаш (овоз ва анимация);
- бошқа воситаларни бажарувчи модулларини киритиш ва б.

Оммавий қўлланишга мўлжалланган инструментал воситаларнинг афзалликлари:

- малакали дастурчи бўлмаган фойдаланувчилар томонидан ЭД яратиш имконияти;
- меҳнат ва вақт сарфининг қисқариши;
- компьютер ва дастурий таъминот юқори даражада талаб қилинмаслиги.

Шу билан бирга бир қатор камчиликларни ҳам айтиб ўтиш лозим:

- интерфейснинг қулаймаслиги;
- мультимедиа ва гипермедиа тизимларига нисбатан имкониятларини камлиги;
- масофавий ўқитиш дастурини яратиш имконияти йўқлиги.

Мультимедиа воситалари. Мутахассисларнинг таъкидлашича материални ўзлаштириш даражаси ўқиганда 10%, эшитганда 20%, кўрса ва эшитса 50%, бошқалар билан муҳокама қилганда 70%ни ташкил этади. Демак, мультимедиа ахборот узатишни бир неча усулларини – матн, статик тасвир (расм ва сурат), динамик тасвир (мультипликация ва видео) ва овоз (рақамли ва MIDI) – интерактив маҳсулот сифатида бирлаштиради.

Аудио ахборот нутқ, мусиқа, овоз эффектларидан иборат. Видео ахборотнинг статик видео қаторини икки гуруҳга бўлиш мумкин: графика (чизма тасвирлар) ва фото суратлар. Динамик видео қатор статик элементлардан яъни кадрлар кетма-кетлигидан ташкил топган. Мультимедиа маҳсулотларининг бошқа ахборот ресурсларидан фарқли жиҳати катта ҳажмда бўлишидир.

Гиперматн ва гипермедиа воситалари:

Гиперматн – матн шаклидаги материалга чизиқли бўлмаган ўтиш усули, матнда баъзи жумлалар ажратилган бўлиб улар бошқа матн фрагментларига боғланган. Шундай қилиб, фойдаланувчи нафақат саҳифаларни бирин кетин очиши мумкин балки йўлловчи жумла ёрдамида бошқа саҳифага ўта олади. Гипермедиа тизимида расмлар ёрдамида ўтишни амалга ошириш мумкин, маълумот сифатида матн, графика, видеотасвир ёки овоз бўлиши мумкин.

Гиперматн технологияси структураси оддийлиги ва қўлланиши қулайлиги жиҳатлари билан дарсликларга қўйилган талабларга жавоб беради. Лекин, унинг дизайни ва шу каби баъзи жиҳатларининг камчиликлари

мавжуд. Ҳозирги пайтда турли гиперматн форматлари мавжуд, булар (HTML, DHTML, PHP ва б.).

Электрон дарслик сериялаб чиқариладиган дастурий маҳсулот ҳисобланади. Ҳар бир дастурий маҳсулотнинг ҳаражатлари бўлганлиги каби электрон дарслик яратишда ҳам турли ҳаражатлар мавжуд.

Дастурий маҳсулотни яратиш ҳаражатлари:

- бевосита лойиҳалаш, дастурлаш, фойдаланувчи талаблари асосида ҳатоларни тузатиш ва синаш;
- дастурий маҳсулотнинг тажриба нусҳасини яратиш;
- дастурий маҳсулот яратишни автоматлаштирувчи дастурий воситалар ва технологияларни яратиш, қўллаш ва тайёрлаш;
- дастурий маҳсулот яратишни автоматлаштиришда фойдаланиладиган ЭҲМ;
- мутахассисларни тайёрлаш ва малакасини ошириш ҳаражатларидан иборат.

Замонавий ахборот-коммуникация технологияларининг ривожланиши инсоният олдида янги имкониятлар яратибгина қолмасдан, янги вазифаларни ҳам юклади. Биз бу мақолада шу вазифалардан бирига, яъни замонавий ахборот технологияларининг мультимедиа воситаларидан фойдаланган ҳолда таълим беришнинг янги босқичига, электрон дарсликларни таълим жараёнида қўллаш имкониятларига ва уларни яратиш ҳаражатларини аниқлаш технологияларига тўхталиб ўтдик.

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ENG YAQIN QO‘SHNI USULI

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Annotatsiya. *Tezisda suniy intelektda turli toifadagi sinflarni to’gri ajratishning yaqin qo’shnilar usuli haqida malumot berilgan.*

Kalit so’zlar: *klassifikatsiya, obyekt, vazn. sinf.*

Аннотация. *Тезис предоставляет информацию о методе близких соседей по искусственному интеллекту для правильного различения разных классов.*

Ключевые слова: *классификация, объект, вес. класс.*

Annotation. *The thesis provides information on the method of close neighbors in the correct separation of different categories of classes in artificial intelligence.*

Keywords: *classification, object, weight. class.*

Eng yaqin qo‘shni usuli-obyektlar yaqinligini baholashga asoslanga eng soda smetrik klassifikatordir. Klassifikatsiya qilinayotgan obyekt tegishli sinfga shu obyektga yaqin bo‘lgan obyektlar ham tegishli bo‘ladi.

Eng yaqin qo‘shni usuli klassifikatsiyalashning eng soda algoritimidir. Bunda klassifikatsiya qilinayotgan x obyekt tegishli bo‘lgan y_i sinfga shu obyektga yaqin bo‘lgan x_i obyektlar ham tegishli bo‘ladi.

$X^m = \{(x_1, y_1), ..., (x_m, y_m)\}$ ”obyekt-javob” juftlarning o‘rgatuvchi tanlanmasi berilgan bo‘lsin. Obyektlar to‘plamida $\rho(x, x')$ masofa funksiyasi berilgan bo‘lsin. Bu funksiya obyektlar bir hilligining yetarlicha adekvat modeli bo‘lishi lozim. Bu funksiyaning qiymati kattalashgan sari ikkita x, x' obyektlar shunga kamroq ,bir hil bo‘ladi.

Ixtiyoriy u obyekt uchun o‘rgatuvchi x_i tanlamaning obyektlarning masofalarining u gacha o‘sish tartibida joylashtiramiz:

$$\rho(u, x_{1;u}) \le \rho(u, x_{2;u}) \le ... \le \rho(u, x_{m;u})$$

bu yerda $x_{i,u}$ bilan u obyektning i-qo‘shnisi bo‘lgan obyekt belgilangan.i-qo‘shnidagi javob uchun ham huddi shunga o‘xshash belgilash kiritamiz: $y_{i,u}$ shunday qilib , ixtiyoriy u obyekt qaytadan nomerlanib qoladi.

Eng umumiy ko‘rinishda eng yaqin qo‘shnilar algoritimi

$$a(u) = \arg\max_{y \in Y} \sum_{i=1}^{m} [x_{i;u} = y] \omega(i, u),$$

ko‘rinishida yoziladi, bu yerda $\omega(i;u)$-berilgan vazin funksiyasi bo‘lib, bu funksiya u obyektning klassifikatsiyasi uchun i-qo‘shnining muhimlik darajasini baxolaydi.Tabiyki,bu funksiya nomanfiy va o‘suvchi emas.

Vazn funksiyasini turlicha ko‘rinishda berib, eng yaqin qo‘shnilar usulini turli variantlarini hasil qilish mumkin.

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A SIMPLIFIED COMPARATIVE STUDY OF MACHINE LEARNING CLASSIFIERS

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Abstract. *Machine learning is an emerging field, aiming to make the machines:*

- *do predictions about future or*
- *Classify the information in order to help out people so that they can make better decisions.*

Several machine learning algorithms are available. ML algorithm is made to learn from past experiences by analyzing the historical data. In this way ML algorithm is said to be trained enough to make future prediction very well [1]. Classification is a supervised machine learning approach, where a set of given data points are assigned different classes being already defined. In other words classification predicts the class and labels the given data points.

Several classification algorithms are available in order to classify the given data. For example Logistic regression, Naïve Bayes, KNN, Decision Trees etc. In this paper, I have applied six classification algorithms on same dataset. Results have been compared then: using some performance evaluation measures like precision, accuracy, incorrect predictions and recall.

Keywords: *Machine Learning, Classification, Naive Bayes, KNN, SVM, Logistic Regression, Compare accuracy*

INTRODUCTION

Whenever there is a problem to be solved using machine learning, we are not sure that which ML algorithm's performance will be best [2]. Observing the problem nature, one can easily identify the type of algorithm to be used to solve a particular problem, either its regression or classification? But to choose the exact regression or classification algorithm type, which will outperform, is a difficult task. The only way to choose the best algorithm is checking in advance the performance of specific algorithms and then select certain algorithms to move forward.

Main purpose of the paper is to simplify the task of choosing best algorithm(s) for your problem. Here six classification ML algorithms are compared:

1. Logistic Regression
2. K-Nearest Neighbors
3. Support Vector Machine(SVM)
4. Kernel SVM
5. Naive Bayes
6. Decision Trees
7. Random Forest

The problem is a standard binary classification dataset called the Loan Dataset for loan prediction problem. This dataset has 615 instances, 13 attributes and 2 classes.

RELATED WORK

Mostly all the research work dealing with classifiers comparison falls into two main categories [15]:

1. Relatively few classifiers are compared and validated in order to justify the need of a new approach (e.g [3]-[7])
2. Some has done the comparison of many classifiers in a very systematic way both qualitatively and quantitatively.

For example [8],[9],[10] have done qualitative analysis over many different classifiers telling the advantages and limitations, disadvantages of each method. While [11] has done quantitative analysis of classifiers.

Mostly the researchers conducted research in order to find out that which classifiers are more suitable for problems under discussion (see e.g [12]-[14]), but very few of these compare the performance of these classifiers in a quantitative way.

Moreover it is also found that mostly these classifiers are analyzed/ compared on multiple datasets. This research paper simplifies the analysis task by targeting same dataset for different classifiers in order to facilitate ML beginners so that they could easily take an overview of these algorithms' working.

RESEARCH METHODOLOGY

Selected Dataset

I selected loan classification dataset taken from kaggle. This dataset has 615 instances, 13 attributes and 2 classes.

This dataset can be downloaded from this link:

https://www.kaggle.com/burak3ergun/loan-data-set

Basically this dataset was provided by Dream Housing Finance company (dealing in all home loans).

SELECTED CLASSIFICATION ALGORITHMS

I have used following algorithms for same loan dataset:

1. Logistic Regression
2. K-Nearest Neighbors
3. Support Vector Machine(SVM)
4. Kernel SVM
5. Naive Bayes
6. Decision Trees
7. Random Forest

Software used

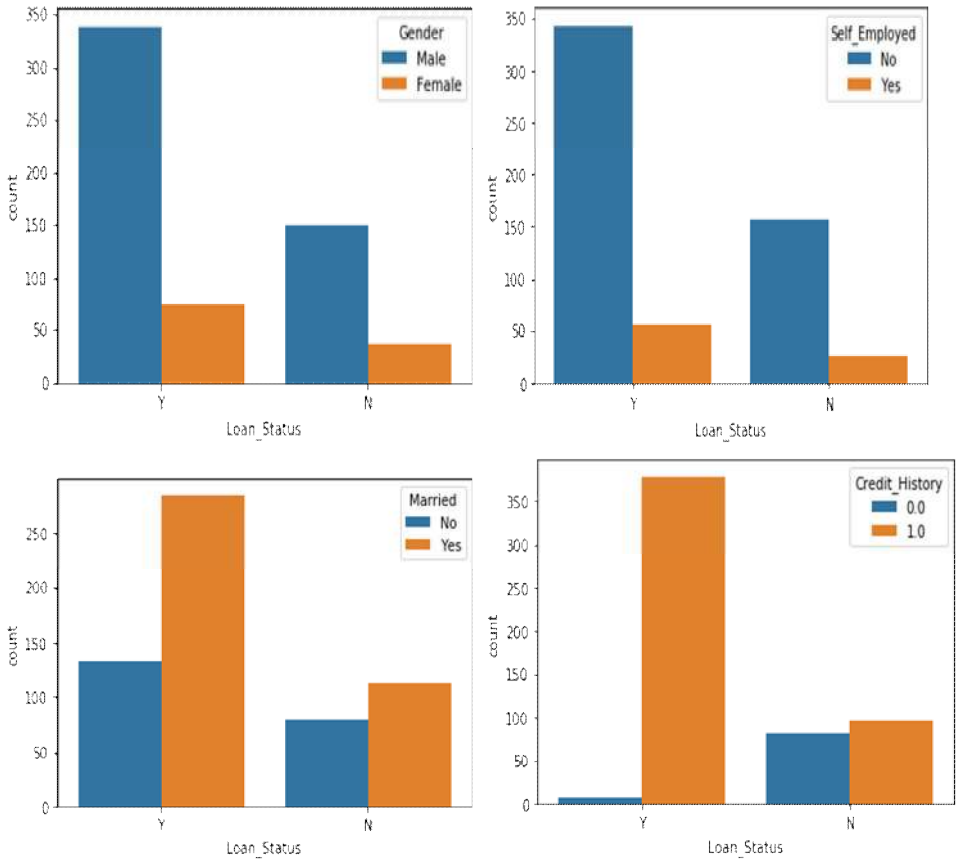
Kaggle is a platform to perform analytics and predictive modeling, arrange competitions related to Data Science around the world. Moreover it has powerful tools and resources to test our projects. Python language is used for project coding.

Project Steps explained:

Step 1: Import required libraries and Load the dataset

Step 2: Data preprocessing (Filling missing values, converting non-numeric attributes to numeric etc,).

Step 3: Visualizing the dataset



Step4: splitting the data set this dataset has around 615 records. i used 80% of it for training the model and 20% of the records to evaluate all chosen classifiers one by one. as this dataset has lot of columns, i used most influencing fields income fields, loan amount, loan duration and credit history fields to train the models.

Step5: Applying different classifiers one by one. In this step I applied different classifiers (already told) and then evaluated model performance using confusion matrix.

RESULTS

In classification problems, the predicted results can be compared with the actual results by using the confusion matrix. In simple words, confusion matrix tells the count of correct and incorrect entries.

Table 1. A typical Confusion Matrix Template.

Confusion Matrix	Predicted

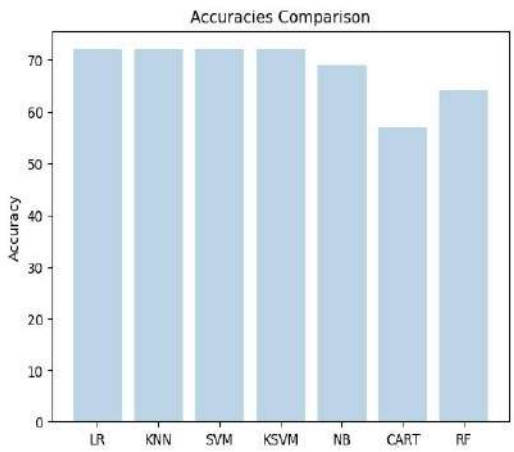
Actual	Negative	True Negative(TN)	False Positive(FP)
	Positive	False Negative(FN)	True Positive(TP)

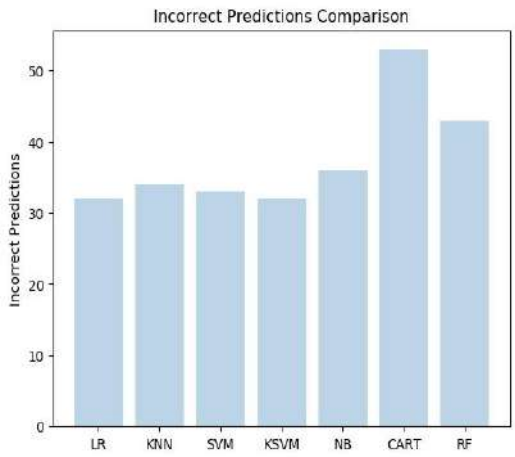
Table 2. Result Table showing classifiers result

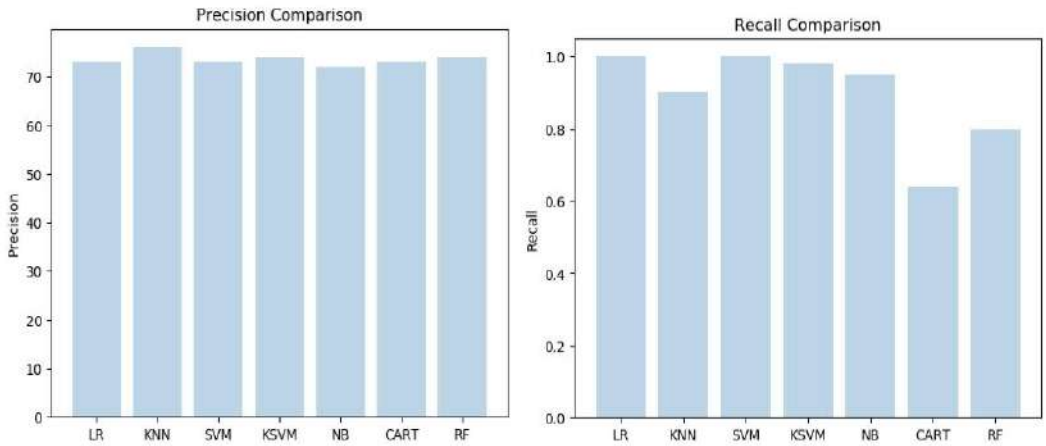
Classifier	Incorrect Prediction	Accuracy	Precision	Recall
Logistic Regression	32	73%	73 %	1.0
KNN	34	72%	76 %	0.9
SVM	33	73%	73 %	1.0
KERNEL SVM	32	73%	74 %	0.98
NAÏVE BAYES	36	70%	72 %	0.95
CART	53	56%	73 %	0.64
RANDOM FOREST	43	65%	74 %	0.8

Comparative Analysis

Below is given bar charts of above Table 2 comparison parameters.







The comparative analysis concludes that Logistic regression outperforms the other classifiers as it has higher accuracy and less number of incorrect predictions.

CONCLUSION

Classification is the main field of machine learning dealing with the categorization of given data in different classes.

A large number of classification algorithms are there. So it's a difficult and technical task (especially for ML beginners), to find out in advance which algorithm will solve our machine learning problem effectively. I have applied seven different classifiers on a single dataset in order to get an idea that which classifier is best for this dataset.

Based on different quality measures like accuracy, precision, recall and number of incorrect predictions, I concluded that Logistic regression fits best for this dataset.

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THE MODERNIZATION OF THE EDUCATIONAL PROCESS OPPORTUNITIES OF INFORMATION TECHNOLOGIES

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Annotation: *The principles of solving problems using Innovative computer technologies in the process of modernization of Education System are discussed in the article.*

Keyboards: *education, software, management, technology, process, information, computer, media, multimedia.*

The rapid development of new modern information and communication technologies and means of communication, as well as enhancing the quality of the education process to new levels.

Creation and implementation of progressive infrastructure in the educational process gave the management of educational institutions the following tasks[1]:

development of general strategy and technology of computerization and informatization of educational process, as well as creation of infrastructure;

- Training and retraining of potential faculty members to work in a new information environment;
- Providing educational and methodological rooms and classrooms with computer technology and other modern information technology equipment for individual work of students under the supervision of a teacher;
- Creation and implementation of effective and advanced software co-ordinated training based on computer hardware and communication tools.

There are several types of software systems that should be implemented in the education system [2]:

1. Self-study programs.
2. Knowledge control programs.
3. Programs that facilitate and facilitate communication and communication between teachers and students.
4. Model - programs.
5. Imitation programs (expert systems, simulation models) in which students are trained as professionals;
6. Programs for providing students with free access to the database and system, as well as seamless access to the conclusions of the experts in the object studied.
7. The program of preparation of final qualifying works of students and master's thesis in this area, methodical materials of professors and teachers.

Practical implementation of information systems based on progressive infrastructure enables the university administration to control the dynamic state of the

educational process, contributing to the formation of students' independent learning skills. This, in turn, provides the foundation for the proper management of the learning process and the adoption of operational, optimal management and distribution decisions [3].

In summary, the management of the educational process with the help of an information system based on the database ensures the combination of theoretical knowledge and practical skills of the leading specialists in society. In particular, the unique role of information technologies in the modernization of education has begun to play an important role. Experience has shown that it is desirable to use information technology in public, otherwise it is likely to cause harm rather than effectiveness.

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IDENTIFICATION OF NK CELLS IN HEALTHY BONE MARROW USING ORANGE

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Abstract. *It is normally that NK cells play an important role in defending infected cells and handle tumor growth. All living things made up by cells every single cell have nucleus and in nucleus all type of gene are exist and different genes perform different task. In cell some relevant gene are activate and other are deactivate. There are three types of blood cells White Blood cells (WBc), Red Blood cells (RBc) and Platelets. WBc work for defense purpose and RBc carry Oxygen and Platelets used for stop bleeding. I am going to identify natural killer cells (NK cells) in data set that are activate to eliminate virus-infected cells. I am going to solve this problem using orange data mining tool because orange have built-in widgets and easy to implement and get better accuracy. I will do my task by using NK cell as a gene marker and apply on my data set and I will show where NK cell exists in my dataset is.*

Keywords: *Orange Data Mining, Cells, Artificial Intelligence, ML Clustering, Genes, DNA, Score cell, Marker Gene, Annotation*

1. INTRODUCTION

Artificial Intelligence (AI) is used to build a system that perform different task that require human intelligence. Task that AI perform known as problem like face detection, voice recognition and natural language processing. All following problem are good to address type of clinical diagnostic task[1].For example speech recognition technique can be used in detection of neurological disorders[2] .in some areas it may be not possible problem and diagnostic task are same. Then techniques of computer science are useful to identify different elements in human genome and there functionality, they can be identifying some specific DNA sequences in given multiple sequences. Genes are important part of our daily biological treatment. We easily handle lots of problem using genes prediction. There is major concern with blood gene impact on different blood infections. Another important part of gene prediction is marker gene that is specific number of DNA sequences for any functionality and try to match our datasets if match we make different analysis depend on marker gene sequence[3]. Here I am going to pick NK cells as a Marker gene and try to find it in healthy bone marrow. Nk cells are in white blood cells. And they work to defend against different kind of germs. Our dataset is from bone marrow if NK cells are not found may be patient is in AML. AML is a type of cancer of bone marrow if it is not detected it will worse quickly [4].

ML (Machine Learning) is subtype of AI and used in different fields to train on past dataset then learn from environment and then use for different analysis. Deep learning is subtype of Machine Learning. All (AI, ML and Deep Learning)

are use in data science for extracting insight from raw data. ML is field in which we used different model for learning on training data sets model find pattern from these datasets and try to predict new data sets.[5]

I am going to apply some Machine Learning (ML) algorithms and Deep Learning techniques to Identify NK cells as a gene marker in Bone Marrow healthy cells. I am using hierarchical clustering for making cluster in my dataset. Machine Learning helps to classify our data with base on similarities and differences in data pattern.

1.1. BIOINFORMATICS

It is field of science in which gathered biology, IT, CS, mathematics and statistics to understand biological data. Bioinformatics also used in single cell datasets to find different insights from them. It is used to collection of data then modeling, data analysis and visualization of data. A major work of bioinformatics is found in different field like medicine and heart disease [6].

1.2. CELLS

All living things are made of cells. Nucleus is present in center of cell and DNA found in nucleus all type of genes are present in every single cell. In cell different genes are play different role. Cells give six primary capacities. They give structure and backing, encourage development through mitosis, permit aloof and dynamic vehicle, produce vitality, make metabolic responses and help in proliferation.

Blood cells are fond in three types' white blood cell, red blood cell and platelets. White blood cell is working in defense mode, red blood cells take oxygen and platelets are used for stop bleeding. All types of blood cells generated by bone marrow [7].

1.3. GENE MARKER

We pick a single gene and try to find in dataset for some analysis purpose these sequence is called gene marker. I am going to use NK cell marker gene for prediction if our dataset have these gene or not. A marker gene is a quality or DNA grouping with a known area on a chromosome that can be utilized to recognize people or species. It tends to be portrayed as a variety that can be watched. Gene markers can be utilized to consider the connection between an acquired illness and its hereditary reason (for instance, a specific change of a quality that outcomes in a blemished protein). It is realized that bits of DNA that lie close to one another on a chromosome will in general be acquired together. This property empowers the utilization of a marker, which would then be able to be utilized to decide the exact legacy example of the quality that has not yet been actually restricted[8].

Gene markers are utilized in gene to find logical problem in different data cell.in which we use 9 marker gene for testing bone marrow. Gene markers must be effectively recognizable, related with a particular locus, and exceptionally polymorphic, on the grounds that homozygotes don't give any data. Location of the marker can be immediate by RNA sequencing, or backhanded utilizing allonyms. A portion of the strategies used to contemplate the genome or phylogenetic are RFLP, AFLP, RAPD and SSR. They can be utilized to make hereditary maps of

whatever life form is being considered. Gene markers have additionally been utilized to gauge the gene behavior to choice in domesticated animals.

1.4. NK CELL

There are three types of white blood cells that are T-cells, B-cells and NK cells. T-cell and B-cell have its own defense cells but NK cell have not. Some type of NK cell are activate when different type of virus going to attack. Common executioner cells (otherwise called NK cells, K cells, and executioner cells) are a kind of lymphocyte (a white platelet) and a part of inborn invulnerable framework. Characteristic executioner cells (otherwise called NK cells, K cells, and executioner cells) are a sort of lymphocyte (a white platelet) and a segment of intrinsic safe framework. Patients insufficient in NK cells end up being exceptionally vulnerable to early periods of herpes infection contamination[9].

2. LITERATURE REVIEW

2.1. DATA SCIENCE

Data science is used for quantitative and qualitative methods to resolve problems and for predictions. In data science we need deep knowledge of domain and better analytical skills. We can get analytical skills by investing lots of time. It is not possible for single person to get all field domain knowledge with analytical expertise. And if u have lots of domain expertise and weak in analytical it may be difficult. Some expert analytical may not willing domain expertise.

Biomarker revelation is a significant point in biomedical utilizations of computational science, including applications, for example, quality and SNP determination from high-dimensional information. Shockingly, the strength as for testing variety or vigor of such determination forms has gotten consideration as of late. Be that as it may, strength of biomarkers is a significant issue, as it might extraordinarily influence ensuing organic approvals. Likewise, an increasingly vigorous arrangement of markers may fortify the confidence of a specialist in the aftereffects of a determination technique. Results: Our first commitment is a general edge work for the investigation of the strength of a biomarker determination calculation. Furthermore, we directed a huge scope examination of the as of late presented idea of troupe include choice, where numerous component determinations are consolidated so as to build the vigor of the final set of chosen highlights. We center around determination strategies that are installed in the estimation of help vector machines (SVMs). SVMs are incredible classification models that have indicated cutting edge execution on a few analysis and guess assignments on natural information. Their component determination augmentations likewise offered great outcomes for quality choice errands. We show that the power of SVMs for biomarker revelation can be generously expanded by utilizing gathering highlight determination procedures, while simultaneously enhancing classification exhibitions. The proposed approach is assessed on four microarray datasets showing increments of up to practically 30% in heartiness of the chose biomarkers, alongside an improvement of ~15% in classification execution. The soundness improvement with troupe strategies is especially perceptible for little

mark estimates (a couple many qualities), which is generally applicable for the plan of a conclusion or forecast model from a quality mark.[3].

Recently, a computational target in genetic epidemiology and his properties is identify one gene interact to other gene and some environmental factor effect on different complex disease. They solve this using neural network and sport vector machine. Also apply random forest technique using machine learning in this paper was discussed strength and weakness of machine learning algorithms to identifying gene expressions [4].

Recently, DNA microarray generating for measurements of gene expression that combine detail about tissue and sample cells according to difference between gene expressions that use in disease diagnose. In this paper sport vector machine algorithm is used for analysis at the end tissue samples are discovered that are wrongly labeled.

2.2. OPEN SOURCE PROGRAM

Open source software are those software that are available for free of cost. Users used for different purpose without pay. Some companies are providing that type of software like orange data mining, Python, R etc. Open source items incorporate authorization to utilize the source code, plan records, or substance of the item. It most normally alludes to the open-source model, in which open-source programming or different items are discharged under an open-source permit as a component of the open-source-programming development.

2.3. ORANGE

Orange is Data mining tools that are provide programming free technique for solving our problems. In which we use widgets that are built-in algorithms and drag and drop method. Orange is an open source information representation and examination device, where information mining is done through visual programming or Python scripting. The device has segments for AI, additional items for bioinformatics and content mining and it is stuffed with highlights for information investigation.

2.4. METHODOLOGY PROBLEM STATEMENT

Mostly infection detects at serious case its need something else that we detect at starting level and can resolve before it become complex case. In this paper I am trying some gene marker on healthy bone marrow dataset by this way we can find any sequence in dataset any can know germs in starting phase it play a vital role in bioinformatics.

2.5. DATASET

The information from Galen et al.(Cell, 2019) is accessible in the GEO database under the increase number GSE116256 (Figure 1) . We will utilize the information from just a single solid individual BM4 and its comment record since this is by a wide margin the greatest no enhanced example from a sound individual right now.

8390 instances (no missing values)
1000 features (no missing values)
Discrete class with 2 values (no missing values)
3 meta attributes (no missing values)

Variables
- [x] Show variable labels (if present)
- [x] Visualize numeric values
- [x] Color by instance classes

Selection
- [x] Select full rows

Entrez ID	Type	Replicate	ID	Barcode	HBG1 3047
1819	healthy	1	0002af3f6f2a6b...	TGAGTGACCG...	0
403	healthy	1	0010e6178e2d7...	AGGGTGGATCC...	0
6193	AML	1	0019396d40053...	CGCCTAACCG...	0.765941
2401	healthy	2	001cefccf32a08...	AGCATCGAACT...	0
1710	healthy	1	0020dcb4391b1...	TCACAACTTAT...	0
4410	healthy	2	0022fe496e9b7...	TTCTCAGATAA...	0
5816	AML	1	0025d13041edb...	CAGTCAGACAT...	0
1490	healthy	1	0030817851c48...	GTCTAACTTCC...	0
3179	healthy	2	003169c7cce51...	CTAATGCTACG...	0
5611	AML	1	0038ba99315ae...	ATTTGCACGCG...	0
1801	healthy	1	003e87c2ac7da...	TGAATAACGCC...	0
5337	AML	1	00459f0947e598...	ATAACCCTCCA...	0.848796
7698	AML	1	004d81cdfec21...	TAGTCGGAGGT...	0.937285
4672	AML	1	004e7345f0032a...	AATATCGAAAG...	3.4858
5894	AML	1	0055667ff62f98...	CATTACACGAA...	0
7342	AML	1	005ccab835763...	GTCGACCTCC...	8.21273
3281	healthy	2	005e9541d9cfb...	CTTAGACTGAC...	0

Figure 1: Data set view

2.6. PROCEDURES

After we load the dataset I will sent gene to match with Entrez ID in which 893 gene out of 1000 are matched using gene widget in orange data mining tool (Figure 2).

Info
1000 genes in input data
893 genes match Entrez database
107 genes with match conflicts

Organism
Homo sapiens

Gene IDs in the input data
Stored in data column

Filter:

Input ID	Entrez ID	Name	Description
HBG1	3047	HBG1	hemoglobin su..
HBG2	3048	HBG2	hemoglobin su..
S100A9	6280	S100A9	S100 calcium bi..
S100A8	6279	S100A8	S100 calcium bi..
GNLY	10578	GNLY	granulysin
LYZ	4069	LYZ	lysozyme
IGJ	3512	JCHAIN	joining chain of.

Figure 3: Match Entrez

Information (on the other hand, you can stack the Healthy human bone marrow dataset utilizing the Single Cell Datasets gadget) and match the qualities in the dataset to those in databases, we sift through every one of the qualities that show up in under 10 cells. Data was 8390 cells and 893 genes among which 760 gene are selected (Figure 3).

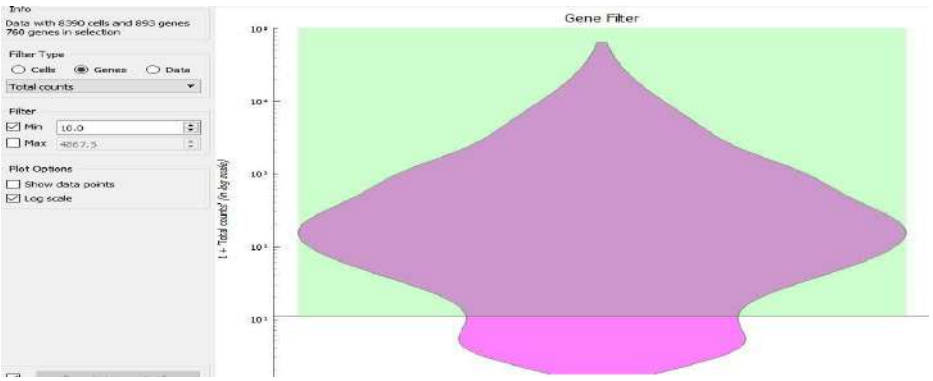

Figure 4: Filter Gene that belong to more than 10 cells

Among 8390 cells we select those 5000 cells that have better varience. we utilize the Hierarhical Clustering and not the Louvian Clustering widget to group the information. Right off the bat, we ascertain the separations between the cells and afterward outwardly decide the quantity of groups by hauling the vertical line over the chart (Figure 5).

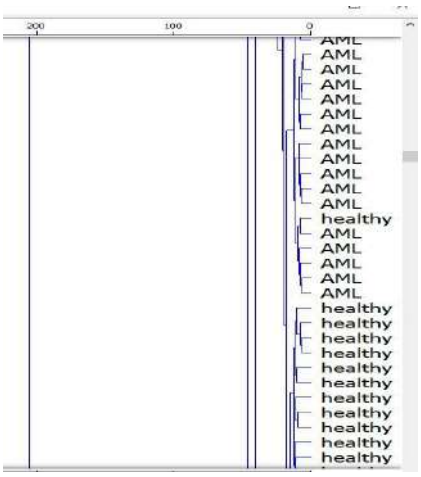

Figure 5: Clustering

After clustring we show data using t-SNE widget and then apply NK cells (Figure 5) for identification than compare and see NK cells are found in healthy cells and absence in AML cells (Figure 6).

FCGR3A	2214	Natural killer cell	Fc fragment of IgG receptor IIIa	29610856
FCGR3B	2215	Natural killer cell	Fc fragment of IgG receptor IIIb	29610856
CD19	930	Natural killer cell	CD19 molecule	29610856
CD2	914	Natural killer cell	CD2 molecule	29610856
CD3D	915	Natural killer cell	CD3d molecule	29610856
CD3E	916	Natural killer cell	CD3e molecule	29610856
CD3G	917	Natural killer cell	CD3g molecule	29610856
NCAM1	4684	Natural killer cell	neural cell adhesion molecule 1	29610856
KLRD1	3824	Natural killer cell	killer cell lectin like receptor D1	29610856
KLRC1	3821	Natural killer cell	killer cell lectin like receptor C1	29610856
BMI1	648	Cancer stem cell	BMI1 proto-oncogene, polycomb ring fi...	29607565

Figure 6: NK cells

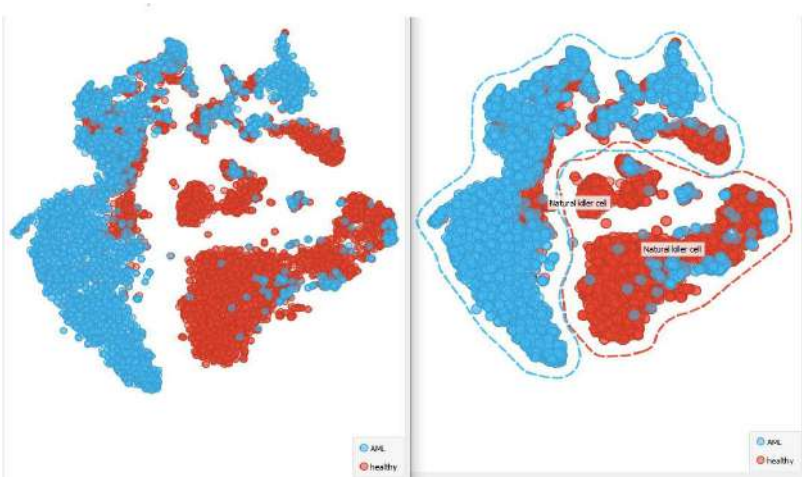

Figure 7: Before marker gene Vs After Marker Gene Nk cells show

What we have additionally effectively done right now, recognized markers for each group with the assistance of the Data Tables (clarified in detail right now). With these markers we can order groups. For instance, CD3D is the most noteworthy quality in group 4. It encodes T-cell surface glycoprotein CD3. Also MS4A1 in the bunch 3 encodes B-lymphocyte antigen CD20.

3. FINDINGS AND DISCUSSION

We found the score of NK cells in AML dataset and Healthy Dataset and analyses that NK cells found in Healthy cells and absence in AML cells (Figure 8).

Entrez ID	Type	Score
4458	AML	0
1986	healthy	0.889416
4459	AML	0
1987	healthy	0.480638
1	healthy	0.91166
4460	AML	0
1988	healthy	0
2	healthy	0
1989	healthy	0.935141
3	healthy	0.444814
4461	AML	0
1990	healthy	0.445115
4462	AML	0
4	healthy	1.23229
1991	healthy	0.444658
4463	AML	0
4464	AML	0
4465	AML	0
4466	AML	0
1992	healthy	0.445981

Figure 8: Resulted Score of Identification of Nk cells

4. CONCLUSION AND FUTURE RESEARCH

In this paper we understand how I can identify and DNA sequence make good analyses on base of absence and presence of marker gene. In future we can pick any infected sequence as a gene marker and can apply different type of cells to check that specific infection present or not on given cells. It is very useful in bioinformatics fields.

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ИНФОРМАЦИОННЫЕ МОДЕЛИ

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Аннотация: *Информационные модели определяют ограничения на предоставление ввода/вывода системы, которые достаточны для реализации системы.*

Ключевые слова: *Модель, невмешательства, не выводимости, Высокий ввод*

Abstract: *Information models determine the restrictions on the provision of input / output of the system, which are sufficient for the implementation of the system.*

Keywords: *Model, laissez-faire, non-deduction, high input*

Они накладывают ограничения на интерфейс программных модулей системы с целью достижения безопасной реализации. При этом подробности реализации определяются разработчиком системы. Данные модели являются результатом применения теории информации к проблеме безопасности систем.

Рассмотрим две информационные модели:

- Модель невмешательства.
- Модель не выводимости.

Достоинством данных моделей является:

1) Отсутствие скрытых каналов утечки.
2) Естественность их использования для реализации сетевых защищенных АВС.

Модель невмешательства

Невмешательство - это ограничение, при котором ввод высокоуровневого пользователя не может смешиваться с выводом низкоуровневого пользователя. Модель невмешательства рассматривает систему, состоящую из 4-х объектов:

- Высокий ввод (High In).
- Низкий ввод (Low In).
- Высокий вывод (High Out).
- Низкий вывод (Low Out).

Рассмотрим систему, вывод которой пользователю *u* определён функцией *out:*

out (и, hist.read (и)),

где *hist.read (u)* - это история ввода системы *(traces),* чей последний ввод был *read (u),* т.е. команда чтения, исполненная пользователем *u.*

Введем понятие - очищение (*purge*) истории ввода. Purge удаляет команды, исполненные пользователем, чей уровень безопасности не доминирует над уровнем безопасности u.

Используется также функция *clearance (u)*, которая определяет степень доверия к пользователю.

Система удовлетворяет требованиям невмешательства, если, и только если для всех пользователей *u*, всех историй *T* и всех команд вывода *c* выполняется следующее равенство:

$$out\ (u,\ T.c(u)) = out\ (u,\ purge\ (u,\ T).c(u))$$

С целью проверки системы на соответствие требованиям невмешательства разрабатывалось большое количество различных условий, выполнение которых было бы достаточно для поддержки невмешательства. Верификация модели невмешательства более сложная, чем верификация модели БЛМ. Достоинство в том, что при применении данной модели не остаётся скрытых каналов утечки информации, она более интуитивно понятна по сравнению с БЛМ.

Сравнение модели БЛМ и модели невмешательства:

1. БЛМ слабее, чем модель невмешательства, за счёт того, что последняя запрещает многие скрытые каналы, которые остаются при реализации БЛМ.
2. Модель невмешательства слабее, чем БЛМ, так как она разрешает низкоуровневым пользователям копировать один высокоуровне- выи файл в другой высокоуровневый файл, что запрещается в последней из-за нарушения безопасности по чтению.

Модель не выводимости

Так же как и предыдущая модель, модель не выводимости базируется на рассмотрении информационных потоков, выражается в терминах пользователей и информации, связанных с одним из двух возможных уровней секретности:

- Высокий.
- Низкий.

Система считается не выводимо безопасной, если пользователи с низким уровнем безопасности не могут получить информацию с высоким уровнем безопасности в результате любых действий пользователей с высоким уровнем безопасности.

Или другими словами: каждый пользователь связан с определенным взглядом на систему и может получить информацию, интерпретируя видимое ему поведение. Если система является невыводимо безопасной, то низкоуровневые пользователи не должны получить новой информации, если на вводе системы есть дополнительные высокоуровневые пользователи. Кроме этого, если низкоуровневые пользователи могут получить определенную информацию, основываясь на видимом ими поведении, то удаление высокоуровневых пользователей не должно изменить получаемой низкоуровневыми пользователями информации.

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TEZKOR DARAJAGA KO'TARISH ALGORITMI

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Maxmudov M.N., Andijon davlat universiteti talaba, O'zbekiston.

Annotatsiya. *Maqolada binar darajaga ko'tarish algoritmi haqida ma'lumot berilgan bo'lib, dastur kodi C/C++ va Pascal dasturlash tillarida ko'rsatib o'tilgan.*

Kalit so'zlar: *C++, assosiativlik qonuni, mantiqiy ko'paytirish, EHM, binar daraja.*

Аннотация. *В статье рассмотрен алгоритм бинарного возведение в степень и показан код программы на языках программирования C/C++ и Pascal.*

Ключевые слова: *C++, закон ассоцивности, логическое умножение, ЭВМ, бинарная степень.*

Annotation. *The article discusses the binary exponentiation algorithm and shows the program code in the programming languages C / C ++ and Pascal*

Keywords: *C ++, the law of associativity, logical multiplication, computers, binary degree*

a^n darajani tezkor hisoblash algortimi, darajani 2 ga bo'lish asosida ya'ni n sonini teng 2 ga bo'lib, bo'lingan qismlarni yana 2 ga bo'lish usuli yordamida hisoblashga asoslangan. Oddiy qilib aytganda matematikadagi assotsiativlik qonuni (1) asosida daraja hisoblanadi.

Matematik model: Binar darajaga ko'tarish usuli yordamida istalgan n-darajali sonni $O(\log n)$ vaqtda topish imkonini beradi *(Odatiy darajaga ko'tarish usuli $O(n)$ vaqtda topadi)*. Bundan tashqari, bu yerda tasvirlangan usul nafaqat sonlarni ko'paytirish uchun, balki har qanday assotsiativ xossasiga ega bo'lgan boshqa amallarga nisbatan ham qo'llaniladi. Har qanday butun a, b, c sonlari uchun ko'paytirishning assotsiativlik qonuni (1) o'rinli:

$$(a * b) * c = a * (b * c) \quad (1)$$

Agar n soni juft son bo'lsa, unda a sonining darajasini (2) formula yordamida yozish mumkin:

$$a^n = \left(a^{\frac{n}{2}}\right)^2 = a^{\frac{n}{2}} * a^{\frac{n}{2}} \qquad (2)$$

(2) formula yordamida darajaga ko'tarishni ikki barobar tezlashtirish mumkin. Ammo agar n soni toq son bo'lsa, unda yuqoridagi formuladan foydalanish tavsiya qilinmaydi va xato natija chiqishiga sabab bo'ladi. Shu sababli avvalo $\boldsymbol{n}$ sonini toqlikka tekshirishimiz kerak bo'ladi. Buning uchun $\boldsymbol{n}$ sonini 2 ga bo'lishda qoldiq 1 yoki 0 ga tengligini tekshirishning o'zi kifoya qiladi, ya'ni:

$$(n \bmod 2 = 1) \text{ yoki bazida } \left[\frac{n}{2}\right] = 1 \qquad (3)$$

(3) formulada mod va [ ] belgilari bir ma'noni anglatadi, ya'ni bo'linmani qoldiq qismini olish kerakligini bildiradi. *(*Misol uchun: $5 \bmod 2 = 1$ *ga? teng).*

$$a^n = a^{n-1} * a \qquad (4)$$

n soni toq bo'lganda (4) ga asosan *n-1* soni juft songa aylanadi va a^{n-1} sonini (2) formula bo'yicha hisoblash mumkin bo'ladi.

EHM (3) formula asosida bo'lish va qoldiqli bo'lish amallarini bajarishga ko'p, mantiqiy amallarni bajarishga kamroq vaqt sarflaydi. Berilgan sonni juft yoki toq sonligini aniqlashda 1-jadval asosida mulohaza yuritishimiz mumkin. Ushbu jadvalda bir nechta butun son ikkili sanoq sistemasiga o'tkazilgan.

1-jadval. Sonlarning o'nlik va ikkilik ko'rinishlari

O'nlik	Ikkilik	O'nlik	Ikkilik	O'nlik	Ikkilik	O'nlik	Ikkilik
0	0	5	101	10	1010	15	1111
1	1	6	110	11	1011	16	10000
2	10	7	111	12	1100	17	10001
3	11	8	1000	13	1101	18	10010
4	100	9	1001	14	1110	19	10011

1-jadvaldan, o'nlik sanoq sistemasidagi juft sonlarning ikkili ko'rinishi 0 bilan tugashi, toq sonlar esa 1 bilan tugashi ko'rinib turibdi. Berilgan sonni toq ekanligini tekshirish uchun mantiqiy ko'paytirish *VA* amalidan foydalanamiz. Mantiqiy ko'paytirishda ikkala mulohaza bir vaqtda chin (1) bo'lganda chin (1) qilgan hollarda yolg'on (0) bo'ladigan mulohazaga aytiladi. (2-jadval)

(2-jadval)

A	B	A va B
0	0	0
0	1	0
1	0	0
1	1	1

$$agar\ n\ va\ 1 = ro'st\ bo'lsa \begin{cases} u\ holda,\ a^n = a^{n-1} * a \\ aks\ holda,\ a^n = a^{\frac{n}{2}} * a^{\frac{n}{2}} \end{cases} \qquad (5)$$

Yuqoridagilarni e'tiborga olib, xususiy holda 2^5 darajasini hisoblab ko'ramiz. Odatgai darajaga ko'tarish amali $2^5 = 2*2*2*2*2 = 4*2*2*2 = 8*2*2 = 16*2 = 32$ usulida amalga oshiriladi. Endi yuqoridagi formulalar asosida $2^5 = 2*(2*2)*(2*2) = 2*4*4 = 2*16 = 32$ ko'rinishiga keladi bu esa binar darajaga ko'tarishdir.

Dastur algoritmi: Matematik formulalar yordamida dastur algoritmni tuzamiz, buning uchun matn usulidan foydalanaman:

a^n kabi to'g'ridan-to'g'ri dasturda yozib bo'lmaydi. a soning n darajasi degani bu a sonini n marta ko'paytirish deganidir, misol uchun: $a^3 = a*a*a$ kabi yozish mumkin. Dastur algoritmni quyidagicha:

1) *r = 1* ga teng bo'lsin;

2) agar $n = 0$ bo'lsa (6) qadamga o'tilsin, aks holda keyingi qadamga o'tilsin;
3) agar n *VA* $1 = 1$ bo'lsa $r = r * a$
4) $a = a * a$;
5) $n = [n / 2]$;
6) (2) qadamga o'tilsin;
7) natija r ga teng deb olinsin;
8) tamom.

Dastur kodi: Dastur kodi C++ dasturlash tilida berilgan. Chap tarafda yuqoridagi algoritm yordamida tuzilgan, o'ng tarafdagi kod esa mantiqiy ko'paytirish, diskret matematika qonuniyatiga asoslangan holda optimallashtirilgan.

Oddiy yechim	Optimal yechim

int bpow(int a, int n)
{ int res = 1;
while (n != 0)
{ if (n % 2 == 1)
{ res *= a;
--n;
} else
{ a *= a;
n /= 2;
}
}
return res;
}
	int bpow(int a, int n)
	{ int res = 1;
	while (n)
	{ if (n & 1)
	res *= a;
	a *= a;
	n >>= 1;
	}
	return res;
	}

Pascal dasturlash tili kodi:

function bpow(a, n:integer):integer;
begin
result := 1;
while n <> 0 do begin
if n and 1 = 1 then result := result * a;
a := a * a;
n := n shr 1; // n := trunc(n / 2);
end;
end;

Taxlil: Berilgan algorim rostan ham to'g'ri ishlaydimi buni tekshirishimiz kerak, chap tarafdagi kodda bitta C++ dasturlash tiliga hos bo'lgan bir usuldan foydalanilgan, o'ng tarafda esa mantiqiy ko'paytirish asoslaridan foydalanilgan. Dastur kodlarida $n /= 2$ va $n >>= 1$ amallari hozrda bir vazifani bajaradi.

C++ dasturlash tilida butun sonni butun songa bo'lish natijasi butun son hosil bo'ladi, ya'ni ***5/2*** bo'lish natijasi ***2*** soni hosil bo'ladi, ***2.5*** soni hosil bo'lmaydi. C++ da bitlarni o'nga surish operatori >> belgisi yordamida tariflanadi, uning vazifasi bitlarni n birlik o'ng tomonga surishdan iborat, bizning misolda bu ***1*** ga teng.

5 >> 1 surish natijasi biz yana ***2*** sonini olamiz. Buning sababi $5_{10} == 101_2$ sonlar ekvavalent, $101_2 \gg 1$ bit o'ng tomonga surish natijasida biz 10_2 soni olamiz bu esa $10_2 == 2_{10}$ soniga tengdir. Bundan yana bir holat kelib chiqadi, n sonini toqlikka tekshirishning o'zi kifoya chunki har qanday holatda ham juft soni uchun bajariluvchi formula bajariladi. Buni berilgan o'ng tomondagi dastur kodida ko'rishimiz mumkin.

Endi 2^5 sonini dastur kodi bo'yicha tekshirib ko'ramiz, bunig uchun matematik algoritmdan foydalanamiz, ushbu algoritm o'ng tarafda berilgan dastur kodining ishlash prinsipi ko'rsatilgan: Qavs ichida o'zgaruvchilar ayni damda saqlagan qiymatlari berilgan. != belgisi $\neq$ belgisi bilan ekvavalent ya'ni teng emas degan ma'noni anglatadi.

1) A = 2, N = 5	
2) R = 1	
3) N != 0; XA	(5 != 0?)
4) N & 1 == 1?; XA	(5 & 1 == 1?)
5) R = R * N;	(R = 1 * 2 = 2)
6) A = A * A;	(A = 2 * 2 = 4)
7) N >>= 1;	(N = 5 >> 1 = 2)
8) N != 0; XA	(2 != 0?)
9) N & 1 == 1?; YO'Q	(2 & 1 == 1?)
10) A = A * A;	(A = 4 * 4 = 16)
11) N >>= 1	(N = 2 >> 1 = 1)
12) N != 0; XA	(1 != 0)
13) N & 1 == 1? XA	(1 & 1 == 1)
14) R = R * A	(R = 2 * 16 = 32)
15) N >>= 1	(N = 1 >> 1 = 0)
16) N != 0? YO'Q	(0 != 0)
17) Natija R	(R = 32)

Shunday qilib, informatikadan murakkab masalalarga dastur tuzishda dastur hajmiga, bajarilish vaqtiga, o'zgaruvchilar tiplarini tanlashga qat'iy chegaralar qo'yilgan bo'ladi. Bunday holatlarda mos algoritmni tanlash muhim ahamiyat kasb etadi. Jumladan yuqoridagi algoritm ay'nan shunday talablarga javob beradi.

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НЕЛОКАЛЬНАЯ ЗАДАЧА ДЛЯ ОДНОГО ГИПЕРБОЛИЧЕСКОГО УРАВНЕНИЯ ЧЕТВЕРТОГО ПОРЯДКА

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Аннотация. В работе для одного гиперболического уравнения четвертого порядка рассмотрена нелокальная задача типа Бицадзе-Самарского и доказано существование единственного решения.

Ключевые слова: нелокальная, единственное решение, представление решения, аналог функции Римана, корректность.

Annotation. In work for one hyperbolic equation of the fourth order is considered non lokal problem of the type Bicadze-Samarsky and is shown existence of the uniqueness solution.

Keywords: nonlocal, unique solution, representation of a solution, analogue of the Riemann function, correctness

В области $D=\{(x,y): 0<x<\ell, \quad 0<y<h\}$ для уравнения гиперболического типа [1]

$$u_{xxyy}(x,y)+bu_{yy}(x,y)=f(x,y), \quad b-const, \tag{1}$$

в классе функций

$$M=\{u(x,y): u(x,y)\in C^1(\overline{D}), \quad u_{yy}(x,y)\in C(\overline{D}), \quad u_{xxyy}(x,y)\in C(D)\}$$

рассмотрим следующую нелокальную задачу, которая является некоторым обобщением задачи Гурса.

Задача 1. *Найти в области* ***D*** *решение уравнения (1) из класса M, удовлетворяющее условиям*

$$u(0,y)=\varphi_1(y), \quad u_x(0,y)=\varphi_2(y), \quad 0<y<h, \tag{2}$$

$$u(x,0)=\lambda(x)u(x,h), \quad u_y(x,0)=\psi(x), 0<x<\ell, \tag{3}$$

где $\varphi_1(y), \varphi_2(y), \psi(x), f(x,y)$ - заданные функции, причем

$$\begin{gathered}\varphi_1'(0)=\psi(0), \ \varphi_2'(0)=\psi'(0), \quad \varphi_1(0)=\lambda(0)\varphi_1(h), \\ \varphi_2(0)=\lambda'(0)\varphi_1(h)+\lambda(0)\varphi_2(h),\end{gathered} \tag{4}$$

а $\lambda(x)$ - некоторая заданная действительная функция.

Для решения поставленной задачи предварительно рассмотрим следующую задачу.

Задача 2. (Гурса). *Найти решение уравнения (1), удовлетворяющее условиям (2), второму условию из (3) и условию*

$$u(x,0)=g(x), \ 0<x<h, \tag{5}$$

где $g(x)$ - пока неизвестная функция.

В работе [2] задача 2 решена методом аналога функции Римана и решение, например в случае $b<0$, представляется в следующем виде

$$u(x,y)=ch(\sqrt{-b}\,x)\varphi_1(y)+\frac{1}{\sqrt{-b}}sh(\sqrt{-b}\,x)\varphi_2(y)-$$

$$-\frac{1}{\sqrt{-b}}\int_0^x sh\left[\sqrt{-b}\,(\xi-x)\right]\left(g''(\xi)+bg(\xi)\right)d\xi-$$

$$-\frac{y}{\sqrt{-b}}\int_0^x sh\left[\sqrt{-b}\,(\xi-x)\right]\left(\psi''(\xi)+b\psi(\xi)\right)d\xi+$$

$$+\frac{1}{\sqrt{-b}}\int_0^x d\xi\int_0^y(\eta-y)sh\left[\sqrt{-b}\,(\xi-x)\right]f(\xi,\eta)d\eta. \qquad (6)$$

Используя интегрирование по частям для однократных интегралов в представлении (6) и учитывая, что $g'(0)=\varphi_2(0)$, $g(0)=\varphi_1(0)$, получим

$$\int_0^x sh\left[\sqrt{-b}\,(\xi-x)\right]\left(g''(\xi)+bg(\xi)\right)d\xi=sh\left[\sqrt{-b}\,x\right]\varphi_2(0)-\sqrt{-b}\,g(x)+\sqrt{-b}\,ch\left[\sqrt{-b}\,x\right]\varphi_1(0)$$

$$\int_0^x sh\left[\sqrt{-b}\,(\xi-x)\right]\left(\psi''(\xi)+b\psi(\xi)\right)d\xi=sh\left[\sqrt{-b}\,x\right]\psi'(0)-\sqrt{-b}\,\psi(x)+\sqrt{-b}\,ch\left[\sqrt{-b}\,x\right]\psi(0)$$

.

Тогда представление (6) можно переписать в следующем виде

$$u(x,y)=ch(\sqrt{-b}\,x)\varphi_1(y)+\frac{1}{\sqrt{-b}}sh(\sqrt{-b}\,x)\varphi_2(y)-\frac{1}{\sqrt{-b}}sh\left[\sqrt{-b}\,x\right]\varphi_2(0)+g(x)-$$

$$-ch\left[\sqrt{-b}\,x\right]\varphi_1(0)-\frac{y}{\sqrt{-b}}sh\left[\sqrt{-b}\,x\right]\psi'(0)+y\psi(x)-ych\left[\sqrt{-b}\,x\right]\psi(0)+$$

$$+\frac{1}{\sqrt{-b}}\int_0^x d\xi\int_0^y(\eta-y)sh\left[\sqrt{-b}\,(\xi-x)\right]f(\xi,\eta)d\eta. \qquad (7)$$

Из (7) при $y=h$ получим

$$u(x,h)=F(x)+g(x),$$

где

$$F(x)=ch(\sqrt{-b}\,x)\left[\varphi_1(h)-\varphi_1(0)\right]+\frac{1}{\sqrt{-b}}sh(\sqrt{-b}\,x)\left[\varphi_2(h)-\varphi_2(0)\right]-$$

$$-\frac{h}{\sqrt{-b}}sh\left[\sqrt{-b}\,x\right]\psi'(0)+h\psi(x)-hch\left[\sqrt{-b}\,x\right]\psi(0)+$$

$$+\frac{1}{\sqrt{-b}}\int_0^x d\xi\int_0^h(\eta-h)sh\left[\sqrt{-b}\,(\xi-x)\right]f(\xi,\eta)d\eta.$$

Используя первое условие из (3) и условие (5) имеем

$$g(x)\left(1-\lambda(x)\right)=\lambda(x)F(x). \qquad (8)$$

Итак, если $\lambda(x)\neq 1$ при $x\in[0,\ell]$, то неизвестная функция $g(x)$ единственным образом может быть определена в виде

$$g(x)=\frac{\lambda(x)F(x)}{1-\lambda(x)}. \qquad (9)$$

Подставляя это найденное выражение для $g(x)$ в представление (7) мы можем определить решение задачи 1.

Таким образом, доказана

ТЕОРЕМА. *Если* $\varphi_1(y), \varphi_2(y) \in C^2[0,h], \psi(x) \in C^2[0,\ell]$, *выполнены условия (4) и* $\lambda(x) \neq 1$ *при* $x \in [0,\ell]$, *то задача 1 в области D имеет единственное решение из класса M.*

В случае $\lambda(x) = 1$ заданные в граничных условиях функции станут линейно зависимыми и нарушается корректность задачи.

ПРИМЕР. Пусть в области $D = \{(x,y): 0 < x < 1, 0 < y < 1\}$ требуется найти функцию $u(x,y) \in M$, удовлетворяющую уравнению

$$u_{xxyy}(x,y) - 4u_{yy}(x,y) = y, \tag{10}$$

и краевым условиям

$$u(0,y) = \varphi_1(y) = y^2, \quad u_x(0,y) = \varphi_2(y) = y^3, \quad 0 < y < 1, \tag{11}$$

$$u(x,0) = x\,u(x,1), \quad u_y(x,0) = \psi(x) = x^2, \quad 0 < x < 1. \tag{12}$$

Очевидно, что

$$\varphi_1(y) \in C^2[0,1], \varphi_2(y) \in C^2[0,1], \psi(x) \in C^2[0,1],$$

и для них имеют места условия (4).

В случае этого примера функция $g(x)$ определяется в виде

$$g(x) = \frac{x}{1-x} ch(2x) + \frac{x}{2(1-x)} sh(2x) + \frac{x^3}{1-x} - \frac{x}{24(1-x)}\left(1 - ch(2x)\right) \tag{13}$$

Тогда на основании формулы (7) решение задачи (10), (11), (12) может быть определено в следующем виде

$$u(x,y) = ch(2x)y^2 + \frac{1}{2} sh(2x)y^3 + \frac{x}{1-x} ch(2x) + \frac{x}{2(1-x)} sh(2x) + \\ + \frac{x^3}{1-x} - \frac{x}{24(1-x)}\left(1 - ch(2x)\right) + yx^2 - \frac{y^3}{24}\left(1 - ch(2x)\right) \tag{14}$$

Принадлежность этого решения классу M очевидно. Также легко можно показать, что найденное решение (14) удовлетворяет уравнению (10) и всем краевым условиям (11) и (12).

Покажем, например, выполнение первого условия из (12).

Из (14) имеем, что при $y = 1$

$$u(x,1) = ch(2x) + \frac{1}{2} sh(2x) + \frac{x}{1-x} ch(2x) + \frac{x}{2(1-x)} sh(2x) + \\ + \frac{x^3}{1-x} - \frac{x}{24(1-x)}\left(1 - ch(2x)\right) + x^2 - \frac{1}{24}\left(1 - ch(2x)\right).$$

Тогда

$$xu(x,1) = xch(2x) + \frac{1}{2}xsh(2x) + \frac{x^2}{1-x}ch(2x) + \frac{x^2}{2(1-x)}sh(2x) +$$

$$+\frac{x^4}{1-x} - \frac{x^2}{24(1-x)}\left(1-ch(2x)\right) + x^3 - \frac{x}{24}\left(1-ch(2x)\right) =$$

$$= ch(2x)\left[x + \frac{x^2}{1-x}\right] + sh(2x)\left[\frac{x}{2} + \frac{x^2}{2(1-x)}\right] + \frac{x^4}{1-x} + x^3 - (1-ch(2x))\left[\frac{x^2}{24(1-x)} - \frac{x}{24}\right] =$$

$$= \frac{x}{1-x}ch(2x) + \frac{x}{2(1-x)}sh(2x) + \frac{x^3}{1-x} - \frac{x}{24(1-x)}\left(1-ch(2x)\right).$$

Из того же (14) получим, что

$$u(x,0) = \frac{x}{1-x}ch(2x) + \frac{x}{2(1-x)}sh(2x) + \frac{x^3}{1-x} - \frac{x}{24(1-x)}\left(1-ch(2x)\right),$$

то есть

$$u(x,0) = xu(x,1).$$

Аналогично можно показать выполнения остальных условий.

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CUSTOMER SEGMENTATION BY CLASSIFICATION USING WEKA

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Abstract: *The most progressive and expandable marketing Programme is the segmentation of customers. By using this strategy we can increase our business and impress our customers by keeping view the interest of our customer's products. We can also categorize customers of specific country, region or area by view their scoring. Various autonomous division techniques are per framed on the clients, every methodology bringing about its own arrangement of scores. .Besides, unique composite scores can be resolved utilizing various potential strategies and these various scores can, themselves, be joined to create a general Score and positioning for every client. In the previous years, inquire about in the fields of large information investigation, AI and information mining strategies is getting progressively visit. This proposal depicts a client division approach in a recycled vintage dress E-commercial. These client bunches depend on client cooperation's with things in the commercial center, A significant objective of this proposal was to build an individual feed for every client where the things are gotten from the client gatherings. The client division strategy talked about in this paper depends on the grouping calculation K-implies utilizing cosine likeness as the similitude measure. The information grid utilized by the K-implies calculation is a User-Brand appraisals lattice where each brand is given a rating by every client. A representation apparatus was additionally built so as to improve image of the information and the subsequent bunches. So as to envision the profoundly dimensional User-Brand grid, Principal Component Analysis is utilized as a dimensionality decrease calculation.*

Keywords: *Customer, Segmentation, WEKA, Classification, Data Mining, Region, Online*

1. LITERATURE REVIEW

Segmentation techniques have focused on demographic and Psychographic variables .In this way constituted customer groups reveal Who is buying in the investigated stores and why. Results show the usefulness of customer segmentation based on their buying behavior [1]. A thorough examination of several customer contacts attributable to a single sale is still lacking .This means there is also a lack of approaches to segmenting customers according to their contact with retailers. Some relevant studies only inspect the behaviour in the store or mall, behaviour prior and after the purchase is neglected. But all contacts in the different phases of the purchase process are important influencing factors of customers behaviour first contributions e.g. by Balasubramian, Raghunathan, and Mahajan (2005), Silberer and Mau (2006).

Lamb et al. (2008) state that retention and loyalty support serves to increase repeat purchases and helps to build loyalty to the brand or business. Mullin (2010)

argue that retention and loyalty support is important for building relationships with customers. According to Toopa et al. (1991) the retention and Loyalty support has various roles in practice. It should encourage consumers not only to first purchase a product of the brand, but to purchase more and repeatedly, to contribute to building customer confidence so that customers remain loyal to the brand even after more purchases, remind the customer of certain benefits that the company offers, and is thus better than the competition, contribute to improving the reputation of the brand or company. The concept of customer retention refers to retention of individual customers in the enterprise or willingness to repeatedly buy the products of the company (Best, 2010). Retention is one of the so called "output measure of customer performance" (Lostakova et al., 2009). on the context, the likelihood to visit/repurchase from the retailer again (Agustin and Singh, 2005, Anderson and Mittal, 2000, Anderson and Sullivan, 1993, Bloemer and de Ruyter, 1998, Chandrashekaran et al., 2007, Cronin et al., 2000, Gustafsson and Johnson, 2004, Homburg and Furst, 2005, Homburg and Giering, 2001, Johnson et al., 2006, Lam et al., 2004, Liang and Wang, 2004, Mittal et al., 1999, Mittal et al., 1998, Ngobo, 1999 and Seiders et al., 2005). Loyalty means "creating a customer intending to permanently remain with the company, the so called owning the customer" (Horrel, 2007). When companies "own" their customers, it means that the customers are loyal to a few companies, despite the fact that these companies have, for example, higher prices if compared to others. The reasons that make the customer loyal to a company and brand can be different, but what is common is that due to them the customers have emotionally affiliated to the company and its products, because they perceive that it brings them a greater value than anyone else does (Lostakova et al., 2009). Loyal customers would not go away on any account and constantly come back to these few companies [2].

2. INTRODUCTION

Customer segmentation is a method of dividing customers into groups on the basis of common characteristics. We can segment customers into various demographic characteristics such as Country, item, age etc.

Customers are of different character and have different needs. It is not optimal to have same strategy and marketing for every customer. In order to meet the customer need and take care of their customer who are important for the company, it is important to segment their customers and sort out the difference between them. The point of this venture was to get more knowledge about the clients of the vintage E-commercial center application and furthermore to improve their client experience. The application has seen an expansion of notoriety, flaunting a user base. This huge client base has led to an expanding stream of transferred things accessible for the intrigued purchasers. Be that as it may, numerous of these things are not seen by most purchasers because of the measure of things being made consistently. More seasoned things are lost in the apparently ceaseless rundown of articles. This issue is frequently alluded to as data over-burden [3] and can be tackled by giving particular article streams to every client contingent upon his/her inclinations. This report will cover an examination of the

Plick client base, in a perfect world, the investigation ought to reveal a few examples in the information that can be utilized to join clients into littler gatherings. Two clients in the Plick commercial center are viewed as comparative in the event that they have comparable inclinations in garments. The assembled information for the examination and the likeness calculations will be completely portrayed in this report.

To improve every client's experience which thusly helps in client maintenance. Besides, satisfied clients are bound to prescribe the commercial center to others, prompting an expansion in esteem for the organization. This kind of key methodology is a piece of the organization's business knowledge (BI) which is a lot of specialized procedures, for example information mining and examination, used to distinguish and make new business openings associated with every client's needs.

3. METHODS AND MATERIALS

In the field of group examination it is essential to pick a calculation well appropriate for the accessible dataset. So as to settle on this decision, extends that tackle comparable issues and utilize comparable strategies were examined during the initial step of the undertaking. We have used the data mining tool for analysis using tool named as Weka 3.8.4. We had used one dataset and the performance of a comprehensive set of Classification algorithms has been analyzed. The chosen dataset differ in size from original dataset collected from the source.

3.1 Customer Dataset

The “Customer Segmentation Dataset" where taken from the kaggle community. A large number of instances were selected from this dataset, the customer Dataset. This dataset contains the data of customers who had done shopping online from different countries.

This dataset contains in total 6912 instances and 8 attributes which specify the descriptive properties of customers. This helps us to conclude the importance of customers.

4. CLASSIFICATION

A large number of compressive classification algorithms [4], but we have chosen three of them and we had tried to find which algorithm is more efficient for our dataset. The results of algorithms are different so algorithms through Weka provides different accuracy.

4.1 OneR

OneR, another way to say "One Rule", is a straightforward, yet exact, grouping calculation that creates one standard for every indicator in the information, at that point chooses the standard with the littlest absolute blunder as its "one guideline". To make a standard for an indicator, we develop a recurrence table for every indicator against the objective. It has been demonstrated that OneR produces controls just somewhat less exact than best in class grouping calculations while creating decides that are basic for people to decipher [5].

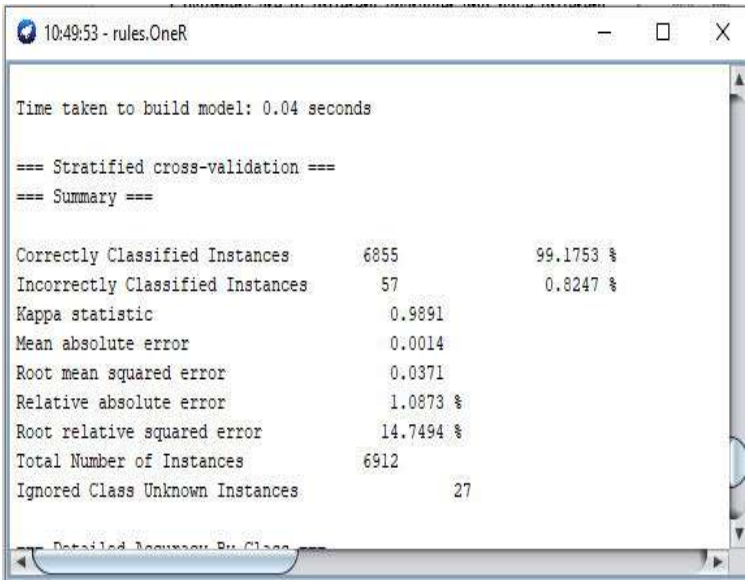

Image 1: OneR Algorithm

Instances	**Results**
Correctly Classified instances	99.1753 %
Incorrectly Classified Instances	0.8247 %
Kappa statistic	0.9891
Mean absolute error	0.0014
Root mean squared error	0.0371
Relative absolute error	1.0873 %
Root relative squared error	14.7494 %
Total Number of Instances	6912
Ignored Class Unknown Instances	27

Table1: OneR Algorithm Table

4.2 Nave Bayes

It is simple probabilistic classifier based on applying Bayes theorem with independence assumption among the features. It is highly scalable require a number of parameters linear in the number of variables in a learning problem [6].

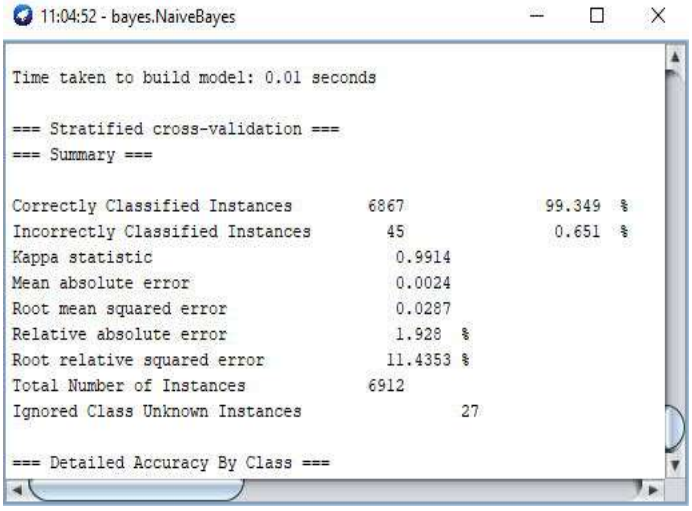

Image2: Nave Bayes Algorithm

Instances	Results
Correctly Classified instances	99.349 %
Incorrectly Classified Instances	0.651 %
Kappa statistic	0.9914
Mean absolute error	0.0024
Root mean squared error	0.0287
Relative absolute error	1.928 %
Root relative squared error	11.4353 %
Total Number of Instances	6912
Ignored Class Unknown Instances	27

Table2: Nave Bayes Algorithm Table

4.3 J48

Quinlan's C4.5 calculation completes J48 to make a cut C4.5 choice tree. The each part of the data is to part into minor subsets to base on a choice. J48 take a gander at the normalized information gain that actually the outcomes the split the data by picking a property. To sum up, the trait extraordinary normalized information picked up is used. The minor subsets are returned by the calculation. The split techniques stop if a subset has a spot with a comparative class in all the occurrences. J48 builds up a choice hub using the normal estimations of the class. J48 choice tree can manage specific qualities, lost or missing characteristic estimations of the information and differing property costs. Here exactness can be extended by pruning (Venkatesan, 2015) [7].

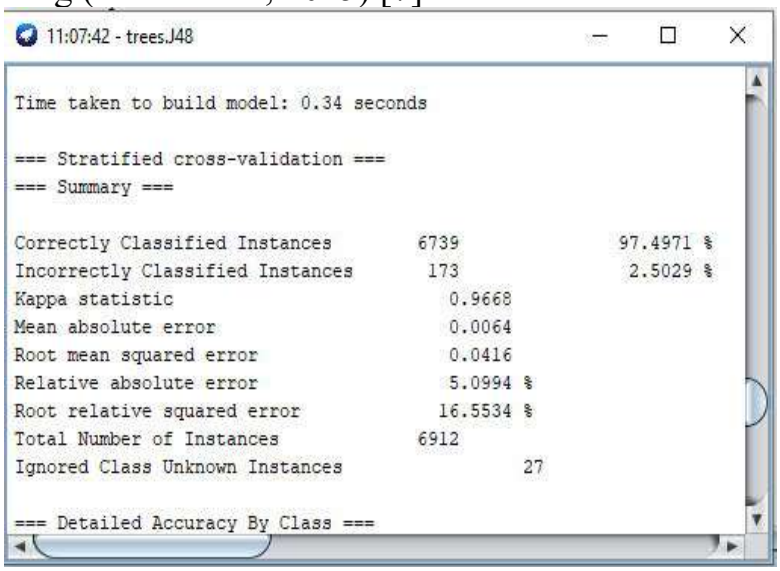

Image3: J48 Algorithm

Instances	Results
Correctly Classified instances	97.4971 %
Incorrectly Classified Instances	2.5029 %
Kappa statistic	0.9688
Mean absolute error	0.0064
Root mean squared error	0.0416

Relative absolute error	5.0994 %
Root relative squared error	16.5534 %
Total Number of Instances	6912
Ignored Class Unknown Instances	27

Table3: J48 Algorithm Table

4.4 Random Forest

This algorithm is built upon decision tree algorithm. It Contains within itself some instances processed decision tree [8], otherwise this is a "forest" that contains some "trees"[9]. In the Weka Tool, which provides opportunity to this algorithm and it can be configured to improve performance. It gives opportunity to notes the number of attributes used during the Random generation, the number of constituent trees in "forest" and basic number "Seed" used for generating random numbers.

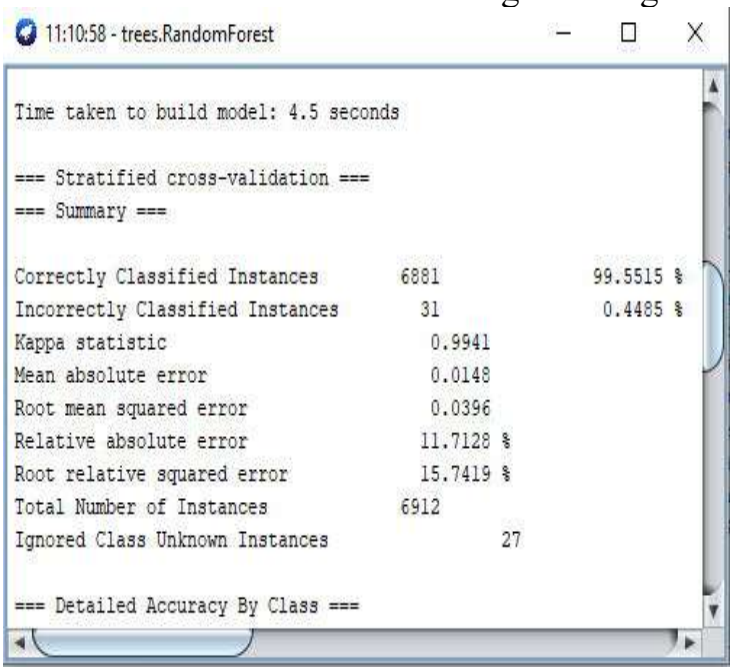

Image4: Random Forest Algorithm

Instances	Results
Correctly Classified instances	99.5515 %
Incorrectly Classified Instances	0.4485 %
Kappa statistic	0.9941
Mean absolute error	0.0148
Root mean squared error	0.0396
Relative absolute error	11.7128 %
Root relative squared error	15.7419 %
Total Number of Instances	6912
Ignored Class Unknown Instances	27

Table4: Random Forest Algorithm Table

5. RESULTS AND DISCUSSION

The final result after applying different classification algorithms on the same dataset shows the accuracy level of the dataset according to the algorithms applied.

	OneR	Nave Bayes	J48	Random Forest
Correctly Classified Instances	99.1753 %	99.349 %	97.4971 %	99.5515 %

Table5: Data Set Analysis Table

6. CONCLUSION

A definitive objective of this task is to portion clients into littler gatherings which can be seen as gatherings of clients that appear to like a similar sort of items. These gatherings can be utilized to convey individual suggestions dependent on scoring. This is a clearly a very amazing asset for reactivating clients.

In the event that this thought is taken significantly further, the Plick application and site could incorporate an individual Feed with these things. Given that these things truly are important to the clients, the measure of sold things should increment since clients see fascinating things that would have "been lost" in the long feed of things which is principally requested by transfer time. This advantages both the purchasers and the dealers which thus are bound to prescribe Plick to loved ones. In this report, a client division approach is introduced and assessed. During the last phases of the execution a rendition where preferences were fused in the framework was tried, anyway no noteworthy enhancements were watched. All things considered, the spotlight during this undertaking was on the bunching examination, the pre-preparing phase of this venture could be improved by joining preferences and discussion to the evaluations estimations utilizing some weighting of these information focuses. Another fascinating information point is buys, most clients choose to get together so as to buy or sell things. A thought examined inside to determine this issue is to require the dealer to add a purchaser to a thing at whatever point he/she sets the thing state to sell in the application.

(This study analyses that the accuracy level of Random Forest algorithm is higher than others which is 99.5515 % among the other three algorithms used.
The content and size of dataset used in our research is different; therefore, the results differ. Overall, the results indicate that the performance of a Random Forest depends on the dataset, especially on the number of attributes used in the dataset.

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ИНТЕРНЕТДА РУХСАТСИЗ КИРИШ УСУЛЛАРИНИНГ ТАСНИФИ

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Аннотация: *Интернетда рухсатсиз кириш кўплаб муоммоларни келтириб чиқормоқда шу сабабли буни олдини олиш учун бир қанча муоммоларни хал этишни кўриб чиқамиз.*

Калит сўзлар: *FTP, Gophes, Глобал тармоқ, TCP/IP, DNS spoofing.*

Аннотация: *Несанкционированный доступ к Интернету вызывает много проблем, поэтому мы постараемся решить ряд проблем, чтобы предотвратить это.*

Ключевые слова: *FTP, Gophes, глобальная сеть, TCP / IP, DNS-спуфинг.*

Annotation: *Unsanktsionirovannыy dostup k Internetu vыzыvaet mnogo problem, poetomu postaraemsya reshit ryad problem, chtoby predotvratit eto.*

Keywords: *FTP, Gophes, globalnaya set, TCP / IP, DNS-spufing.*

Глобал тармоқларнинг ривожланиши ва ахборотларни олиш, қайта ишлаш ва узатишнинг янги технологиялари пайдо бўлиши билан Интернет тармоғига хар хил шахс ва ташкилотларнинг эътибори қаратилди. Кўплаб ташкилотлар ўз локал тармоқларини глобал тармоқларга улашга қарор қилишган ва хозирги пайтда WWW, FTP, Gophes ва бошқа серверлардан фойдаланишмоқда. Тижорат мақсадида ишлатилувчи ёки давлат сири бўлган ахборотларнинг глобал тармоқлар бўйича жойларга узатиш имкони пайдо бўлди ва ўз навбатида, шу ахборотларни химоялаш тизимида малакали мутахассисларга эхтиёж туғилмоқда.

Глобал тармоқлардан фойдаланиш бу фақатгина «қизикарли» ахборотларни излаш эмас, балки тижорат мақсадида ва бошқа ахамиятга молик ишларни бажаришдан иборат. Бундай фаолият вақтида ахборотларни химоялаш воситаларининг йўқлиги туфайли кўплаб талофотларга дуч келиш мумкин.

Хар қандай ташкилот Intenetга уланганидан сўнг, хосил бўладиган қуйидаги муаммоларни хал этишлари шарт:

- Ташкилотнинг компьютер тизимини хакерлар томонидан бузилиши:
- Интернет орқали жўнатилган маълумотларнинг ёвуз ниятли шахслар томонидан ўқиб олиниши;
- Ташкилот фаолиятига зарар етказилиши.

Интернет лойихалаш даврида бевосита химояланган тармоқ сифатида ишлаб чиқилмаган. Бу сохада хозирги кунда мавжуд бўлган қуйидаги муаммоларни келтириш мумкин:

- Маълумотларни енгиллик билан қўлга киритиш;
- Тармоқдаги компьютерлар манзилини сохталаштириш;
- TCP/IP воситаларининг заифлиги;

- Кўпчилик сайтларнинг нотўғри конфигурацияланиши;
- Конфигурациялашнинг мураккаблиги.

Глобал тармоқларнинг чегарасиз кенг ривожланиши ундан фойдаланувчилар сонининг ошиб боришига сабаб бўлмоқда, бу эса уз навбатида ахборотлар хавфсизлигига тахдид солиш эхтимолининг ошишига олиб келмоқда. Узоқ, масофалар билан ахборот алмашиш зарурияти ахборотларни олишнинг қатъий чегараланишини талаб этади. Шу мақсадда тармоқларнинг сегментларини хар хил даражадаги химоялаш усуллари таклиф этилган:

- Эркин кириш (масалан: WWW-сервер);
- Чегараланган киришлар сегменти (узоқ масофада жойлашган иш жойига хизматчиларнинг кириши);
- Ихтиёрий киришларни ман этиш (масалан, ташкилотларнинг молиявий локал тармоқлари).

Интернет глобал ахборот тармоғи ўзида нихоятда катта хажмга эга бўлган ахборот ресурсларидан миллий иқтисоднинг турли тармоқларида самарали фойданишга имконият туғдиришига қарамасдан ахборотларга бўлган хавфсизлик даражасини оширмоқда. Шунинг учун хам Интернетга уланган хар бир корхона ўзининг ахборот хавфсизлигини таъминлаш масалаларига катта эътибор бериши керак.

Локал тармоқларнинг глобал тармоқларга қўшилиши учун тармоқлар химояси администратори қуйидаги масалаларни хал қилиши лозим:

— локал тармоқларга глобал тармоқ, томонидан мавжуд хавфларга нисбатан химоянинг яратилиши;

— глобал тармоқ фондаланувчиси учун ахборотларни яшириш имкониятининг яратилиши; Бунда қуйидаги усуллар мавжуд:

— кириш мумкин бўлмаган тармоқ манзили орқали;

— Ping дастури ёрдамида тармоқ пакетларини тўлдириш;

— рухсат этилган тармоқ манзили билан тақиқланган тармоқ манзили бўйича бирлаштириш;

— таъқиқланган тармоқ протаколи бўйича бирлаштириш;

— тармоқ бўйича фойдаланувчига парол танлаш;

— REDIREST туридаги ICMP пакети ёрдамида маршрутлар жадвалини модификациялаш;

— RIP стандарт бўлмаган пакети ёрдамида маршрутлар жадвалини ўзгартириш;

— DNS spoofingдан фойдаланган холда уланиш.

Рухсат этилган манзилларнинг рухсат этилмаган вақтда уланиши

Ушбу хавф глобал тармоқларнинг бир канча сохаларини қамраб олади, жумладан:

- локал соха;
- локал-глобал тармоқларнинг бирлашуви;
- мухим ахборотларни глобал тармоқларда жўнатиш;

- глобал тармоқнинг бошқарилмайдиган қисми.

Ихтиёрий ахборот тармоқларининг асосий компонентлари бу серверлар ва ишчи станциялар хисобланади. Серверда ахборотлар ёки хисоблаш ресурслари ва ишчи станцияларда хизматчилар ишлайди. Умуман ихтиёрий компьютер хам, сервер хам ишчи станция бўлиши мумкин — бу холда уларга нисбатан хавфли хужумлар бўлиши эхтимоли бор.

Серверларнинг асосий вазифаси ахборотларни сақлаш ва тақдим қилишдан иборат.

Ёвуз ниятли шахсларни қуйидагича таснифлаш мумкин:

- ахборот олишга имконият олиш;
- хизматларга рухсат этилмаган имконият олиш;
- маълум синфдаги хизматларнинг иш режимини ишдан чиқаришга уриниш;
- ахборотларни узгартиришга харакат ёки бошқа турдаги хужумлар.

Ўз навбатида, хозирги замонавий ривожланиш давомида сервис хизматини издан чиқаришга қарши кураш муаммоси мухим ахамият касб этади. Бу хилдаги хужумлар «сервисдаги бузилиш» номини олган.

Ишчи станцияларга хужумнинг асосий мақсади, асосан, қайта ишланаётган маълумотларни ёки локал сақланаётган ахборотларни олишдир. Бундай хужумларнинт асосий воситаси «Троян» дастурлар саналади. Бу дастур ўз тузилиши бўйича компьютер вирусларидан фарқ килмайди ва компьютерга тушиши билан ўзини билинтирмасдан туради. Бошқача айтганда, бу дастурнинг асосий мақсади — тармоқ, станциясидаги химоя тизимини ички томондан бузишдан иборат.

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MIKRO-, NANO- ELEKTRONIK VA FOTOLEKTIK QURULMALARNI RAQAMLI MODELLASHTIRISH UCHUN MILLIY TEXNOLOGIK PLATFORMANI ISHLAB CHIQISH VA TADBIQ QILISH

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Annotatsiya: *Ushbu maqolada mikro- va nano- elektron fotoelektrik qurulmalarni raqamli modellashtirish uchun milliy texnologik platformani ishlab chiqishning dastlabki natijalari haqida ma'lumotlar berilgan.*

Kalit so'zlar: *texnologik platforma, raqamli modellashtirish, yarimo'tkazgichlar, quyosh elementi*

Annotation: *In this article, provides information on the preliminary results of the development of a national technology platform for digital modeling of micro-, nano-electronic photoelectric devices.*

Key words: *technological platform, digital modeling, semiconductors, solar cells*

Аннотация*: В данной статье приводится информация о предварительных результатах разработки национальной технологической платформы для цифрового моделирования микро-, наноэлектронных фотоэлектрических устройств.*

Ключевые слова: *технологическая платформа, цифровое моделирование, полупроводники, солнечные элементы.*

Yarimo'tkazgichlar sohasida olib borilayotgan ilmiy izlanishlarni samaradorligini oshirish hamda, tajribalar o'tkazishga sarflanadigan vaqt va mablag'ni kamaytirish uchun simulatsion dasturlardan foydalanish qulaydir[1]. Chunki olinayotgan natijalar reallikga yaqin bo'lib, bir vaqtning o'zida juda ko'p parametrlarni aniqlashga imkon beradi[2].

Ushbu maqola yarimo'tkazgichli mikro- va nano- elektron fotoelektrik qurilmalarni raqamli modellashtirish uchun milliy texnologik platformani ishlab chiqishning dastlabki natijalari haqida xabar beradi. Texnologik platforma - bu universitetlarda o'quv maqsadlarida xizmat qiladigan, tadqiqot olib boradigan va amaliy sanoat muammolarini hal qiladigan interfaol vosita.

Texnologik platforma yarimo'tkazgichli materiallarning elektrofizik va optik parametrlarini hisoblashning asosiy nazariyasiga, shuningdek, yarimo'tkazgich asosida yaratilgan qurilmalarning optik, fizik, optoelektronik, fotoelektrik, energiya parametrlari va volt-amper xarakteristikalariga asoslanadi.

Texnologik platformadagi zamonaviy dasturiy ta'minot uchun bir nechta dasturlash tillari kombinatsiyasidan iborat "Suntulip-1" va "Suntulip-2" simulatsion dasturlar tizimi ishlab chiqilgan.

Ishlab chiqilgan dasturiy ta'minot soddalashtirilgan interfeysga ega, u foydalanuvchidan maxsus chuqur dasturiy bilimlarni talab qilmaydi. Simulyatsion

hisoblashda, nazariy ifodalar, tanlangan chegaraviy shartlar va yarimo'tkazgich, metall, optik, dielektrikni bir qator fizik parametrlarining yaratilgan ma'lumotlar bazasi o'rtasida samarali muvofiqlashtirish ta'minlanadi. Masalan, yaratilgan ma'lumotlar bazasi 132 turdagi materiallarning eksperimental ravishda aniqlangan kompleks nur sindirish ko'rsatkichining qiymatlarini o'z ichiga oladi.

Suntulip-2 turli metall nanozarralarining fizik va geometrik parametrlarini p-n o'tishli kremniy quyosh elementlarini xususiyatlariga ta'sirini o'rganishga imkon beradi.

Yangi texnologik platforma quyidagi asosiy sahifalardan iborat: "Bosh sahifasi"- o'rganilayotgan ob'ektlar uchun foydalanuvchi tanlagan parametr qiymatlarini kiritishga xizmat qiluvchi; "Natijalar"- Ikki va uch o'lchovli grafik va diagrammali tasvirlarga o'tkazish imkoniyati bo'lgan ko'p tarmoqli jadvallar ko'rinishida namoyish etiladi; "Nur sindirish ko'rsatkichlarining ma'lumotlar bazasi"; "Yarimo'tkazgich materiallarning eksperimental ma'lumotlar bazasi; "Texnologiya va dizaynni tanlash".

"Bosh sahifa" tanlangan yarimo'tkazgichning quyidagi asosiy parametrlarini, tuzilishini va tashqi ta'sirlarning shartlarini kiritishni amalga oshirish imkon beradi:

- donorlar va akseptor kontsentratsiyasi; - tuzilma qatlamlarining qalinligi; - dielektrik qatlamlarning qalinligi; - temperatura; - yorug'lik manbai; nurlanish turi va dozasi.

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ТИББИЙ МУАССАСАЛАРДА БЕМОРЛАРГА ТАШХИС ҚЎЙИШ ВА ДАВОЛАШ ЖАРАЁНИНИ ОПТИМАЛЛАШТИРИШНИНГ БИР УСЛУБИ ҲАҚИДА

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Аннотация: *Мақолада дастлаб тиббий муассасаларда беморларга ташхис қўйиш ва даволаш жараёнидаги кўрсатиладиган барча хизматлар иккита гуруҳга ажратилган. Кейинги босқич хизматларнинг нархлари, тиббий муассаса ва беморнинг имконияти ҳисобга олинган ҳолда оптималлаштириш масаласига бағишланган. Шунингдек, масаланинг кўп вариантлилиги ҳисобга олинган ҳолда квазиоптимал ечимни аниқлашнинг услуб ва умумлашган алгоритми тавсия этилган.*

Калит сўзлар: *Ташхис, даволаш, тиббий хизмат, хизмат ҳақи, ҳизмат тури, эксперт, баҳо, квазиоптимал, услуб, алгоритм.*

Аннотация: *В данной статье сначала все оказываемы пациентам услуги, в процессе диагностики и лечения, разделяются на две группы. Далее рассматривается решение задачи оптимизации процесса диагностирования и лечения с учетом стоимости услуг, возможности пациентов и медицинских учреждений. Также, с учетом многовариантности решения этой задачи, предлагается метод и обобщенный алгоритм для определения квазиоптимального решения.*

Ключевые слова: *Диагноз, лечения, медицинские услуги, стоимость услуг, виды услуг, эксперт, оценка, квазиоптимал, метод, алгоритм.*

Annotation: *In this article diagnosing the patients and provided services in the period of treatments are divided into two groups. Further, the solution to the problem of optimizing the process of diagnosis and treatment is considered taking into account the cost of services, the capabilities of patients and medical institutions. Apart from this, multiverse solution to current problem, a method and a generalized algorithm for identifying a quasi-optimal solution is suggested.*

Keywords: *Diagnosis, treatment, medical services, cost of services, types of services, expert, assessment, quasioptimal, method, algorithm.*

Беморлар тиббий муасасаларга мурожаат қилганда бир қатор пуллик хизматлардан фойдаланишга тўғри келади. Шунинг учун тиббий муасасаларга мурожаат килувчилар биринчи навбатда унга ташхис қўйиш ва даволаш учун кўрсатиладиган хизматлар ва уларга бўладиган тўловлар ҳақидаги тўлик маълумотларга эга бўлиши керак.

Қаралаётган жараёндаги хизматларни иккита турга ажратиш мумкин:

- бемор мурожаат қилгандан бошлаб ташхис қўйишгача қилинадиган хизматлар;
- ташхис қўйилгандан кейин даволаш билан боғлиқ хизматлар.

Ташриф буюрган беморга биринчи турда врачлар кўриги, тахлиллар топшириш, тиббий аппаратларда текшириш ва бошқа турдаги хизматлар кўрсатилади: $X= \{ x_1,x_2,\ldots,x_n\}$.

Ҳар бир хизмат турига мос хизмат ҳақини қуйидагича ифодалаш мумкин: $Y= \{ y_1,y_2,\ldots,y_n\}$

Демак, бу босқичдаги хизматларни қуйидаги жадвал кўринишида ифодалаш мумкин:

Хизмат турлари номи	x_1	x_2	…	x_n
Кўрсатилаган хизмат тури қиймати (0 ёки 1)	k_1	k_2	…	k_n
Хизмат ҳақи, сўм	y_1	y_2	…	y_n

Бу ерда n биринчи босқичда кўрсатиладиган хизматлар сони.

Хизмат турларини турли алтернативалари мавжуд бўлиш эҳтимолини ҳисобга олсак, хизмат тури ва ҳақларини қуйидаги кўринишида ифодалаш мумкин:

Хизмат тури / Алтер-натив вариантлар	x_1	x_2	…	x_n
a_1	y_{11}	y_{12}	…	y_{1n}
a_2	y_{21}	y_{22}	…	y_{2n}
…				
a_m	y_{m1}	y_{m2}	…	y_{mn}

Беморга биринчи турда кўрсатиладиган хизматлар ҳажмини қуйидагича аниқлаш мумкин:

$$C = \sum_{i=1}^{n}\sum_{j=1}^{m} k_i y_{ij} \qquad (1)$$

Бу ерда k_i кўрсатиладиган хизматларга қараб 0 ёки 1 қиймат қабул қилувчи коэффициент, яъни:

$$k_i = \begin{cases} 1, & \text{агар шу турдаги хизмат кўрсатилса;} \\ 0, & \text{агар шу турдаги хизмат кўрсатилмаса ёки хизмат бепул бўлса.} \end{cases}$$

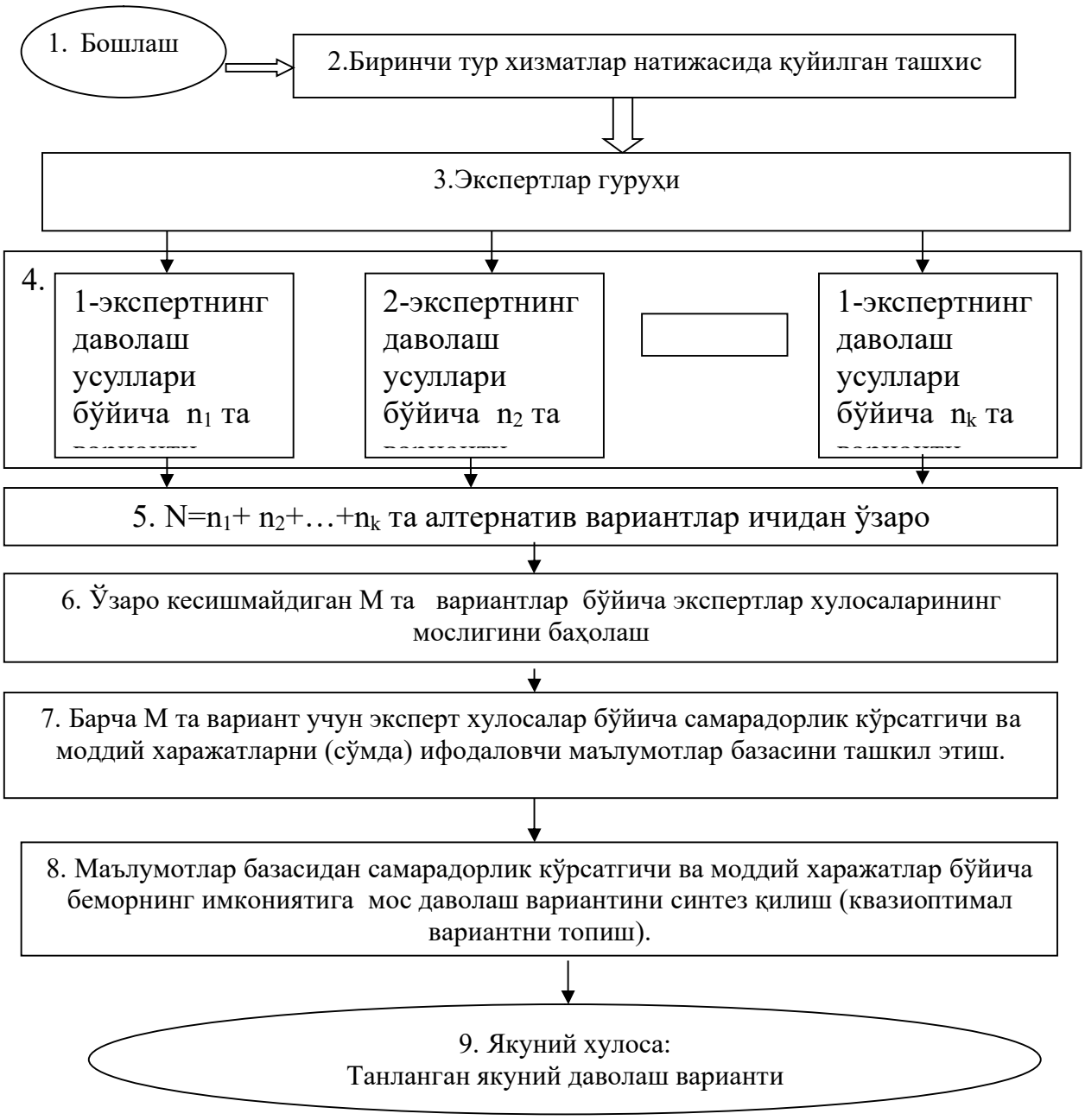
Демак, биринчи турдаги кўрсатиладиган хизматлар қийматини (1) орқали аниқлаш мумкин.

Биринчи тур хизматлар натижасида беморга ташхис қўйилади. Барча маълумотлар аниқлангач ташхис қўйишда [1-4] лардаги қўлловчи тизимлар ва усуллардан фойдаланиш мумкин.

Шундан сўнг иккинчи тур хизматларига ўтиш мумкин. Иккинчи турдаги хизматлар кўп вариатли бўлиб қуйидаги бир нечта босқичларни ўз ичига олади:

- ташхисга мос даволаш алтернатив усулларни танлаш;

- алтернатив усулларни баҳолашда экспертлар хулосаларини жамлаш;
- экспертлар хулосалари мослигини баҳолаш;
- умумий хулосани, яъни якуний даволаш усулини синтез қилиш.



1-расм. Ташхислаш ва даволаш жараёнини квазиоптимал ечимини топишнинг умумлашган алгоритми.

Қаралаётган ҳолатда ташхисга мос даволаш алтернатив усуллари даволаш усулларининг маълумотлар базасидан олиш мумкин. Демак, даволаш усулларининг маълумотлар базасини шакллантириш биринчи асосий масала ҳисобланади. Иккинчи турдаги хизматларни амалга оширишнинг умумий алгоритмини 1-расмдаги кўринишда ифодалаш мумкин.

Энди 1- расмдаги ҳар бир блокка изоҳлар берамиз. 1-алгоритмнинг бошланиши. 2-блокда биринчи тур хизматлар натижасида олинган ташхис: халқаро классификатордаги коди ва номи берилади. 3-блок экспертлар гуруҳи ва уларни устиворлик коэффициентларини ифодалайди. 4-блокда ҳар бир эксперт берилган ташхисга мос ташхислар ва уларнинг самарадарлик кўрсатгичларини тавсия этади. 5-блокда $N=n_1+ n_2+\ldots+n_k$ та алтернатив вариантлар ичидан ўзаро кесишмайдиган М та вариантни (ўзаро кесишмайдиган вариантлар ва ўзаро кесишувчи вариантлар бир марта ҳисобга олинади) танлаш ишлари бажарилади. 6-блокда ўзаро кесишмайдиган М та вариантлар бўйича экспертлар хулосаларининг мослигини баҳолаш ишлари бажарилади. Бу ерда Коркардация коэффициентидан фойдаланиш мумкин [5]. 7-блокда барча М та вариант учун эксперт хулосалар бўйича самарадорлик кўрсатгичи ва моддий харажатларни (сўмда) ифодаловчи маълумотлар базасини ташкил этиш ишлари бажарилади. 8-блокда маълумотлар базасидан самарадорлик кўрсатгичи ва моддий харажатлар бўйича беморнинг имкониятига мос даволаш вариантини синтез қилиш, яъни квазиоптимал вариантни топиш масаласи ечилади. 9-блокда эса клиникадаги барча имкониятлар даражасида моддий жиҳатдан беморни қаноатлантирувчи якуний даволаш варианти тавсия этилади.

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INFORMATIKANI O‘QITISHDA MATEMATIK MASALALARDAN FOYDALANISH.

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Annotatsiya *Ushbu maqolada ba’zi sonli funksiyalarni kompyuter yordamida o‘rganish dasturlari tuzilgan.*

Kalit so‘zlar: *Usul, mukammal son, qoldiq. tub son, umumiy bo‘luvchi, umumiy ko‘paytuvchi, takrorlash, blok-sxema, dastur.*

Аннотация *В этой статье составлены программы обучения некоторых числовых функций с помощью компьютеров.*

Ключевые слова: *Метод, соверщенное число, остаток, простое число,общий делитель, общие краткие,цикл, блок-схема, программа.*

Annotation *This article contains computer-based training programs for some numerical functions.*

Key words: *Method, perfect number, remainder, prime number, common divisor, general shorts, cycle, flowchart, program.*

Bugungi kunda ta’lim tizimida innovatsion pedagogik texnologiyalar va interfaol usullardan keng foydalanilmoqda. O‘quv jarayonida innovatsion pedagogik texnologiyalarning tadbiqi – shaxsni jamiyatning talabiga ko‘ra yo‘naltirish, ta’limni shu talablar asosida tashkil etish, ta’lim tamoyillari va texnologiyalari aloqadorligi asosida shaxsni har tomonlama yetuk kadr qilib shakllantirish, uning qobiliyati va imkoniyatlarini to‘liq namoyon etishi va rivojlantirishi uchun qulay shart – sharoitlar yaratishdan iborat. Zamonaviy texnologiyalarga asoslanib darslarni tashkil etish uning sifat va samaradorligini oshirishda yaxshi natijalarni bermoqda.

Zamonaviy usullar yoki o‘qitishning samarasini oshirishga yordam beruvchi kompyuter dasturlaridan foydalanish talabalarda ta’limga qiziqishini oshirish, kompyuter savodxonligini va mantiqiy, aqliy, ijodiy, adabiyotlarni o‘qishga kelajakda yetuk mutaxasis bo‘lishi uchun mustahkam zamin yaratadilar.

Talabaning axborot kompetentligi uning axborotlashgan dunyo qarashi, ham an’anaviy ham yangi axborot texnologiyalardan foydalanish bilan axborot talabini optimal qanoatlantirish bo‘yicha mustaqil ish faoliyatini ta’minlovchi bilim va malakalarining tizimi bilan xarakterlanadi. U talaba faoliyatini muhim va asosiy tomonlarini yoritadi, ya’ni uning axborot madaniyatini shakllantirish, ularda doimiy ravishda bilimga bo‘lgan qiziqish va intilishni uyg‘otish, axborotlarni izlash, saqlash, saralash hamda olingan ma’lumotlar ustida ishlash, ularni baholash ko‘nikmalarini to‘g‘ri shakllantirish. Talabalarning axborot kompetentligini shakllantirish jarayonining muhim qiyinchiliklaridan biri shundaki, ko‘pchilik talabalar axborotlar bilan ishlash bo‘yicha kerakli malakaga ega emas, kerakli so‘rovlarni talab darajasida bayon eta olishmaydi, amaliy mashg‘ulotlariga oid hisobotlarni, matematik masalalarni kompyuter yordamida bajarishda qiyinchiliklarga duch kelishadi. Buning asosiy sababi ular, matematik masalalarni

kompyuterda yechish dasturlarini tuzishda qiynalishadi. Masalan: butun sonlarni ekubi va ekukini, ularning bo‘luvchilarini, bo‘luvchilar yig‘indisini va boshqa shunga o‘xshash masalalarni kompyuter yordamida yechish dasturlarini tuzishda talabalar yetarli malaka va ko‘nikmaga ega emaslar. Shularni e’tiborga olib biz quyida ba’zi sonli funksiyalarni kompyuter yordamida o‘rganish dasturlarini tuzamiz.

a va d sonlar o‘zaro tub sonlar bo‘lsin. U holda quyidagi teorema o‘rinli.

Teorema(Dirixle): Quyidagi {a+nd}, n=1,2,3,… arifmetik progressiya o‘z ichiga cheksiz ko‘p tub sonlarni oladi.

Tuzilgan algoritmni Pascal tilida yozamiz:

```
var a1,n,i,j,d:integer;
   s:real;
   t:string;
begin                    cls;
    writeln('Arifmetik progressiyadagi tub sonlar');
    write('a1=');
    readln(a1);    //Progressiyaning 1-hadi
    write('d=');
    readln(d);     //d-ayirmasi
    write('n=');
    readln(n);     //n-dastlabki "n" ta hadi
    write('Tub hadlari: ');
    for j:=1 to n do
       if a1>2 then
       begin
           s:=0;
           for i:=2 to a1-1 do
              if a1/i=trunc(a1/i) then s:=1;
           if not(s=1) then
           begin
               write('a',j,'=',a1,'; ');
               t:='a';
           end;
           a1:=a1+d;
       end
       else a1:=a1+d;
       if t='' then write('Tub hadi mavjud emas.');
end.
```

Misol. (3+I*4) n, I=0,…, N arifmetik progressiyadagi tub sonlar sonini aniqlash.

Mashqlar:

N, A, D larning quyidagi qiymatlari uchun { A + I * D}, I = 0, …, N

Progressiyadagi tub sonlarning va tub sonlar sonini aniqlang:

1. N = 35, A = 7, D = 9
2. N =10, A = 5, D = 7
3. N = 20, A = 6, D = 11
4. N = 15, A = 7, D = 15

Ko‘pincha matematik masalalarni yechishda, ya’ni ularning algoritmini tuzishda tekshirilayotgan ob’ektlar ichma-ich joylashgan bo‘ladi. Bunday hollarda ichma-ich joylashgan sikllardan foydalanish tavsiya qilinadi.

Berilgan oraliqdagi mukammal sonlarni aniqlash dasturini tuzishda ham siklik operatorlardan foydalanilsa masalani yechish dasturi sodda va tushunarli bo‘ladi.

Mukammal son deb o‘zidan farqli barcha bo‘luvchilari yig‘indisiga teng bo‘lgan songa aytiladi. Mukammal sonlar natural sonlar qatorida cheksiz ko‘p bo‘lishiga qaramasdan ularni aniqlash ko‘p hisoblashlarni talab qiladi. Masalan: 1 dan 50 gacha bo‘lgan sonlar orasidan mukammal sonlarni ajratib olish uchun bu oraliqdagi sonlarning har birining o‘zidan farqli bo‘luvchilarini topib, ularni yig‘indisini hisoblash va bu yig‘indini berilgan songa teng bo‘lish yoki bo‘lmasligini tekshirish kerak bo‘ladi. Yuqoridagi fikrlarni e’tiborga olib biz quyida berilgan oraliqdagi mukammal sonlarni kompyuterda aniqlash dasturini tuzamiz.

```
program mukammal son;
var i,j,k,n,m:integer;
begin
    write(‘k=’);  readln(k);
    for n:=2 to k do
      begin
m:=0
for i:=2 to n do;
            for j:=1 to i-1 do if i mod j=0 then m=m+j;
        end;
         if m=i then writeln(n, ' mukammal son') else writeln (n, 'mukammal
son emas');
end;
end.
```

Mahsqlar:

1) l=2, k=10
2) l= 20, k=30
3) l=490, k=500
4) l=100, k=1020
5) l=50, k=100
6) l=300, k=320
7) l=1090, k=2030
8) l=3000, k=3090

Quyidagi:

- Berilgan sonning bo‘luvchilarini aniqlash.
- Berilgan sonning bo‘luvchilari sonini aniqlash.
- Berilgan sonning bo‘luvchilari yig‘indisini hisoblash.
- Berilgan sonning tub yoki murakkab son ekanligini aniqlash.

- Berilgan sonlarning eng katta umumiy bo‘luvchisini topish.
- Berilgan sonlarning eng kichik umumiy bo‘linuvchisini topish.

va hokazo masalalarni kompyuterda yechish dasturlarini tuzishda ham yuqoridagi dasturlardan foydalanish mumkin.

Bu dasturlardan dasturlash tillarini o‘rgatishda, har xil matematik masalalarni kompyuter yordamida yechish dasturlarini tuzishda, shuningdek informatika fanidan amaliy mashg‘ulotlarni tashkil qilishda foydalanish mumkin.

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DATA MINING FORCASTING OIL AND GAS DEVELOPMENT COMPANY LTD. SHARE PRICES USING ORANGE.

Muhammad Farooq Ishaq. Riphaha international university, Lahore, Pakistan.

Abstract. *Data Mining is one of the emerging technology that is being use in the field of Data Science. In data mining, we can be used multiple algorithms of machine learning. There are many tools available for the purpose of data mining which one of the Orange3. The purpose of this paper is to use Orange3 for the Analysis of Oil and Gas share prices of the stock exchange. In this paper, four algorithms are being used for the purpose of predicting the share prices of OGDCL in the exchange market. The result of both algorithms are compared by each other and then it was found the best result of the algorithm is Naïve Bayes and Neural Network. It was found the most accurate and perfect result gives the Naïve Bayes and Neural Network. For the given Dataset. In the future, I will do different analyses for the purpose of predict accurate share price results.*

Keyword. *Data Mining, Orange3, Forecasting, OGDCL, Share Prices, Algorithms.*

1. INTRODUCTION

With the volatile growth of data such as, from from terabytes to petabytes, the importance of data mining is increasingly day by day. In this way data mining is the extraction of data from large dataset, and changing it into more meaningful from with the help of different tools and methods. It can also be distinct as the grouping of data base management system. And computer science.[1] Which is include the data science, artificial intelligence, machine learning etc.

Data mining is also called knowledge detection in database as it is the process of removing important knowledge from the huge amount of data by using the different analysis or used pattern techniques.

The data mining process is multiple steps such as selecting the target data, preprocessing the data, removing extracting the data and applying the different machine learning algorithms and interrupting the accurate and perfect results. [2]

In this way one of the most wide-ranging tool is Orange3, and orange is a collection of python-based module which is written in C++. Which is open source and free of cost for using the machine learning, data mining and artificial intelligence. Orange provides the different algorithms and techniques for the purpose of finding the different results in different fields. In orange different algorithms categories in different model. It required a specific extension dataset to find the specific and appropriate targets.[3]

2. LITERATURE REVIEW

A lot of research and practical work had been done on the data mining. Dataset obtain by stock exchange market websites. Different algorithms provide the ORANGE tool. In this section summarized the previous work that is done in the field of data mining. Four different tools are being used in this research paper

for the purpose of predict or forecasting the price of stock exchange in Pakistan.[4]

One open source data mining tool being used to apply the multiple machine learning algorithms. In orange different algorithms available like KNN, SVM, NAÏVE BAYES, NEURAL NETWORK, LOGISTIC REGRESSION, LINEAR REGRESSION, and TREE etc. These models being used for the different purpose of finding the results.[5]

Data mining techniques can also be applied in education system in order to prediction the results of students and predict the drop out rat of the students, predict the students' performance. We can analyses the students data for the purpose research. Data mining is a wide range field because in future data mining is necessarily for everyone. Data mining is need of business. In data mining being used the orange were evaluate the prediction, test and score, confusion matrix, calibration curve.

The survey of literature and classification of data mining articles from 2015 to 2018, done in this paper, which is allows us to regulate the number of data mining techniques that is established with the passage of time. [2] However, data mining is applied in different fields like Bio, Bioscience, Biochemistry, Earth, Math, Physics, Chemistry, Medical, Social, Planetary, Accounting, Decision science, Health, Finance, Chemical science, Economics, astronomy, nursing, energy, agriculture, Biological, Engineering, veterinary, pharmacy.[6]

Data mining is used in classification like gender, birds, flowers, and datamining is being used for the prediction of diseased liked breast cancer, etc. However, we can predict the share prices of stock exchange of oil and gas company limited Pakistan.

3. RESEARCH QUESTION

In this paper were faced as well as many problems .Firs of all how to collect data for dataset. I researched the dataset for research of this paper from many websites but no found at last I were found the data in the stock exchange market websites. Which were the algorithms use for prediction of OGDCL. How to predict and which factors are affected in Prediction. How to study for research write a paper.

4. METHODOLOGY

A. Orange3

Orange is collection of OOP-Based module that sit over the core library C++ Objects. It is an open source and free of cost for each user. Orange widget is a GUI (Graphical User Interface) for data mining and machine learning. By using orange no need for any kind of programming language. That is very easy to apply in machine learning algorithms. In orange provides add-ons for neural network, time series, bioinformatic, text mining, educational, Image Analytics, prototypes, text able, etc.[7]

Orange provides different algorithms for data mining , classification, time series, forecasting, predicting, etc. However, this paper deals the four algorithms and in this purpose Orange 3.24.0

B. ORANGE

Forecasting Algorithms

This Paper is providing the Relative analysis of four algorithms. The forecast environment of orange allows the user to make the predicting the share price of stock exchange market of OGDCL.

1) Prediction
2) Test and Score
3) Confusion Matrix
4) Calibration Plot

C. OGDCL Stock Exchange Dataset

OGDCL (Oil and Gas Development Company Limited) is one of the top company which provide the Oil and Gas in Pakistan (PSX) as well as the London exchange Stock Exchange market. Data were taken by (PSX) website that is 1st February 2020 to 30th April . This data has been a sample data and were prepared for predict the price in orange .

5. Results and Discussion

The data is loaded in orange3 by File in .csv format. Following are the attributes being used in the datasets.

i. OGDCL
ii. Date
iii. Open
iv. High
v. Low
vi. Close

These attributes open, high, low, close, prices of OGDCL has been taken in future prediction without holydays. In this way the Minimum Value, Maximum Value, Shows in the table.

Four models were compared it was found

The best algorithm is Neural network which gives the best classification accuracy is 0.878 and and NAÏVE BAYES accuracy is 0.796 other models are less results.

Table 1: Minimum, Maximum, Mean, StdDev Values of attributes.

	Minimum	**Maximum**	**Mean**	**StdDev**
Open	76	137.25	106.132	19.295
High	76	137.5	108.143	18.935
Low	73.25	133.2	103.815	19.171
Close	75.01	134.83	105.648	18.844

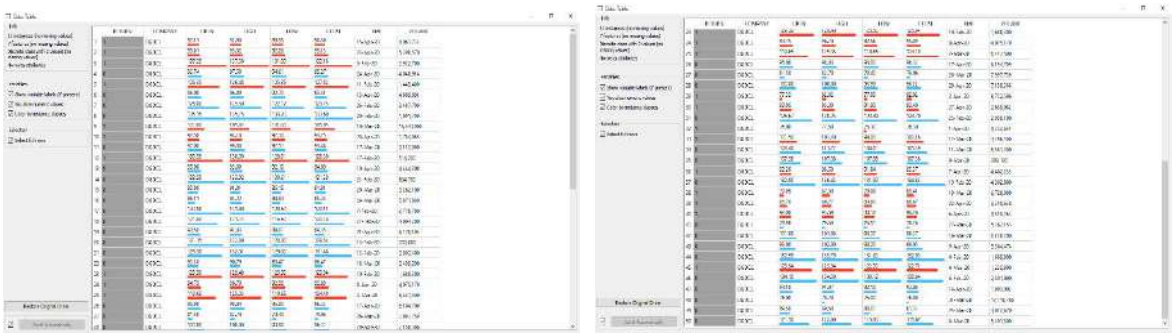


Figure 1: Shows the Train Datasets Analyses the Attributes.

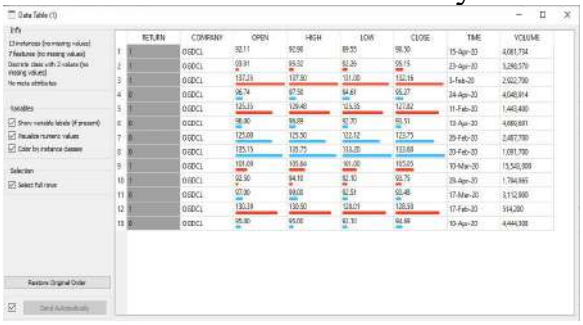
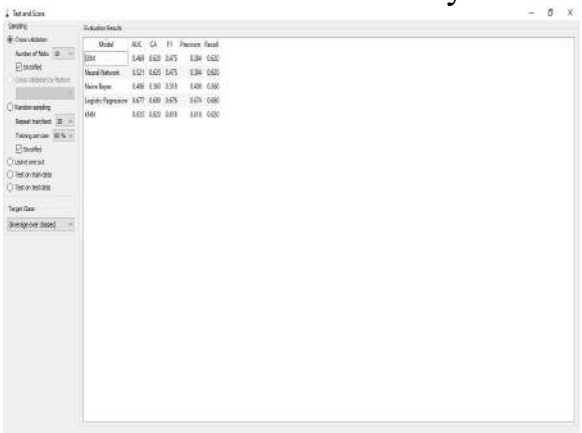


Figure 2: Shows the Test Datasets Analyses the Attributes.



Figures 3 Shows The Test Results

Figure 4: Shows The Prediction Results of OGDCL

Predicted

Actual	0	1	Σ
0	6	0	6
1	7	0	7
Σ	13	0	13

SVM

Predicted

Actual	0	1	Σ
0	6	0	6
1	0	7	7
Σ	6	7	13

Neural Networks

Actual \ Predicted	0	1	Σ
0	2	4	6
1	0	7	7
Σ	2	11	13

Naïve Bayes

Actual \ Predicted	0	1	Σ
0	6	0	6
1	2	5	7
Σ	8	5	13

Logistic Regression

Actual \ Predicted	0	1	Σ
0	4	2	6
1	3	4	7
Σ	7	6	13

KNN

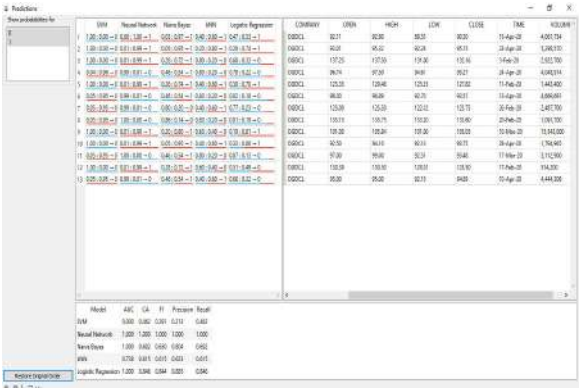


Figure 5: Shows the Forecasting OGDCL Share price

Thus, after the analysis and comparison of Naïve Bayes and Neural Network models, it was found that Neural Network is a better model for forecasting the values of open, high, low and close prices of OGDCL stock data. The values predicted by Neural Network were found to be more accurate, when compared with actual prices of next ten days. Also, Neural Network had the lower error rate than the Remaining algorithm, as shown in

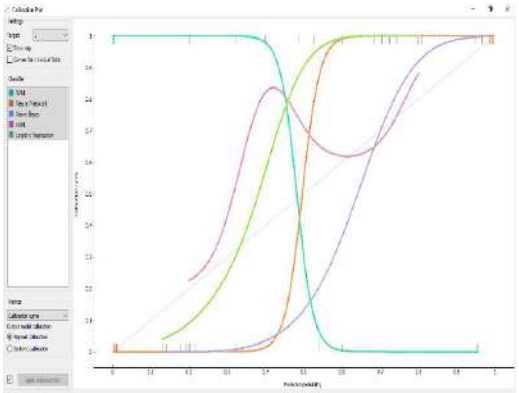


Figure 6: Shows the Future Predicted Probability.

6. CONCLUSION AND FUTURE WORK

Although there are many financial, economic and fundamental factors involved in the prediction of stock exchange share prices analysis, but technical analysis and prediction can be done by applying the machine learning algorithms by using orange3.

According to the analysis done in this paper. Neural Network Can be used for the forecasting the future prediction of stock exchange datasets and the that factors which is affected on that results.[8]

However, In future other predictions may be used on the this example of datasets like daily, weekly, monthly, to find it there is any other better option available. And in future others product predictions may be use on this sample of datasets. So, that's simple and unique work is possible for future.

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WEB LOYIHALARNI YARATISH KONSEPSIYASI ASOSLARI

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Annotatsiya: *Webga mo'ljallangan ma'lumotlar bazasi asosida internetda axborotni ifodalash, sahifalarni tadqiq qilishdagi barcha ishlar butunlay kompyuter egasi yelkasida bo'ladi. Webga mo'ljallangan ma'lumotlar bazasini yaratishdagi ishlar ijodiy harakterga ega bo'lib, unda har biri o'z vazifasini bajaruvchi ma'lum miqdordagi mutaxassislar ishtirok.*

Kalit so'z: *Web loyiha, elektron muhit, ma'lumotlar bazasi, konsepsiya, web loyiha konsepsiyasi, wikipedia, Web-loyiha xizmatlari.*

Аннотация: *Основываясь на веб-базе данных, вся работа по представлению информации в Интернете и исследованиям страниц полностью лежит на владельце компьютера. Создание веб-базы данных - это творческий процесс, в котором участвует определенное количество специалистов, каждый из которых выполняет свою работу.*

Ключевые слова: *Веб-дизайн, электронная среда, база данных, концепция, концепция веб-проекта, википедия, услуги веб-проекта.*

Abstract: *Based on a web-based database, all the work of representing information on the Internet and researching pages is entirely on the shoulders of the computer owner. Creating a web-based database is a creative process, involving a certain number of professionals, each of whom performs his or her job.*

Keywords: *Web design, electronic environment, database, concept, web project concept, wikipedia, Web project services.*

Webga mo'ljallangan ma'lumotlar bazasi (Web–loyiha) asosida internetda axborotni ifodalash shaxsiy sahifani yaratishdan butunlay farq qiladi, chunki dunyoda sahifani tadqiq qilishdagi barcha ishlar butunlay kompyuter egasi yelkasida bo'ladi. Webga mo'ljallangan ma'lumotlar bazasini yaratishdagi ishlar ijodiy harakterga ega bo'lib, unda har biri o'z vazifasini bajaruvchi ma'lum miqdordagi mutaxassislar ishtirok etadi. Masalan, yirik tashkilotlarda dizayner–loyiha uslubini yaratadi; rassom–badiiy jihozlar va grafiklarni tayyorlaydi; Web–master web texnologiyalari bilan Web-loyiha verstini; dasturchi Web-loyiha uchun dasturiy modullarini yozish; yozuvchi–loyiha matnlari, maqolalarni tuzish, ma'lumotlar bazasiga kiritish uchun ma'lumotlarni to'plash; kontent master–loyihaga joylashgan materiallarni tanlash va ko'zdan kechirish; analitik Web-loyihadagi axborotlar ommaviyligini analiz qilish; trafikni analiz qilish, statistik ishlarni olib borish; server administratori–dasturiy apparat kompleksining ish qobiliyatini quvvatlash xavfsizligini ta'minlash; menejer–marketolog tashkilot va hamkorlar bilan aloqada bo'lish; reklama faoliyatini olib borish, Web-loyiha davomatini ta'minlash va h.

Gilyarevskiy fikriga ko'ra, elektron muhit bir qator afzalliklarga, jumladan, aloqaning interaktiv xarakteri; dunyodagi barcha foydalanuvchilarning 24 soat

davomida axborotlardan foydalana olishi; axborotlarni operativ tarzda(tez suratda) yangilab borish, shu jumladan, saytga tashrif buyuruvchilarning savollari va takliflariga asosan saytni to‘ldirib borish; chegaralanmagan hajmdagi axborotlarni shu jumladan, matnli, grafikli, ovozli va video ma’lumotlar taqdim etish; ... katta o‘lchamdagi axborotlardan zarur ma’lumotlarga tayangan holda ko‘p jihatli(aspektli) va tezkor qidiruvni amalga oshirish; saytga tashrif buyuruvchilar haqida ma’lumot, hamda ularni aloqa muhitini natijasini olish; alohida mahsulotlar va xizmatlarga yoki turlicha foydalanuvchilar auditoriyasiga mo‘ljallangan saytlar yaratish imkoniyatlarga ega bo‘lishi lozim. [1]

Ta’kidlash kerakki, Webga mo‘ljallangan ma’lumotlar bazasi yuqorida sanab o‘tilgan afzalliklarga shunchaki avtomatik tarzda ega bo‘lib qolmaydi, balki yaratishda yaxshi o‘ylangan, chuqur asoslangan yondoshuv natijasida paydo bo‘ladi.

Webga mo‘ljallangan ma’lumotlar bazasini yaratishda yechilishi kerak bo‘lgan masalalarni sanab o‘tamiz:

1) Webga mo‘ljallangan ma’lumotlar bazasida tasvirlanishi va ulardan foydalanish uchun ruxsat berilishi mumkin bo‘lgan ma’lumotlarni saralash;

2) Webga mo‘ljallangan ma’lumotlar bazasining tuzilishini loyixalash, ya’ni har bir sahifani tashkil qiladigan ma’lumotlarni tanlash;

3) Webga mo‘ljallangan ma’lumotlar bazasining ko‘rinishini dizayn jihatidan ishlab chiqish;

Ma’lumki, ma’lumotlar bazasi tushunchasi fanga kirib kelgunga qadar, ma’lumotlardan turli ko‘rinishda foydalanish juda qiyin edi. Dastur tuzuvchilar ma’lumotlarini shunday tashkil qilar edilarki, u faqat qaralayotgan masala uchungina o‘rinli bo‘lardi. Har bir yangi masalani hal qilishda ma’lumotlar qaytadan tashkil qilinar va bu hol yaratilgan dasturlardan foydalanishni qiyinlashtirar edi.

Shuni qayd qilish lozimki, ma’lumotlar bazasini yaratishda ikkita muhim shartni hisobga olmoq zarur:

- ma’lumotlarning turi va ko‘rinishi ularni qo‘llaydigan dasturlarga bog‘liq bo‘lmasligi lozim, ya’ni ma’lumotlar bazasiga yangi ma’lumotlarni kiritganda yoki ma’lumotlar turini o‘zgartirganda, dasturlarni o‘zgartirish talab etilmasligi lozim;
- ma’lumotlar bazasidagi kerakli ma’lumotni bilish yoki izlash uchun biror dastur tuzishga hojat qolmasin.

Yuqoridagi talablarga asoslangan holda Webga mo‘ljallangan ma’lumotlar bazasi konsepsiyasi ishlab chiqiladi.

Konsepsiya (ot lat. conceptio — anglash, tizim) — biror – bir fanning anglashning(talqin qilish, o‘zlashtirish) aniqlangan usuli, ko‘rinishi yoki jarayoni; fanning asosiy qarashlari, nuqtai nazari; ularni tizimli yoritilishini ta’minlovchi ko‘rsatmalar. (Wikipedia)

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Web loyiha konsepsiyasi - bu strukturalar va g‘oyalar darajasida qurilgan mavhum tushuncha. Konsepsiya o‘z tabiatiga ko‘ra, hech qanday ortiqchalikdan tarkib topmagan, biroq texnik jihatdan amalga oshirish bilan chambarchas bog‘liq bo‘lgan tushuncha. Bunday ideal konsepsiya bilan ishlash uchun yaxshi texnik bilimlar bazasiga ega bo‘lish zarur. Birinchi marta Web-loyiha yaratishni maqsad qilgan odamlarda bunday bilim mavjud bo‘lmaydi, shuning uchun konsepsiya tuzish jarayonida alohida jihatlarni kuzatish mumkin.

Webga mo‘ljallangan ma’lumotlar bazasi(*Web-loyiha*)ning konsepsiyasi tarkibi: Web-loyiha nomi, Web-loyiha maqsadi, Web-loyihaning vazifasi, Web-loyihaning o‘ziga xos xususiyati, logotip va shior, Web-loyiha yo‘nalishi(auditoriyasi), formasi, raqobatchilar, Web-loyiha xizmatlari, biznes–jarayon, byudjet, Web-loyihani tayyorlovchi (dasturchi), Web-loyiha a’zolari, Web-loyiha bo‘yicha topshiriqlar, texnik qismi, Web-loyiha foydalanuvchilari, trafik, umumiy qism, ilovalar mazmuni, server qismi, mijoz qismi, MBBT, Web-loyihani joylashtirish(xosting), qo‘llab-quvvatlash va harakat, Web-loyihaning tasviri, qo‘shimcha(albatta, Web-loyiha konsepsiyasi chegaralanmagan bo‘ladi).

Keyinchalik buni davom ettirish mumkin, ya’ni Web-loyihaning har bir momentini va funksionalligini to‘la bayon etish kabi yozuvlarni qo‘shish mumkin.

Shu kabi savollarga berilgan javoblar Web-loyihaning taxminiy ko‘rinishini, strukturasi va hajmini belgilab beradi.

Loyihani konsepsiyasini tuzayotganda shoshilmasdan mantiqan o‘ylab tuzish zarur, chunki bu keyinchalik as qotadi. Konsepsiya – bu Web-loyihani amalga oshirish yo‘lining asosiy qismi.

Konsepsiyani yozish bo‘yicha umumiy maslahatlar:

- Yagona g‘oyani ishlating.
- Muxoliflar resurslaridan nusxa ko‘chirmang va foydalanmang. Hamda boshqa Web-loyihani o‘xshashini yaratmang.
- O‘zingizni haqiqiy ismi sharifingizni ishlating.
- Loyiha terminlarini yozayotganda mantiqiy bog‘liqlikka e’tibor bering.
- Ushbu Web-loyihaga qiziqish bildirayotgan odamlar bilan muloqot qiling, ularni fikr va mulohazalarini o‘rganing. Ular bilan aloqa o‘rnating. Balki ularni xizmatidan foydalanishga to‘g‘ri kelar.
- Zarur adabiyotlarni o‘qing, dunyoqarashingizni kengaytiring. Muhim qismlarini qalam bilan belgilab keting.
- Qilingan ishlarni yoritib boruvchi kundalik tuting. Bu sizga ishni tezligini oshirishga yordam beradi.
- Qilingan xatolarni qayd etib boruvchi jurnal tuting. Qayta takrorlanuvchi ishlardan vaqtingizni tejang.
- Mavjud xatoliklar ro‘yxatini tuzib chiqing. Ushbu ro‘yxatga veb loyihadagi barcha, hatto arzimas kamchiliklarni ham kiriting va ushbu kamchiliklarni to‘g‘rilab borishga harakat qiling.
- Fikr-mulohazalarni qayd etib boruvchi jurnal tutish maqsadga muvofiqdir. Unga Web-loyihaga taaluqli bo‘lgan barcha, hattoki amalga oshirish mumkin bo‘lmagan g‘oya va takliflarni ham yozib boring.

- Loyihani butun auditoriyada sinab ko‘ring.

Bunday Web-loyiha dizayni va mazmuni o‘zaro biri–birini to‘ldirib borishini esdan chiqarmaslik kerak. Web-loyiha konsepsiyasi tarkibi tuzib chiqilgandan so‘ng, Web-loyihani yaratish bosqichlari amalga oshiriladi.

FORECASTING COVID-19 IN INDIA USING DATA MINING TECHNIQUES

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Abstract. *In 2019 a new disease by the name of covid-19 was reported in wuhan, china. Now the covid-19 is in 212 countries which effected 4,132,264 people and 281,057 people died due to it. Till 30 march 2020, 34863 people are said to be affected by covid-19 in india. The number of cases is increasing every day. There is a concern about the capability and capacity of healthcare units to handle this outbreak. So, some prediction mechanism is needed through which we help public health organizations and policymaking to do the planning. This paper discusses some of the algorithms used in data mining to forecasting the spread of covid-19 in india.*

Keywords: *Forecasting, COVID-19, SMO Regression, Linear Regression, Gaussian Regression and Multilayer Perceptron.*

INTRODUCTION

In 2019 a new disease by the name of COVID-19 was reported in Wuhan, China (1). On 31 December 2019, the World Health Organization (WHO) was informed about the grouped pneumonia cases by the Chinese government. The first case outside of China was reported in Thailand on 13 January. Now the coronavirus is in 212 countries and effected 3,747,292 people and 258,962 people died due to this disease (2). On 30 January 2020, the World Health Organization (WHO) announced Public Health Emergency of International Concern and name this disease as COVID-19 (3).

The first case in India was reported on 21 January 2020 by a passenger who arrives from Wuhan, China. By this date, the Ministry of Health and Family Welfare has confirmed 34863 people who are diagnosed by this disease 1154 deaths, and 9068 recovered in the country (4). According to the experts, the real number is higher. As the testing rate in India is among the lowest in the world. According to the World Bank report India is spending 3.89% of its GDP on health care. So, for a population of 1.353 billion 3.89% is not enough as two third of the population lives in poverty (5).

The government of India as imposed complete lockdown in 82 districts to stop the spread of the virus (6). Public health organizations and policymakers need a better plan and strategy to fight against this disease and find a new way to control the situation. Governments are for that, a better forecasting mechanism is needed which will provide information about the number of cases expected in the coming days. So that resources can we arrange and allocate accordingly.

Governments are failing to understand the type of challenges they are going to face and what will be the intensity of that challenge. Problems for the government will increases if no sold measures are taken against it.

The gapes which we discussed earlier, motivates me to do my research in finding a suitable solution in this filed. My research aims to apply forecasting techniques to predict the number of new cases, deaths and recoveries from COVID-19 on daily bases.

The aim of this research is to obtain the following objectives are

- Recognize and examine the data mining techniques which can be used for time series data forecasting.
- Appling preprocessing techniques to clean the data.
- How we can use these techniques to forecasting COVID-19 in India.

LITERATURE REVIEW

We use the forecasting process for estimating future events based on past and present data. The results we get from the forecasting process can be used in predicting future actions. We can use this method is different domains of society to get benefits from it. Many institutes around the globe are using this process to improve their strategies, decision making, market sentiments, client review, and other business-related things (7). Forecasting is also playing its role in the field of medicine. It is helping Health care institutes to predict new diseases and finding new ways to treat it and analyses its effects on patients. It helps the healthcare institutions to take active steps by pre-informing the type of problem it is going to face and the resources needed to minimize risks and manage damage. To perform better health forecasting, the researcher needs a reliable clinical data.

Health forecasting is providing better results which are helping the doctors to predict and analyze cancer patients (8). It is helping the medical staff to determine the stage and condition of the patient diagnosed with cancer. It's also helping doctors to find a way to minimize the error and obtaining more efficiency results.

In December 2019, the COVID-19 virus was first spotted in Wuhan, China. It took no time to spread across all provinces of China and also transfer to other parts of the world. Due to the new nature of the virus and zero background knowledge, the results and damage of the diseases were unknown. As a result to which China lose a lot of patients and resources fighting against this pandemic. As the days pass and the world gets better knowledge of this disease, the researcher makes different patterns to estimates the disease activity, which will help the governments to arrange better resources to make its fight against this disease.

COVID-19 is affecting countries like Switzerland and other European countries who have stick their laws and encourage the citizens to take preventive measures, but they all know that once they make relaxation of these measures it may initiate a second epidemic wave, the length, and intensity of which are difficult to anticipate (9).

Doing forecasting for COVID-19 researchers are using different ways and methods to find better results. The goal is to make our research accurate enough that it can predict better results. Mostly every country is making statistical analysis for the upcoming events and challenges, using different tools and techniques.

PROBLEM STATEMENT

In India, due to the Government restricting, COVID-19 spread is slow down, and the number of patients that the government was expecting is low. But the authorities and the doctors are afraid that a second wave can initiate, which is more intense than the first one. The health care units have to get themselves prepared and try to arrange more ventilators, medicines, and doctors. For this activity, a system is in need, which will predict the patient's count depending upon the data that they collect from the first wave.

PREPROCESSING

Before heading towards our forecasting process, we need to perform an essential step which is called preprocessing. In this process, we make all the data to be of the same data type to increase the accuracy of our results. The data is maintained in the same scheme so it is easy for the data mining algorithm to better understand the data and produce results of our demand.

FORECASTING TECHNIQUES

After getting data from preprocessing, a technique needs to be applied. For Forecasting in Data Mining, a lot of techniques are being used by researchers. The techniques we used in predicting the COVID-19 daily activity is Time series analysis.

The Time series analysis techniques help us to analyze all the previous and current data and make predictions. The Time series analysis works differently as compared to data mining applications where every data point is acting independently. In the case of time series, every data point is important and contributes to the results. Different approaches are used to handle among which Time Series data, which remove the temporal ordering and then apply to encode via adding more input fields. The other approach is to apply the multilinear regression algorithm or any other algorithm which can predict using the data set. Another variable that plays a role in capturing the past and current values is called lagged variables.

Methodology

Waikato Environment for Knowledge Analysis (Weka) is a machine learning software developed in java by the University of Waikato, New Zealand (10). It is an opensource software designed to perform processes like data pre-

processing, implementing different machine learning algorithms, and result screen. Due to its scope and accuracy, many researchers are using this software for applying different real-time data mining algorithms. The results which we achieve after all these processes are helping the researchers to analyze and contribute to society in a better way.

Time series analysis in Weka is a tool that helps its user to perform different forecasting techniques. It helps the software to process the user data in a form that standard propositional learning algorithms can easily read and conduct operations on it. As we discussed in the forecasting techniques; One Job of the Time series analysis is to remove all the temporal ordering data from our data set. The next step is applying encode by adding more input fields to the data set. Once the data fulfills all the requirements then we can learn the model by implementing any of the regression algorithms available in WEKA. In WEKA we can apply multiple classifier functions but, in our research, we are going to use four of them which are as following:

A. Gaussian Process:

The Gaussian process is a classifier function that is used to collect random variables arranged by time and space. In this process, the missing values are replaced with global mean or mode.

B. Multilayer Perceptron:

The multilayer perceptron is a classifier function that is a feedforward artificial neural network. This function uses backpropagation to classify instances. We can improve the results during our training time.

C. Linear Regression:

The linear regression is a classifier function that performs forecasting through modeling the relationship between dependent variables and independent variables.

D. SMO Regression:

SMO Regression is an algorithm that solves the quadratic programing problems which arise after the training process.

COVID-19 FORECASTING

In this paper, we conduct our research on tracking the latest activities being accrued due to COVID-19 in India. This paper provides a forecast solution that can be used in predicting the upcoming challenges and its events due to this pandemic. For this purpose, we used the data from GitHub with the name of COVID-19 Data Repository which was maintained and uploaded by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (11).

The data time range was from 22 January 2020 to 30 March 2020 on which we have applied different forecasting techniques like linear regression, Gaussian processes, multilayer perceptron, and SMO regression which are accessible in the time series analysis tool.

Data Sets

We used the data from GitHub with the name of the COVID-19 Data Repository. We planned to do our forecast from the information collected from the last 100 days (22 January 2020 to 30 March 2020). The data were preprocessed before further use. The data have information about the people being affected by this disease. The attributes which we selected from the data are Confirm Cases, Recovered Cases, Death Cases, and Active Cases. We will apply forecasting techniques on the data to predict the upcoming Cases on a daily basis.

Forecasting Execution Environment

For performing the predication modeling and forecasting this research is using a tool called "Time series forecasting environment" which is a package of Waikato Environment for Knowledge Analysis. The version which we are using is 3.8.2 (WEKA 3.8.2). All the data is preprocessed manually and then apply the Time series forecasting technique on it.

Forecast Results

This research is made upon the data of the past 100 days (22 January 2020 to 30 March 2020) and predicts the results for 1 April 2020. by applying four different algorithms; Gaussian, Linear regression, Multilayer Perceptron regression, and SMO regression on the data the results from different algorithms are shown in Table 1.

Table 1. Forecasting result with actual values

	Confirm Cases	Recovered Cases	Death Cases	Active Cases
Actual Count	37,257	10,007	1,223	26,027
Gaussian Process	38,674	10,311	1,250	27,113
Multilayer Perceptron	34,034	9,136	1,125	23,906
Linear Regression	33,909	8,048	1,235	25,065

As told earlier to make our research more authentic, we are applying four algorithms, Gaussian, Linear regression, Multilayer Perceptron regression, and SMO regression, to provide results that we can use in determining the accuracy of the experiment. The following are the attached figures for the results we got from the algorithms mentioned above. Figure 1. is showing the results we got when we run Gaussian processes, Figure 2. is showing the results we got when we run Multilayer Perceptron, Figure 3. is showing the results we got when we run Linear Regression, Figure 4. is showing the results we got when we run SMO Regression. We got the results from running these algorithms and place the values in Table 1.

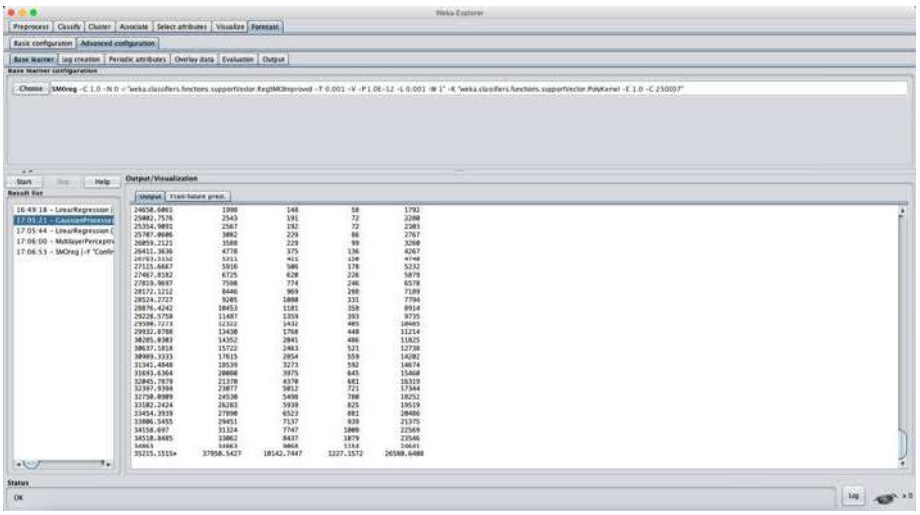

Figure 9. Gaussian processes.

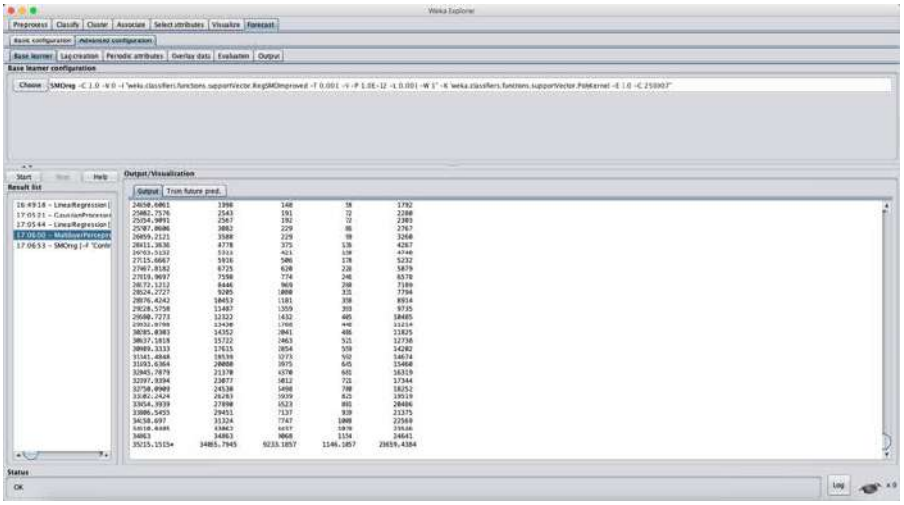

Figure 2. Multilayer Perceptron

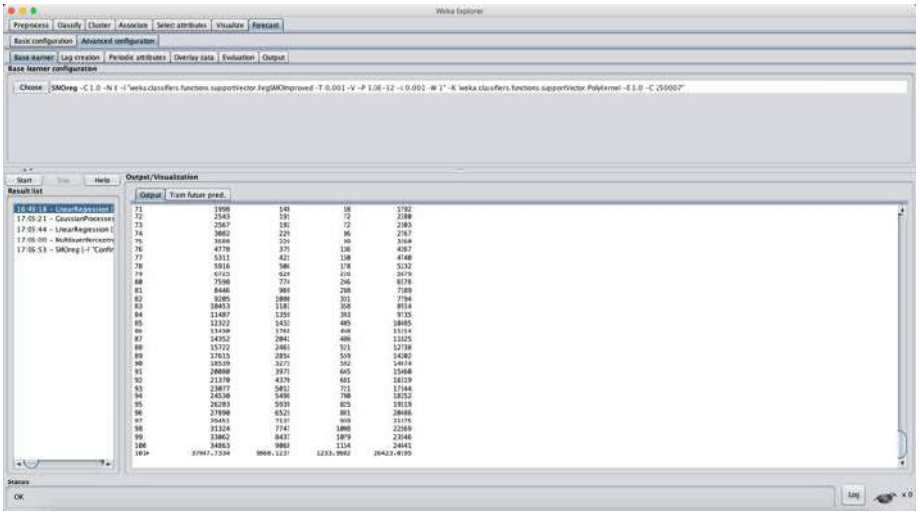

Figure 3. Linear Regression

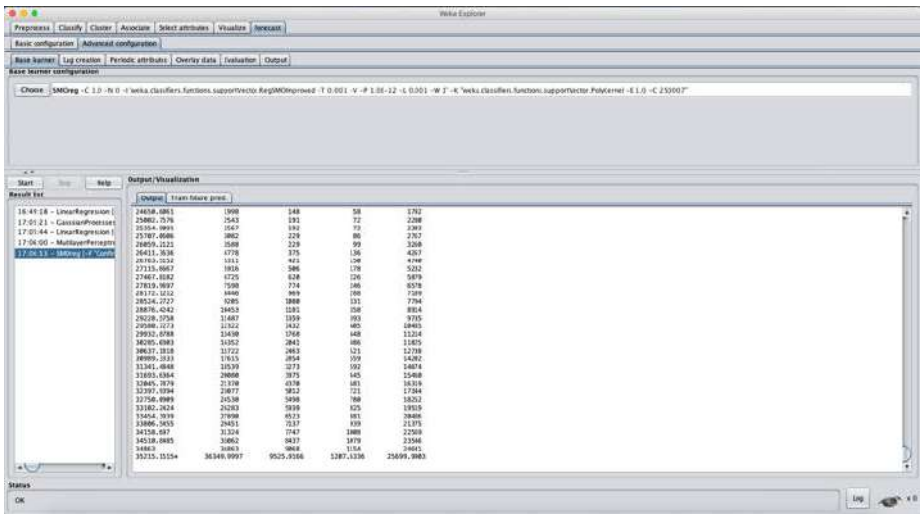

Figure 4. SMO Regression

Results Evaluation

The results we get from the forecasting methods are further evaluated on the bases of Mean Absolute Error (MAE), Rooted Mean Squared Error (RMSE), Relative absolute error (RAE), Root relative squared error (RRAE) and Correlation coefficient (CC) on the results of Table 1. This process is performed to judge the best accuracy of the four methods.

Table 2. Performance comparison of forecasting result

	MAE	*RMSE*	*RAE*	*RRAE*	*CC*
Gaussian Process	*2914.1992*	*3088.4277*	*58.66%*	*47.03%*	*0.9902*
Multilayer Perceptron	*864.3527*	*1509.2102*	*17.40%*	*22.98%*	*0.9745*
Linear Regression	*3941.8044*	*5125.6277*	*79.34%*	*78.05%*	*0.6766*
SMO Regression	*685.7923*	*841.5599*	*13.80%*	*12.81%*	*0.9937*

To calculate the accuracy of the experiment we performed earlier, we need to put the data under some more tests to give us better results. Figure 5. shows the results we got from Gaussian processes, after which we place the values in Table 2. The MSE we got from Gaussian processes is 2914.1992, RMSE= 3088.4277, RAE= 58.66%, RRAE= 47.03% and CC= 0.9902. We do the same process for the other three algorithms Linear regression Figure 6, Multilayer Perceptron regression Figure 7, and SMO regression Figure 8. We placed their values in table 2 and made a comparison.

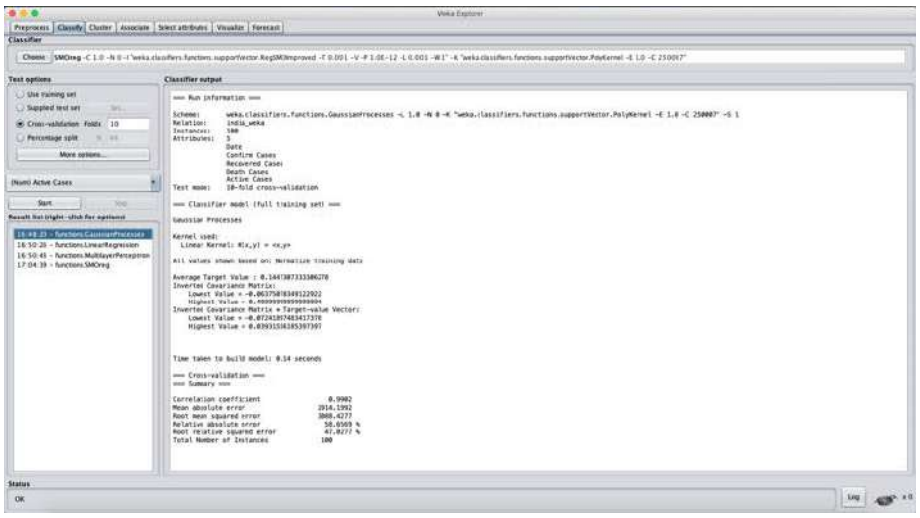

Figure 5. Gaussian processes

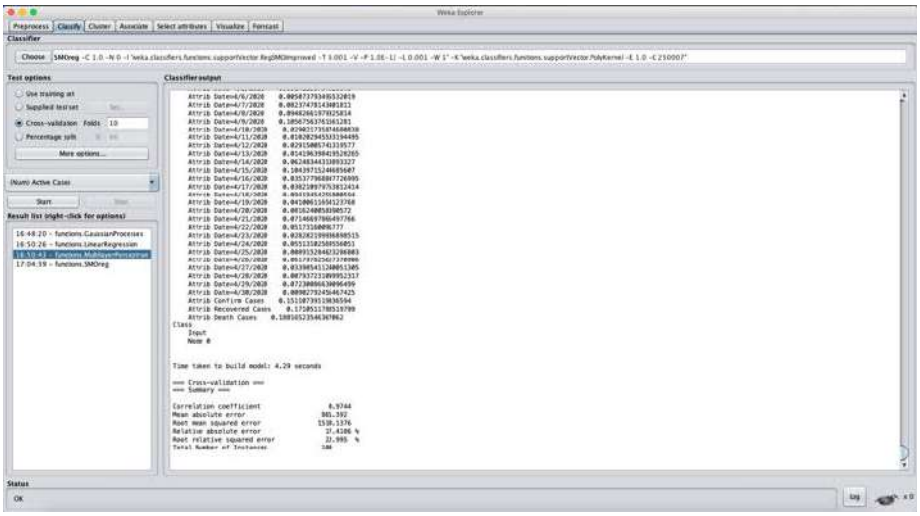

Figure 6. Multilayer Perceptron

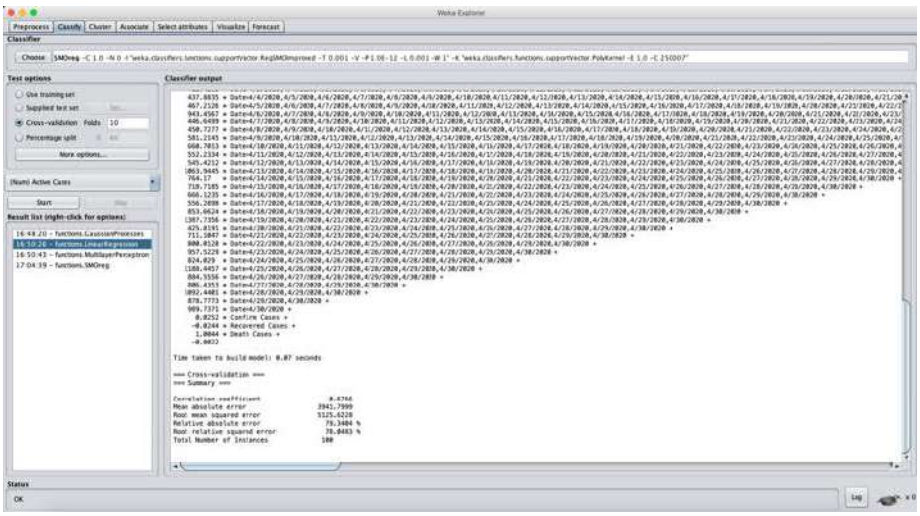

Figure 7. Linear Regression

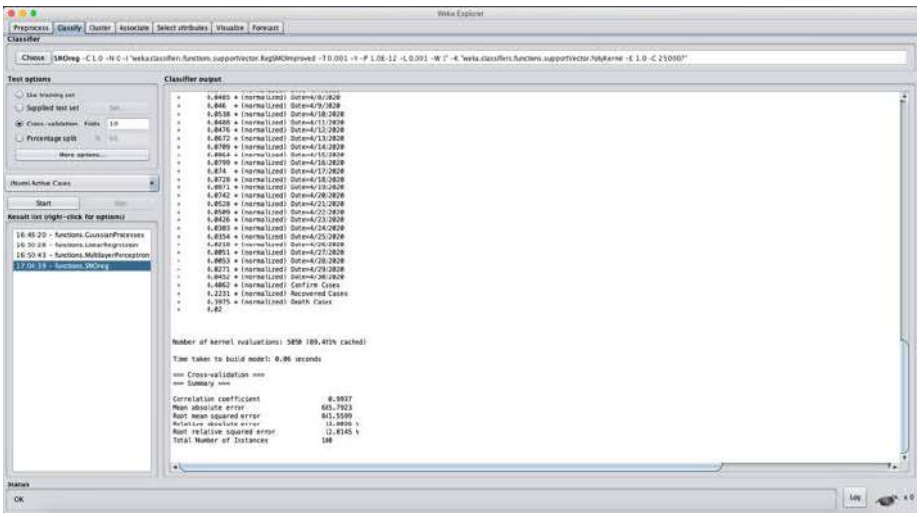

Figure 8. SMO Regression

The performance comparison methods compare the results of Table 1 are shown the result in table 2. According to the result, the Linear regression performance in the forecasting was the best. We can see Figure 9, which shows the difference between the results we calculated from the four algorithms. The blue indicates the confirmed number of cases. Orange represents the recover cases. Gray is from death and yellow for an active number of cases.

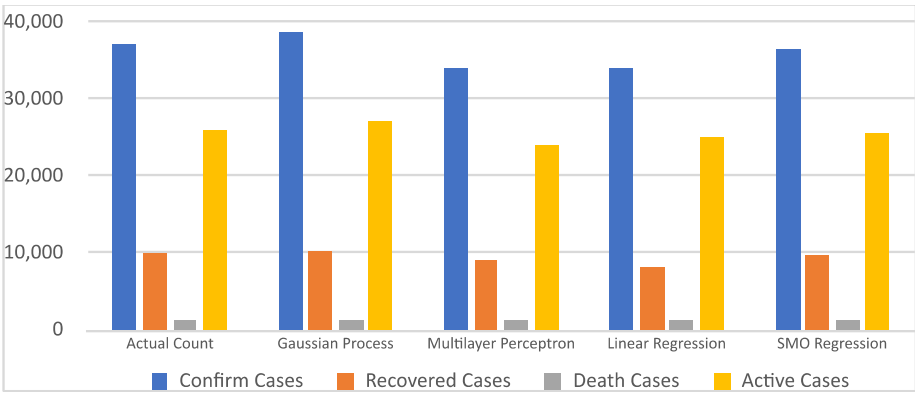

Figure 9. Performance comparison of forecasting result

Gaussian Process was also results were also close to the linear regression but Linear regression is on top of the list. So my research recommends that Linear regression is the best-suited method for forecasting COVID-19 Activities in India.

Figure 10 shows the forecast for the number of cases due to COVID-19 in the last 100 days. It predicts the number of cases we can expect from the coming days.

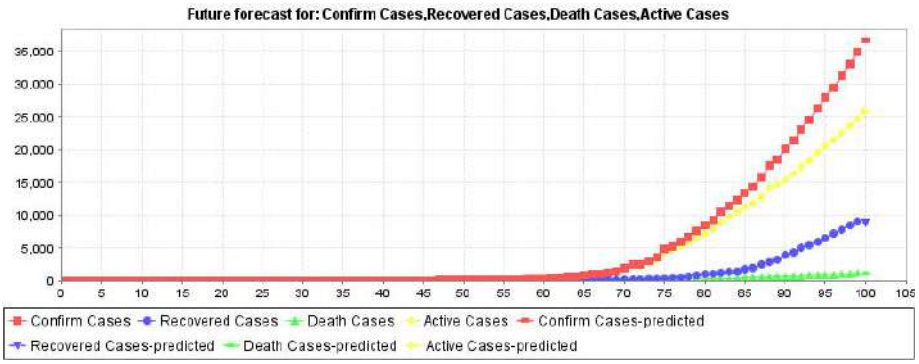

Figure 10. Performance comparison of forecasting result

CONCLUSIONS

This paper presents the challenges the world is facing due to COVID-19. The disease, which started from Wuhan, China, is now spread into 212 countries. Countries are struggling to get rid of this by spending a lot of effort and resources on it. Health institute is working on developing the vaccine until then countries are trying to find ways to get their self-ready for the upcoming challenges. This paper discusses the COVID-19 forecasting in India. The data we used in this research is the time-dependent series of data points. We applied Time Series analysis and Time Series Forecasting using WEKA tools to predict the upcoming events so the policymakers and health institutes can get themselves prepared for the challenge. We applied four regression algorithms on our data set to obtain forecasted results on a daily base. After using an accuracy test on our data, we found that Linear regression and Gaussian process are better suited for forecasting COVID-19 on daily bases. We can improve our machinima by applying these data set regression algorithms with outliers so we can manage to get more accurate results.

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WORLD HAPPINESS RATE OF COUNTRY DATA ANALYSIS USING ML

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***Abstract**. The Research aims to know about the happiness of people and their satisfaction with country in 2020.This is the Research of The world Happiness ratio of the people on the basis of different factors GDP per capita[1], Healthy life, social support, Freedom of choices, Generosity and corruption affected on the country directly or indirectly. In this paper viewers will seen the more clearly view and the effects of these factors the happiness score of a country with visualizing. The results of this study was presented with the "WEKA" which is very Efficient tool and very strong in visualizing. Our research will give more benefits to countries to measure and observe the happiness rate of the people.*

***Keywords**— Analysis, World Happiness, WEKA*

I. INTRODUCTION

In world happiness score we will calculate the score of different countries on the basis of different factors.social support,GDP per capita[2], Healthy life, Freedom of choices, Generosity and corruption with these we calculated the happiness rate for 153 countries. These are the factors which directly affect on the life of people and the happiness score of a country[3]. We will explain it with the data science tool and techniques to explain it. World happiness is a national composite of the answers to the key life appraisal problem asked in the Gallup World Poll (GWP) using the Central Ladder[4]. The World Happiness Study has helped every country understand the aspects that make an impact to happiness. My purpose behind this Research is to test the countries' regionally stable happiness status. The Western World is commonly regarded as the world's most industrialized territories[5]. So, I'd raise this question: Are the people living in these countries really the happiest? We used two algorithms k-Nearest Neighbors, decision tree and Random Forest. And we used the tool WEKA for our results. There are the factors which are effecting on the happiness rate of the countries[6].

A. Happiness score

Objective well-being "variable ladder name" SWB's sample indicator is the publication of the Gallup World Poll (GWP)[7] spanning years 2005 through 2019. It is the national rate response to the issue of life evaluations, unless otherwise specified. The question's English language is "Just imagine a ladder, with steps numbering from 0 at the bottom to 10 at the end. The peak of the ladder represents the perfect future for you and for the bottom.

B. GDP per capita

As of December 2019 GDP per capita is not yet available. .From 2018 to 2019, we

extend the GDP-per-capita time series using country-specific projections of actual GDP growth in 2019[5].

C. Healthy Expectations of Life (HLE)

Good life expectancies at life are based on research collected from the data collection of the World Health Organization (WHO) Global Health Observatory.

D. Social support

A solid social network or culture may offer moral support in good and poor times as well as in. Social support is like "If you're in problem, do you have family or friends that you can rely on to help if you need them, or not?"[8, 9]

E. Freedom of choices

It is the national average of GWP[3] answers "Are you comfortable or uncomfortable with the right to do what you do in your life[10]?

F. Generosity

Is the residual of the national rate regressive answer to the GWP [5]question "Did you donate Funds to a charity about GDP every citizen in the past month?

G. Corruption

The estimate is the national rate of survey results to two GWP questions: "Is corruption common or not through government" and "Is corruption common or not inside business?"The ultimate interpretation is just the two 0-or-1 responses typical. In case there is no concept of government corruption, we use the concept of corporate corruption as the general perception at the country level, impression of corruption is the average result of the total impression at the person level.

II. LITERATURE REVIEW

The World Happiness Survey is a global survey of the internationally happy state[7]. The first report was released in 2012, the second in 2013, the third in 2015, and the fourth in the Update in 2016[11]. The 2017 World Happiness Report which ranks 155 countries by their level of happiness[11] after that on March 20th, 2018 after that 2019 are now we are collecting 153 countries data[12]. In a country the happiness rate of that country is very important for the people. The gross product rate of a country is the main pillar to understand the economy of that country[7]. And the economy of that country directly affected on the happiness of the happiness rate of people[13]. The chapter introduces a set of happiness that is currently applicable for several countries. Any survey results represent almost all countries and can therefore be used to build an aggregate image of the state of global satisfaction in the 21st century's first decade[9].The results and the happiness scores provide data from the

Gallup World Poll.

Problem Statement

Happiness Report of any country is very major fact. After studying different factors which are affected on the happiness rate of any country I decided to select this problem. World happiness rate of country data analysis using Machine Learning and we will check the happiness rate of country with main factors affected on it.

III. MATERIALS AND METHODS

We used an openly access dataset used in this study. The World Happiness Report data was collected from Kaggle[12].com for the year of 2020.Happiness rate of any country is a study of different type of data to visualize the happiness ratio and the factors affecting on it. For this Study "WEKA" is used to representthe data which has been collected. The data of one hundred and fifty three countries with six matrixes to measure Happinessis collected. We used the machine learning process and used the classification algorithms and predict the results. We used decision tree, k-Nearest Neighbors and Random Forest which show the data and give us our results.

A. Machine Learning

Machine learning is an artificial intelligence (AI) technology which provides processes with the ability to read and develop automatically from experience without being directly programmed. We used this for the massive amount of data to understand and execute.

```
Instances:    153
Attributes:   12
              Country name
              Regional indicator
              Ladder score
              Standard error of ladder score
              upperwhisker
              lowerwhisker
              Logged GDP per capita
              Social support
              Healthy life expectancy
              Freedom to make life choices
              Generosity
              Perceptions of corruption
```

Fig-1. Data collecting

a. Decision tree

We used this algorithm because the work of decision tree algorithm is to evaluate an instance of data by creating a tree which starts with the root of a tree and moving towards the leaves until a prediction can be made.

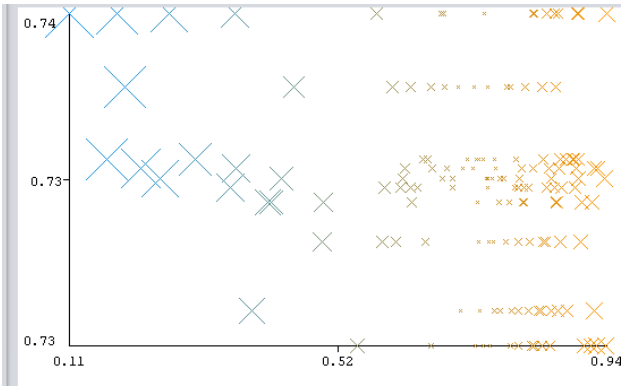
This procedure of creating tree is by selecting the best points in order to make predictions.After applying this algorithm results are shown in Figure-2.

```
IB1 instance-based classifier
using 1 nearest neighbour(s) for classification


Time taken to build model: 0 seconds

=== Cross-validation ===
=== Summary ===

Correlation coefficient                  0.5337
Mean absolute error                      0.122
Root mean squared error                  0.1682
Relative absolute error                 95.8618 %
Root relative squared error             95.7483 %
Total Number of Instances              153
```

Fig-2. Through this algorithm we can see in

Fig-2 the build model time 0.01 and total number of instances on which we applied this algorithm is one hundred and fifty three. Root mean squared value is 0.1757 and mean absolute error is 0.1273 and correlation coefficient is -0.2311.

Fig-3



b. K-Nearest Neighbors

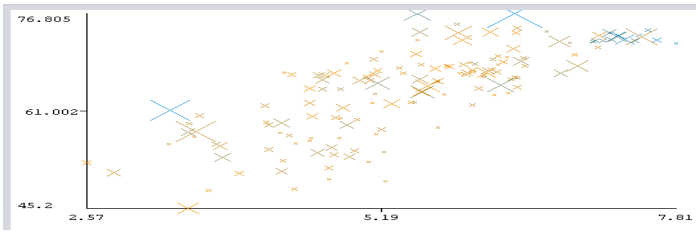
We used this algorithm because the algorithm supports both classification and also regression. It is very simplest algorithm and is get the data about of a problem and make predictions. And in the classification KNN will take the common class and will show very good predictions.

Fig-4

```
IB1 instance-based classifier
using 1 nearest neighbour(s) for classification


Time taken to build model: 0 seconds

=== Cross-validation ===
=== Summary ===

Correlation coefficient                  0.5337
Mean absolute error                      0.122
Root mean squared error                  0.1682
Relative absolute error                 95.8618 %
Root relative squared error             95.7483 %
Total Number of Instances              153
```

Fig-4:-Through KNN we can see in the build model time 0 Sec and total number of instances on which we applied this algorithm is one hundred and fifty three. Root mean squared value is 0.1682 and mean absolute error is 0.122 and correlation coefficient is 0.5337.

Fig-5



presents the Happiness rate of the country region wise. In this y-axis represents the Healthy life expectancy score countries and the average is 5.19.And the X-axis showing the results of ladder score average 61.002.

a. Random Forest

We used this algorithm because it can find the results in like a forest after collecting data and represent the results in the form of manageable view.

```
RandomForest

Bagging with 100 iterations and base learner

weka.classifiers.trees.RandomTree -K 0 -M 1.0 -V 0.001 -S 1 -do-not-check-capabilities

Time taken to build model: 0.33 seconds

=== Cross-validation ===
=== Summary ===

Correlation coefficient                  0.6797
Mean absolute error                      0.1016
Root mean squared error                  0.136
Relative absolute error                 79.7938 %
Root relative squared error             77.3876 %
Total Number of Instances              153
```

Fig-6

Through Random Forest we can see in the build model time efficiency 0.33 Sec and total number of instances on which we applied this algorithm is one hundred and fifty three. Root mean squared value is 0.136 and mean absolute error is 0.1016 and correlation coefficient is 0.6797.

Fig-7

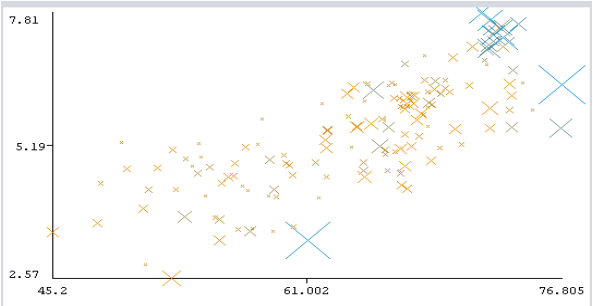


Fig. 7 presents the Happiness rate of the country region wise. In this x-axis

Represents the Healthy life expectancy score countries and the average is 5.19. And the Y-axis showing the results of ladder score average 61.002.

IV. RESULTS AND DISCUSSIONS

The happiness rate is calculated with six matrixes with in GDP, Healthy life, social support, Freedom of choices, Generosity, corruption. We used the classification algorithms and predict the results. Different algorithm shows their results. Through the data average ladder Score in 153 countries is 5.473 out of 10. The lowest Happiness Score collected is at 2.506 which is a sub-Saharan African nation. Focused on the score record for significant contributing factor to the happiness of the

Health year 2020 is ranked at 64,446 Average health and the highest score recorded is 76.805 By Singapore; by converting health to Singaporeans, which is the most important aspect for Singaporeans. Table:-1 summary shows the effecting factors and their average and results in the different countries. It represents the average values and minimum, maximum values of the data of happiness report 2020 and their factors.

Tab-1

Variables	**Mean**	**Min**	**Max**	**StdDev**
GDP per capita	9.296	6.493	11.451	1.202
Healthy life	64.446	45.2	76.805	7.058
social support	0.809	0.319	0.975	0.121
Freedom of choices	0.783	0.397	0.975	0.118
Generosity	-0.015	-0.301	0.561	0.152
corruption	0.733	0.11	0.936	0.175

Algorithms	Correlation coefficient	Time	Relative absolute error
Decision Tree	-0.2311 %	0.01 sec	100
K-Nearest Neighbors	0.5337 %	0 sec	95.8618
Random Forest	0.6797 %	0.33 sec	79.7938

V. CONCLUSION

In this paper by applying different algorithms and methods of analyzing the data of world happiness report with different factors is used to measure the happiness score of the people of countries. The result shows that the Random Forest shows the best and accurate results and shows that where these six factors

GDP per capita, Healthy life, social support, Freedom of choices, Generosity, corruption directly depends on the happiness rates of the countries. In future our work will allow the countries to forecast happiness. And our research will give more benefits to countries to measure and observe the happiness rate of the people.

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ЗАМОНАВИЙ КОРХОНАЛАРНИ БОШҚАРИШДА ИҚТИСОДИЙ ХУЖЖАТЛАР УСТИДА ИШЛАШДА WORD ДАСТУРИ ИМКОНИЯТЛАРИДАН САМАРАЛИ ФОЙДАЛАНИШ

Раҳмонов М.Ш., Камолов Ш.Б. Андижон давлат университети, Ўзбекистон.

Аннотация. *Ушбу мақолада Microsoft Word дастури имкониятларидан фойдаланиб, катта ҳажмга эга бўлмаган жадвалларда оддий иқтисодий ҳисоб-китобларни бажариш ишларини амалга ошириш баён этилган.*

Калит сўзлар: *Microsoft Word, иқтисодий ҳисоб-китоблар, жадваллар.*

Аннотация. *В данной статье описывается, как выполнять простые экономические вычисления для таблиц, которые не имеют большого объема, используя возможности программы Microsoft Word.*

Ключевые слова: *Microsoft Word, экономические вычисления, таблицы.*

Abstract. *This article is about performing simple calculations in small tables, using the capabilities of the Microsoft Word.*

Key words: *Microsoft Word, economic calculations, tables.*

Одатда Word типидаги хужжат ичида ҳисоб-китоб қилишини керак бўлган жадвал мавжуд бўлса, уни Excel га нусха оламиз ва ҳисоблашларни бажариб бўлиб, натижалар Wordга олиб ўтилади. Агар хужжатдаги жавдал унчалик катта бўлмаса, ундаги ҳисоблашларни Wordнинг ўзида ҳам бажариш мумкин бўлади. Аксарият фойдаланувчилар бу қулайликдан фойдаланмайдилар ёки уни амалга оширишни билмайдилар.

=SUM (LEFT)
=SUM (RIGHT)
=SUM (ABOVE)
=SUM(BELOW)
=SUM (LEFT, ABOVE)

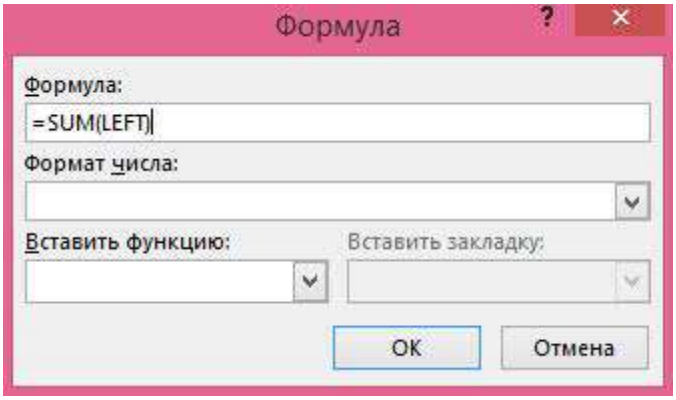
Топшириқ. Корхона фаолияти натижалари тўғрисидаги жадвал қуйида келтирилган.

Квартал	Даромад. минг евро бирлик	Харажат. минг евро бирлик	Фойда. минг евро бирлик	Фойда ўсишнинг занжирли суръати
I	1155	-980	175	
II	1340	-1025	315	
III	1580	-1170	410	
IV	1420	-1390	30	
Максимал				
Минимал				
Ўртача квартал				
Умумий				

Ушбу жадвалда қуйидагиларни ҳисобланг: кварталлардаги фойда, квартал фойданинг максимал ва минимал қийматлари, ўртача квартал фойда, корхонанинг йиллик фойдаси, кварталлардаги фойдани ўсиш суръати.

Бажарилиши.

Қуйида Word типидаги жавдалда қандай қилиб ҳисоблашлар олиб боришни кўрсатиб ўтамиз.



- ✓ I квартал қаторидаги бўш ячейкага курсорни қўямиз;
- ✓ “Макет”-“Формула” буйруғини бажарамиз;
- ✓ Натижада “Формула” диалог ойна пайдо бўлади. Бу ерда дастур турғун холатда =SUM(LEFT) функцияни таклиф қилмоқда. Яъни курсорга нисбатан чап томонда жойлашган ячейкалардаги қийматлар йиғиндисини ҳисоблашни билдиради. Жадвалимизда курсорга нисбатан 2 та қиймат турибди, яъни 1155 ва -980. Демак шу сонлар йиғиндиси ҳисобланади. Жадвал тузганда харажатларни манфий сонларда берилди. Чунки ҳисоблашни SUM орқали ҳисоблаш осон бўлади. ОК тугмасини босамиз ва 175 натижага эга бўламиз.
- ✓ Кейинги ячейкага қийматни ҳисоблаш учун курсорни кейинги сатрга олиб тушамиз (II квартал қаторига). Формула тугмани босамиз.
- ✓ Дастур автоматик равишда =SUM(ABOVE) функцияни таклиф этмоқда. Яъни курсор турган ячейкадан юқорида турган ячейкалардаги сонларни йиғиндисини ҳисоблашни таклиф қилмоқда. Би эса бизнинг мисолимизга тўғри келмайди. Шунинг учун формулани клавиатура ёрдамида =SUM(LEFT) га ўзгартирамиз. ОК тугмани босамиз. Ва 315 натижага эга бўламиз.
- ✓ Учинчи ва тўртинчи кварталлар учун ҳам формула тугмани босиб, =SUM(LEFT) функцияни ишлатамиз. Жадвал қуйидаги натижаларга эга бўлади.

Квартал	Даромад. минг евро бирлик	Харажат. минг евро бирлик	Фойда. минг евро бирлик	Фойда ўсишнинг занжирли суръати
I	1155	-980	175	
II	1340	-1025	315	
III	1580	-1170	410	
IV	1420	-1390	30	
Максимал			410	
Минимал				
Ўртача квартал				
Умумий				

Изох. Қуйида баъзи функцияларнинг вазифаларини келтирамиз.

=SUM (LEFT) курсорга нисбатан чап томондаги ячейкалар йиғиндисини ҳисоблайди.

=SUM (RIGHT) курсорга нисбатан ўнг томондаги ячейкалар йиғиндисини ҳисоблайди.

=SUM (ABOVE) курсорга нисбатан юқори томондаги ячейкалар йиғиндисини ҳисоблайди.

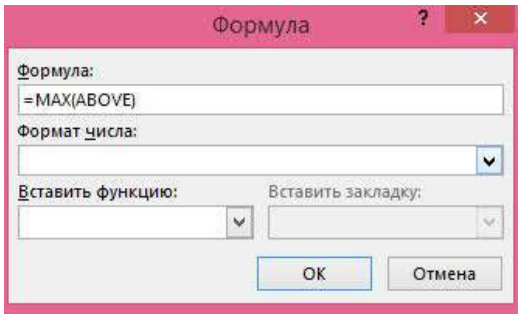
=SUM(BELOW) курсорга нисбатан паст томондаги ячейкалар йиғиндисини ҳисоблайди.

=SUM (LEFT, ABOVE) курсорга нисбатан чап томондаги ячейкалар ва юқоридаги ячейкалар йиғиндисини ҳисоблайди.

✓ Ишни давом эттирамиз. Максимал қийматни ҳисоблаш учун курсорни максимал қиймат ҳисобланиши зарур бўлган жойга олиб тушамиз;

✓ “Макет”-“Формула” буйруғини бажарамиз;

✓ “Формула” диалог ойнанинг формула қаторидаги формулани тўла ўчирамиз ва “Вставить функцию” рўйхатни очамиз, сўнгра MAX функцияни танлаймиз. Агрументни эса (ABOVE) га ўзгартирамиз ва ОК тугмани босамиз. 410 натижага эга бўламиз.

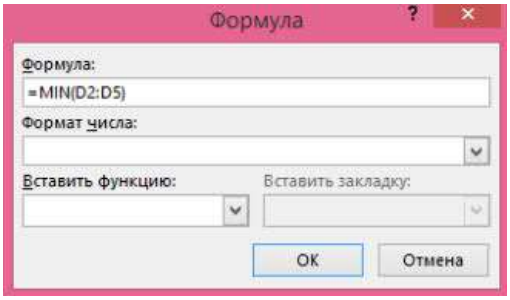


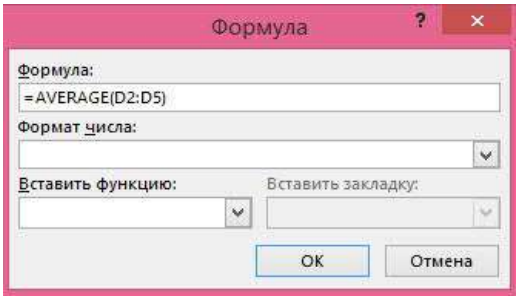
✓ Минимал қийматни ҳисоблашда =MIN(ABOVE) функцияни ишлата олмаймиз чунки 4 та кварталдаги фойдалардан ташқари максимал қиймат ҳам функцияда ҳисобланиб кетади.

✓ Word жадвалларда ҳам сатр ва устун мавжуд бўлиб уларнинг номлари ва номерлари Excel дастуридаги каби кўринмайди. Биз ўзимиз уларни санаб билиб оламиз.

	A	B	C	D	E
1	Квартал	Даромад. минг евро бирлик	Харажат. минг евро бирлик	Фойда. минг евро бирлик	Фойда ўсишнинг занжирли суръати
2	I	1155	-980	175	-
3	II	1340	-1025	315	1,8
4	III	1580	-1170	410	1,3
5	IV	1420	-1390	30	0,07
	Максимал			410	
	Минимал			30	
	Ўртача квартал			232,5	
	Умумий			930	

✓ Минимал қийматни ҳисоблаб учун худди Excel даги каби =MIN(D2:D5) формулани формула диалог ойнага ёзамиз. ОК тугмасини босамиз.



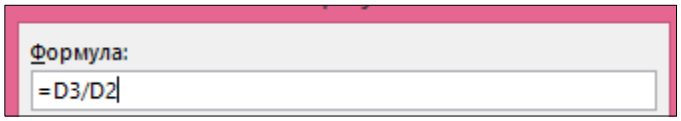


✓ Ўртачаквартални ҳисоблаш учун курсорни кейинги сатрга олиб тушамиз ва ўрта арифметикни ҳисобловчи AVERAGE функцияни қўллаймиз.

✓ Умумий фойдани ҳисоблаш учун формула диалог ойнага =SUM(D2:D5) функцияни киритамиз. OK тугмани босамиз.

✓ Фойда ўсишнинг занжирли суръати устунга қуйидаги формулаларни навбати билан формула диалог ойнага киритамиз ва мос равишда ҳисоблаб чиқамиз. Ҳисоблаш иккинчи ячейкадан бошланади.

=D3/D2
=D4/D3
=D5/D4



Шундай қилиб барча ҳисоблаш ишларини амалга оширдик. Word типидаги жадвал билан Excel даги жадвалларнинг фарқи шундаки, Word жадвалдаги бирор қиймат ўзгартирилса шу вақтнинг ўзида шу қийматга боғлиқ бўлган формулалардаги ҳисоб-китоблар автоматик равишда амалга оширилмайди. Қачонки Word хужжат хотирага олинади ва дастурдан чиқилади, сўнгра шу хужжат қайта очилганда ушбу ўзгартирилган қийматга оид формулалардаги ҳисоблашлар амалга оширилади. Жадвалдаги қийматларни ўзгартириб натижани шу вақтнинг ўзида амалга ошириш учун жадвал тўла ажратилади ва F9 клавиши босилади.

Квартал	Даромад. минг евро бирлик	Харажат. минг евро бирлик	Фойда. минг евро бирлик	Фойда ўсишнинг занжирли суръати
I	1155	-980	175	-
II	1340	-1025	315	1,8
III	1580	-1170	410	1,3
IV	1420	-1390	30	0,07
Максимал			410	
Минимал			30	
Ўртача квартал			232,5	
Умумий			930	

Жадвалдаги II кварталдаги -1025 харажатни -1500 га ўзгартирамиз (дароматдан харажат ортиб кетади). Шундан сўнг F9 клавишини босиб жадвалдаги формулалар жойлашган ячекалар ўзгаришини кузатамиз.

Квартал	Даромад.	Харажат.	Фойда.	Фойда

	минг евро бирлик	минг евро бирлик	минг евро бирлик	ўсишнинг занжирли суръати
I	1155	-980	175	-
II	1340	-1500	-160	-0,91
III	1580	-1170	410	-2,56
IV	1420	-1390	30	0,07
Максимал			410	
Минимал			-160	
Ўртача квартал			113,75	
Умумий			455	

Янги жадвалда олдинги жадвалдан фарқ қилган ячейкалар ажратиб кўрсатилди.

Хулоса қилиб шуни айтиш мумкинки, ушбу мақолада баён этилган фикрларни ўзлаштириб, ҳар бир фойдаланувчи ўз хужжат ишларида, айниқса иқтисодий ҳисоб-китоб ишларини амалга оширишда шу каби формулалардан фойдаланиши мақсадга мувофиқ бўлади деб ҳисоблаймиз.

ИҚТИСОДИЁТНИ РАҚАМЛИ ЎЗГАРТИРИШ ВА РАҚАМЛАШТИРИШ ЖАРАЁНИДА АСОСИЙ КАДРЛАР МАЛАКАСИНИ ШАКЛЛАНТИРИШ

Саримсақов Д.Х., Андижон Давлат Университетининг стажёр тадқиқодчиси, Ўзбекистон.

Аннотация. Ушбу мақолада жамиятимизни рақамли иқтисодиётга ўтказишдаги асосий тушунчаларини ва мазмун моҳияти очиб берилган ва ҳозирда ушбу соҳани жадал ривожлантириш учун кадрлар салоҳиятини янада ошириш йўллари ҳақида тушунчалар бериб ўтилган.

Калит сўзлар: рақобатдош, глобал, инновацион, ахборот-коммуникация технологиялари, динамиклик, рақамлаштириш, трансформациялаш.

Аннотация. В данной статье описываются основные понятия и суть содержания перевода нашего общества на цифровую экономику,а теперь дается представление о путях дальнейшего повышения кадрового потенциала для быстрого развития этой отрасли.

Ключевые слова: конкурентные, глобальные, инновационные, информационно-коммуникационные технологии, динамизм, оцифровка, трансформация.

Annotation. This article describes the main concepts and essence of the content in transferring our society to the digital economy, and now provides insights on ways to further increase the potential of personnel for the rapid development of this industry.

Keywords: competitive, global, innovation, information and communication technologies, dynamism, digitization, transformation.

Ўзбекистонда иқтисодиётни эркинлаштириш ва ривожлантиришга қаратилган «2017-2021 йилларда Ўзбекистан Республикасини ривожлантиришнинг бешта устувор йўналиши бўйича Харакатлар стратегияси»да инвестициялар ва ишбилармонлик муҳитини яхшилаш, иқтисодиёт тармоқларининг рақобатбардошлигини ошириш, рақамли иқтисодиётни шакллантириш юзасидан устувор йўналишлар белгиланган бўлиб, бу борада тизимли ишлар амалга оширилмоқда [1].

Ўзбекистон Республикаси Президенти Шавкат Мирзиёевнинг 2020 йил 24 январда Олий Мажлисга Мурожаатномасида таъкидланганидек: “...жорий йилда рақамли иқтисодиётни ривожлантириш бўйича туб бурилиш қилишимиз керак”.

Биринчи навбатда, қурилиш, энергетика, қишлоқ ва сув хўжалиги, транспорт, геология, кадастр, соғлиқни сақлаш, таълим, архив соҳаларини тўлиқ рақамлаштириш лозим. Шунингдек, “Электрон ҳукумат” тизимини, амалга оширилаётган дастурлар ва лойиҳаларни танқидий қайта кўриб чиқиб, барча ташкилий ва институционал масалаларни комплекс ҳал этиш зарур.[2].

Ўзбекистонда иқтисодиётни рақамли секторини ривожлантириш борасида кенг кўламли тадбирлар амалга оширилмоқда, ҳозирги вақтда технологик ўзгаришлар глобал иқтисодий тизимни шакллантиришда айрим бозорлар ва корхоналар иқтисодиётида сезиларли ўзгаришлар киритди. Жумладан барча ташкилотлар рақамли ёки ахборот-коммуникация технологиялари (АКТ) га рақобатдош бўлишга таянади. АКТнинг аҳамияти ва муҳимлиги компаниялар учун рақамли ресурслар ва инфратузилмани бошқариш ҳолатида бўлишлари керак. Рақамли давлатни шакллантиришда асосий ваколатларни шакллантириш муҳим рол ўйнайди ва муайян ўзига хосликка эга, чунки тез орада АКТ ваколатларидан фойдаланилмайдиган фаолият соҳаси бўлмайди.

Рақамли иқтисодиётнинг жадал ривожланиши давлатлар, саноат ва корхоналарнинг рақобатдошлигини оширишни таъминлайди. Рақамлаштиришнинг кенг миқёсли даражаси бизнесни ташкил этиш жараёнида сезиларли ўзгаришларни келтириб чиқаради. Бугунги тендентсия-бу рақамли технологияларни хўжалик юритувчи субъектлар фаолиятида глобал технологиялардан фойдаланиш, ахборот жамиятини ва умуман рақамли иқтисодиётни шакллантиришга қаратилган барча соҳаларга таъсир этувчи рақамли ўзгаришлардир. Ушбу ўзгаришларни амалга оширишда, ташкилот ва компаниялар учун янги рақамли иқтисодиёт ва платформаларни моделларини ишлаб чиқишга қодир бўлган малакали мутахасисларга эхтиёж сезилади. Рақамли иқтисодиёт муқаррар таълим тизимини ислоҳ қилишда, замонавий таълим муассасалари, таълим хизматлари бозорида ўқув дастурлари ишлаб чиқишда турли кўникмаларга эга юқори малакали мутахассисларни талаб қилади.

Янги билимлар, шунингдек, динамиклик, бошқарилувчанлик, мосланувчанлик, ҳаракатчанлик ва инновациялар – рақобатнинг янги тури-гиперрақобатбардошлик тизимли элементлари бўлиб, у рақамли иқтисодиётнинг ривожланиши натижасида пайдо бўлади. Бу жиҳатлар эса дунёнинг етакчи мамлакатлари эга бўлган глобал афзалликлардан биридир. Корхоналар фаолиятида рақамли иқтисодиётнинг ривожланиши билан муҳим ўзгаришлари вужудга келди. АКТдан фойдаланиш жараёнлари орқали битим харажатларини камайтиришга эришилди. Ушбу рақамли иқтисодиётнинг ривожланишига нисбатан, анъанавий иқтисодиётда бўлган харидор ва ишлаб чиқарувчилар ўртасидаги муносабатларнинг ўзгариши билан боғлиқдир. Бу муносабатлар сервислаштириш учун ўзига хос бўлган, янада яқин ва индивидуаллаштирилган бўлиб, рақамли иқтисодиётнинг даври стратегик жиҳатдан муҳим аҳамиятга эга бўлган билимни келтириб чиқаради, бу эса турли соҳаларда компанияларнинг барқарор иқтисодий ривожланишига боғлиқдир. Шу муносабат билан корпоратив билимларни компания бошқарув тизимига интеграциялашнинг замонавий воситалари ва усуллари асосида бизнесни ривожлантириш стратегиясини ишлаб чиқишда янгича ёндашувларни шакллантириш мақсадга мувофиқдир.[4].

Корхоналарнинг улуши, мижозлар эҳтиёжини қондириш, янги мижозлар сони, товарлар сотиш даражаси ва шу каби кўрсаткичларда ўз

аксини топади. Мавжуд маълумотларни самарали бошқариш, муҳим активлардан фойдаланиш кўникмалари, бошқача айтганда, тегишли асосий ваколатлари доираси корхоналарни молиявий натижаларига бевосита таъсир қилади.

Рақамли ўзгартириш контекстида, энг машҳур техник ваколатлар (қаттиқ кўникмалар); янги бизнес моделлар (платформалар, экотизимлар, тармоқлар) яратиш; маълумотларни таҳлил қилиш (data science); очиқ дастурий интерфейс (openAPI) орқали ҳамкорлар билан интеграцияси; хавфсизлик даражасидаги рақамли дизайин тизими (security by design); камида битта бизнес технологиялари (сунъий ақл, робототехника, 3D видео, хизматлар, вертуал ва кенгайтирилган ҳақиқат, яъни. ахборот технологиялари ёрдамида ташкил этиладиган юқори самарали бошқарув; замонавий бошқарув амалиётини билиш (Lean, Kanban, 6 Sigma, SCRUM, DevOps) муҳим ҳисобланади. Бироқ, инсон омилига нафақат ёрдам бериб колмасдан, балки ижтимоий-иқтисодий тизимларни рақамли ўзгартиришда ҳам бир қатор қийинчиликларни вужудга келтиради.

Биринчи қийинчилик соҳани чуқур биладиган малакали мутахассисларни етишмаслиги.

Рақамли ўзгартириш мутахассислардан асосан маҳорат билим ва воситаларини доимо янгилашини ўрганишни талаб қилади. Ҳозирги фундаментал таълим тез қайта тайёрлаш ва уларнинг профеционал маҳоратини ошириш қобилиятини амалга ошириш рақамли даврда муваффақиятнинг асосий омиллари ҳисобланади.

Иккинчи қийинчилик. Қайта тайёрлашни тезлигини чегараланиши.

Корхоналар, ташкилотлар айрим ҳолатларда ўзгармайди ва рақамли маҳсулотларни аналог маҳсулотлар билан параллел равишда шакллантириш мумкин. Ташкилотнинг операцион модели классик ва инновацион режимда ишлашга имкон бериши мумкин, бунда ўзгаришлар минимал таваккалчиликлар билан амалга оширилади. Кўпинча компаниянинг рақамли ва анъанавий бўлимлари ўртасида рақобат мавжуд бўлади. Муаммони ечиш маъсулияти профессионал менежментга юклатилган.

Учинчи қийинчилик. Юқори бошқарувнинг консерватизми. Рақамли ўзгартиришлар қўшимча вақт, ҳаракат, ва пул талаб қилади бу ҳолатга ҳар бир корхона бунинг учун тайёр эмас бўлиши мумкин. Муваффақият калити эса-бошқарувнинг мослашувчанлиги ва зарур ҳолларда рақамли ваколатларга эга бўлган ходимларни ишга солишга тайёр бўлиши муҳим ҳисобланади. Технологияларининг салоҳияти ва ўзгаришларнинг муқаррарлиги ҳақида ҳақиқий тушунчага эга бўлиш жуда муҳимдир. Рақамлаштириш муқаррар янги иш моделини қуриш жараёнлари ўзлари ўзгарувчанлигини ўз ичига олади. Ҳар қандай ўзгаришлар бизнес эгалари учун таваккалчилик билан боғлиқ, бу одатда тушунарли, аммо таваккал қилганлар ғалаба қозонадилар. Бу рақамли ғоялар учун муваффақият тўлқинини келтириб чиқаради, бу ишбилармонларнинг қўрқувини бузади ва охир-оқибат рақамли иқтисодиётни олдинга суради. Шуни таъкидлаш керакки, ахборот тизимларидан ташқари, корхоналар ўзларига мос маданиятни тадбиқ этишлари керак. Янги иш

форматига ўтиш билан боғлиқ корхоналарда юзага келган муаммоларни ҳал этиш учун бу масалада малакали мутахассислар зарур. Шунинг учун ҳам замонавий рақамли дунёда муваффақиятли профессионал ўсишнинг асосий омили қуйидагича ҳисоблаш мумкин: доимий ўрганиш қобилияти ва янги ривожланаётган технологиялар бўйича янги билимларни дойимо ўзлаштириб бориш, бошқача қилиб айтганда аниқ фанларди билишгина эмас, балки уларни янги босқичларини ҳам ўзлаштириш талаб этилади. Ўсиб бораётган рақамли иқтисодиёт даврида катта ахборотлар оқимини қайта ишлашга қодир бўлган ва айни пайтда ундан энг муҳим масалаларини ажратадиган мутахассис кадрлар етишмаслиги мавжуд.

Рақамли иқтисодиёт инсоният, компаниялар ва келажак мамлакатлари учун улкан мақсадларни қўяди. Иқтисодиёт, таълим ва умуман жамият учун асосий муаммолар: ўқитиш, кадрлар малакасини ошириш жиҳатларини рақамлаштириш саводхонлигини оширишга каратилган. Рақамли иқтисодиётни ривожлантиришнинг асосий мақсадлари, позициялари қуйидагилардир: рақамлаштириш жараёнидаги кадрларни саводсизликни бартараф этиш; илғор таълим йўналишларини ўрганиш; ёки бошқача қилиб айтганда “эскирган” тизимни алмаштириш ва ҳокозолар киради.

Бизнинг фикримизча, рақамлаштиришни муҳим йўналишларига қуйидагиларни киритишимиз мумкин: рақамли иқтисодиётда бизнес-жараёнларни бошқариш; ташкилотнинг рақамли трансформациясини бошқариш; рақамли иқтисодиётда лойиҳаларни бошқариш; ташкилотнинг АТ-инфратузилмасини бошқариш; АТ хизматлари соҳасидаги ташкилотларни бошқариш. Ракамлаштиришни ўрганишда асосий бошқарув фанлар блокига қуйидаги йўналишларни ўрганиш мақсадга мувофиқ деб ҳисоблаймиз.

1. Рақамли иқтисодиёт ва рақамли бизнес инфратузилмаси. Бу амалиёт фундаментал билим ва муддатли "рақамли иқтисодиёт" тўлиқ тушунчасини беради, унинг барча фалсафий ва иқтисодий жиҳатларини очиб бериш, асосий услубий ёндашувлар ва ривожланиш тушунчаларни, қадриятлар ва мақсадларни шунингдек рақамли иқтисодиётнинг чегараларини аниқлайди.

2. Рақамли технологиялар асосида бошқариш. Бу амалиёт доирасида зарурий бошқарувчилик, техник кўникмалар шакллантиради. Ушбу курс менежмент ва рақамли транформациялашни стратегик фойдаланиш учун комплекс асос бўлиб хизмат қилади. Рақамли технологияларни амалга ошириш унумдорлиги ва иш жараёнлари самарадорлигини ошириш талабаларни илғор тадбиркор ва мукаммал билимли менежер бўлишига омил бўлиб хизмат қилади.

3. Рақамли иқтисодиётда лойиҳаларни бошқариш. Ушбу фан қўлланилиши рақамли иқтисодиёт даврида лойиҳаларни бошқариш, таҳлил қилиш, лойиҳалаш ва бошқариш учун зарур бўлган билим ва профиссионал маҳоратни таъминлаш учун мўлжалланган. Тахсил олаётганларга амалий кўникмалар ва зарур тематик назарий тадқиқотлар, амалий ишланмалар жалб этилиб, АТ технологияларни жалб этган ҳолда корхоналарни ёки жамоаларни самарали бошқаришга ундайди. Корхоналарни самарали бошқариш учун

талабалар АТ технологиялардан самарали фойдаланиб, зарур тематик назарий тадқиқотлар, амалий ишланмалар олишга жалб этилади.

4. Рақамли платформалар ва уларнинг экотизимлари. Рақамли платформа саноатининг замонавий иқтисодиётни шакллантиришдаги роли ахборот ресурслари ва дастурий таъминотни интеграциялашувидир. Замонавий шароитларда самарали бизнесни ташкил этиш учун ўзига хос рақамли платформаларини шакллантириш тамойилларини билиш муҳим ҳисобланади.

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THE EXISTENCE PROBLEMS OF SECURITY PROTOCOLS AT THE INTERNET OF THINGS

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Annotation. *In this paper is given security protocols of internet of things. Moreover, their weakness sides are described.*

Key words*: Internet of things, protocols, wireless.*

Several organizations have devised ways to secure their wireless networks from intruders. However, there is currently no wireless security implementation that everyone agrees is always suitable, regardless of what network it is to be used on. Some implementations are satisfactory for some environments, and there is work underway to create future solutions. Meanwhile, some wireless users make the situation more difficult as they advertise existing vulnerable networks. When considering a network with a Wireless Access Point, or "WAP", available, new security concerns come into play. Because wireless is broadcast in nature, anyone within range of a wireless card can intercept the packets being sent out without interrupting the flow of data between wireless card and base station. It is because of this that wireless network security is somewhat more concentrated than that of wired networks. Network administrators with WAP's tend to focus on the security between the wireless card and the base station. After packets leave the base station on the wired side, administrators can rely on more conventional security features already in place on their wired networks to protect the information in question.

Today, due to many application wireless sensor networks, the topic of security in wireless sensor networks is a big challenge. Due to low capabilities of devices, high energy consumption and the lower computational power, using traditional security protocols is very difficult. There are two big problems in security protocols. First, the overload in transition of messages that creating high energy consumption hould be reduced at a minimum cost. Second, low computational power shows that in this case should be used special cryptographic algorithms with less powerful processors. As a result, for solving these problems we should consider new proaches. In secure networks, several properties should be considered: Key establishment, secrecy, trust setup, privacy and authentication. For exchanging messages, the nodes require the secure and efficient Key distribution. So, it is necessary to survey secure protocols. TinySec Protocol, which is used for authentication and encryption and has link layer security architecture. LEAP is another protocol which is used for authentication and localized encryption that base on key management. This protocol supports four kinds of keys. TinyPK protocol, is based on key management. MiniSec protocol is a secure protocol in network. In this protocol, Confidentiality, authentication, broadcast protection and refreshment messages are supported with low energy consumption. SNEP protocol (Sensor Network Encryption Protocol) is the main base for data confidentiality, two-party data authentication, replay protection and weak message freshness in

wireless sensor network. Tesla, based on asymmetric cryptography for providing broadcast authentication that is a main security service in distributed sensor networks. This protocol is one of the technics in Model checking and work base on formal method and also is simulated in different tools. One of the advantages is automation. Also, in this technique determines that the system work base on our expectation or not. In case of lack of good performance is pursued defect of the system.

Cryptographic mechanisms through a delayed disclosure of symmetric keys. In this case, sender broadcasts the message that creates with a secret key to the nodes. After a time, the secret key is disclosed. Until disclosure, the receiver buffer the packets. Then, is authenticated the packets. The limitation of Tesla is that the initial information should arrive to each node before authentication of the message

TinySec: A security architecture is implemented as a link layer and cost overhead is less than 10 percent. This protocol is used as a standard library in TinyOs. The main goal of this protocol is security, access control, message authenticity and integrity and confidentiality. This protocol in application layer has two operations: authentication and secure encryption. Packets are authenticated by CBC-MAC Message Authentication Code and secure encryption is done with an initialization vector of 8 Byte and used from CBC (cipher block chaining). As a result, by using these two operations, there are two packets. TinySec-AE, which is presented for authentication and encryption messages and TinySec-Auth, which is presented for authentication messages. Shared keys are used for encryption and decryption data. TinySec could be combined with any keying mechanism. As a result, Localized Encryption and Authentication Protocol and TinyPK as a keying mechanism has been used.

LEAP: LEAP creates 4 kinds of keys for each sensor node. The base station is shared with an individual key, another sensor node is shared with a pairwise key, multiple neighboring nodes is shared by a cluster key, and a group key that is shared by all the nodes in the network.

MiniSec: for achieving better energy needs, it works in two modes: unicast packets MiniSec-U, and broadcast packets. At MiniSec-U, the message between two nodes A and B is protected. Each pairwise of nodes shares asymmetric key pair for encryption between A and B. At MiniSec-B, the encryption is used and two ways are used for defense against broadcast attacks. Shared keys are used for encryption and decryption and MiniSec protocol uses LEAP mechanism. MiniSec as a secure protocol offers data using coded block mode, encryption mode and authentication and also confidentiality. In MiniSec protocol key distribution or computational algorithm is not addressed, but LEAP is proposed as a solution of key management.

SNEP: As basic primitives offer confidentiality, authentication between two nodes, data integrity and weak message freshness in a wireless sensor network. This protocol is modeled at two scenarios. The first model is communication between the base station and network nodes is to get node confidential information. The second model is a key distribution protocol in a sensor network. In this protocol is used for shared counter. A Message Authentication Code (MAC)

is used in each message and achieve by CBC-MAC algorithm over the ciphered data. CBC-MAC algorithms encrypt a message M in CBC mode with a symmetric key and zero initialization vector. The protocols and their security properties have been classified in Table 1.

Table-1. Classification of the Wireless Sensor Network Protocols and the Security Properties.

№	Protocols / Security Properties	TinySec	MiniSec	SNEP	ZigBee	Leap
1	Access Control	+				
2	Message Integrity	+		+	+	+
3	Weak Message Freshness		+	+		+
4	Prototection Against Replay Attacks	+	+		+	
5	Authentication		+			
6	Confidentiality	+	+	+	+	+

INFORMATIKADA DASTURLASH SOHASIDAGI MUAMMOLAR

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Annotatsiya. *Ushbu maqolada o'rta ta'limdagi informatika fani doirasida mavjud muammolar ko'rib chiqilgan. Keltirilgan aniq fikrlar va tavsiyalar informatika darsliklarini tubdan isloh qilishni taqoza etilishi va buning natijasida yosh o'quvchilarimizning ushbu sohaga bo'lgan qiziqishini ortishiga erishish mumkin bo'ladi.*

Kalit so'zlar: *Informatika, Dasturlash, Innovatsiya.*

Аннотация. *В данной статье рассматриваются проблемы содержания учебника по информатике для средних школ. Приведенные наброски и предложений позволит коренным образом изменить содержание этого предмета, что приведет в будущем к повышению интереса к этому предмету со стороны молодых учащихся.*

Ключевые слова: *Информатика, Программирование, Инновация.*

Annotation. *This article discusses the problems of the content of a textbook on computer science for secondary schools. The outline and proposals will allow for a fundamental change in the content of the subject, which will lead in the future to an increase in interest in the subject by young students.*

Keywords*: Informatics, Programming, Innovation.*

Umumiy o'rta ta'lim va akademik litseylarda informatika fanini o'qitish holati hozirgi zamon va taraqqiyot talablariga deyarli javob bermaydi. Shu bilan birga metodologik masalalarga yetarli darajada e'tibor berilmagan. Uzluksiz ta'lim bosqichlariga mos holda informatika fanining asosiy konseptual modeli ishlab chiqilmaganligi, ushbu fanni o'qitish samaradorligini oshirishga imkon bermayapdi.

Mamlakatimizda dasturlash sohasini rivojlantirishga qaratilgan yosh dasturchilar tanlovlari, olimpiada va turli on-line musobaqalar o'tkazilmoqda. Ushbu tadbirlar axborot-kommunikatsiya texnologiyalarini ommalashtirish bilan birga, boshqa qator muhim masalalarni hal etishga ham xizmat qiladi.

O'quvchi-yoshlarimizda kompyuterda ishlash ko'nikmasi shakllanib bo'lgan. Ammo kompyuter bilan haqiqiy "muloqotga" kirishish uchun uning "til"ini bilish kerak. Biror masalani kompyuterda yechish uchun, avvalo, uning algoritmini tuzib, so'ng bu algoritmni kompyuter tushunadigan qonun-qoidalar asosida yozish kerak. Bu yozuv dastur deb ataladi. Dastur tuzish jarayoni murakkab bo'lib, bunda algoritmik fikrlash qobiliyati talab etiladi. Shu bilan birga qaysi dasturlash tiliga asoslanishni tushunib olish zarur.

O'zbekiston Respublikasi Prezidenti Shavkat Mirziyoev 2018-yil 2-noyabr kuni xalq ta'limi tizimini yanada rivojlantirish borasidagi islohotlar samaradorligini oshirish masalalariga bag'ishlangan yig'ilish o'tkazdi. Unda

quyidagi e'tiroz bildirildi: "Umumta'lim maktablarida axborot texnologiyalarining joriy etilishini ham qoniqarli deb bo'lmaydi. Misol uchun, ba'zi maktablarda informatika fani hali hamon eski dasturlash tili asosida o'tilmoqda, bir qator kompyuter jihozlari yaroqsiz holga kelib qolgan". Bir qarashda sezilarsiz bo'lgan ushbu kamchilik, yillar davomida to'planib juda katta muammolarga olib keldi. Ma'lumki, har bir hodisaning sodir bo'lish sababi juda ko'p omillarga bog'liq bo'ladi. Bu omillar to'planib sodir bo'layotgan hodisaning ro'y berishini keltirib chiqaradi.

Hozirgi kunda ta'lim mazmunini sifat jihatdan yaxshilashda har bir pedagog xodimga alohida ma'suliyat yuklanadi. Fan, texnika rivojlanib, fundamental fanlarga bo'lgan talab ortib borayotganligi uchun har bir dasturlash tilini yangi talqinda tushuntirishi va ularga yangi texnologiyalarni tatbiq qilishi kerak. Ushbu vazifani amalga oshirish maqsadida hozirgi mavjud vaziyatga chek qo'yish lozim. Shu maqsadda uch narsani e'tiborga olish zarurligini eslatib o'tamiz:

1. Umumiy o'rta ta'lim maktab informatika kursida asosan dasturlash tilini va faqatgina unga bog'liq bo'lgan mavzularni kiritish zarur.
2. Ushbu fan doirasida dasturlash tilini tanlashda quyidagi sohalarni inobatga olish zarur: amaliy masalalar; tizimli dasturlar va web dunyosi.
3. Akademik litsey va yuqori sinflarda dasturlash tilining barcha imkoniyatlarini qamrab olish kerak.

Yuqoridagilarni hisobga olgan holda dasturlash tilini tanlash – bu murakkab masala ekanligi aniq bo'lmoqda. Shu bois ozgina tarixga nazar tashlasak. O'rta maktabda dasturlash tillari yillar davomida o'zgarib keldi. Buning asosiy sabablari: dasturlash paradigmasining o'zgarishi, ishlab chiqarish talablarining kuchayishi, qo'llash doirasining kengayishi, kompyuter texnikasining rivojlanishi, axborot texnologiyalarining xilma-xil yo'nalishlarini paydo bo'lishi va boshqalar. Bunda ko'z oldimizga quyidagi dasturlash tillari keladi: Fortran, Basic, Pascal. Ushbu tillarning uzluksiz rivojlanishi davom etishini inobatga olish va Informatika fanida ularni nazarda tutish deyarli amalga oshirilmay qoldi. Eng achinarlisi – bu ushbu fan doirasida ishlab chiqilgan o'quv dasturlarining mantiqiy asoslari ishlab chiqilmaganligida. Bu esa o'quvchilarni savodsiz bo'lishiga olib keldi. Tushunarli bo'lishi uchun, agar biz matematika fanini faqat kalkulyatorda hisob-kitob qilishni o'rgatsak edi, unda qanday achinarli vaziyatga tushgan bo'lar edik.

Shu o'rinda, informatika darsliklaridagi kamchiliklar katta muammolarga olib kelmoqda, masalan, O'zbekiston Respublikasi Prezidenti "Axborot texnologiyalari va kommunikatsiyalarining joriy etilishini nazorat qilish, ularni himoya qilish tizimini takomillashtirish chora-tadbirlari to'g'risida"gi qarorida keltirilgan. Unda Shavkat Mirziyoev axborot texnologiyalari sohasidagi qator muammolarni ma'lum qildi, shulardan biri – bu "…kiberxavfsizlik sohasidagi nazorat tizimi … mukammal emasligi…" ta'kidlab o'tilgan. Ushbu kamchiliklarni bartaraf qilish uchun dasturlash texnologiyalari sohasida kadrlar tayyorlash sifatini oshirishdagi ahamiyatiga alohida e'tibor berish zarur. Shu bois bo'lsa kerak ta'lim sifatini baholash mexanizmi ham ishlab chiqildi [1]. Ammo yuqoridagi muammoning yechimi bunda emas. Birinchi navbatda informatika

sohasidagi darsliklarni tubdan mazmunan o‘zgartirish talab etiladi. Chunki maktab darsliklari ta’lim sifatini oshirishda birinchi manba hisoblanadi. Bugungi kunda ushbu muhim manbalar yaratilishi va ularning sifati haqida turli fikr-mulohazalar bildirilmoqda. Albatta, bu tabiiy holat va o‘z navbatida foydali hamdir. Shu sababli bu kabi qarashlar soha mutaxassislarining o‘z ishiga bo‘lgan mas’uliyatini oshirish, xato va kamchiliklar ustida ishlashiga ijobiy ta’sir etadi.

Maktabda informatika fanidan o‘qitiladigan darsliklar bugungi kun nuqtayi nazaridan ancha eskirgani va ularni zamonaviy ilm-fan ma’lumotlari bilan boyitish zarur deb ta’kidlash – bu hech narsa aytilmadi deganidir. Chunki undagi kamchiliklarni sanab o‘tsak, yana bitta kitob bo‘ladi. Masalan, 7-sinf darsligini olib qarasangiz, unda keltirilgan IASNET tarmog‘ini hozirgi kunda kim biladi? Ammo undagi sanoq tizimlariga chuqurroq tox‘talish, ushbu fanni matematika bilan uzviy bog‘lash va shu bilan o‘quvchilarda qiziqishni oshirish mumkin bo‘ladi.

Albatta, bunday muammolar boshqa fan darsliklarida ham mavjud. Demak, fanda o‘rganilayotgan tadqiqot obyektlarni boshqa fanlar bilan bog‘lash zarur, bu esa mualliflardan chuqur bilimni va mahoratni talab qiladi.

Umuman olganda, har qanday maktab darsliklari bugungi va ertangi kun talabiga javob berishini aniqlashda ularni har tomonlama ekspertizadan o‘tkazish kerak bo‘ladi. Buning uchun taniqli pedagog-olimlar, amaliyotchi o‘qituvchilar tomonidan ochiq va sirli ravishda o‘rganishdan so‘ng darsliklarni chop etishga ruxsat etish zarur.

Hozirgi nashr etilgan darsliklarga nazar tashlaydigan bo‘lsak, ular bevosita DTS va kompetensiyaviy yondashuvga asoslangan bo‘lib, yangi o‘quv dasturlariga mos va dizayn jihatdan sifatli nashrga tayyorlangan. Demak, birinchi muammo bu DTS ni qayta ishlab chiqish zarur. Bunda kompetensiyaga emas, balkim bilimlarni shakllantirishga e’tibor qaratilishi lozim. Masalan, 6-sinf o‘quvchilari uchun informatika yo‘nalishidagi darslikda matn bilan ishlash asoslari berilgan, albatta, bu kompetensiya va u o‘quvchilarni aqliy rivojlantirmaydi. Umuman fikrlash qobiliyatini rivojlantirishga qaratilmagan darslik kimga kerak? Matn bilan ishlashni o‘quvchilar dasturlash jarayonida ham o‘rganib olishadi va buning uchun ularning qimmatli vaqtlarini yoqotish shart emas. Shu bois, bu jarayonda maktab o‘qituvchilarining fikr-mulohazalarini o‘rganish va ularning yangi sharoitga tayyorlash talab etiladi.

Yana bir e’tirof etilgan muammoga nazar tashlasak: O‘zbekiston Respublikasi Prezidentining “Axborot texnologiyalari va kommunikatsiyalarining joriy etilishini nazorat qilish, ularni himoya qilish tizimini takomillashtirish chora-tadbirlari to‘g‘risida”gi qarorida qayd etilishicha, davlat organlari va tashkilotlarida axborot-kommunikatsiya texnologiyalarini rivojlantirish, axborot xavfsizligini ta’minlash tizimini takomillashtirish bo‘yicha chora-tadbirlar ko‘rilayotganiga qaramasdan “Elektron hukumat” tizimining joriy etilishi va samarali faoliyat ko‘rsatishiga, axborot sohasidagi tahdidlarga qarshi kurashishga to‘sqinlik qiluvchi qator muammolar saqlanib qolmoqda. Ya’ni axborot xavfsizligi sohasidagi ushbu muammolarning negizi aslida maktab darsliklaridan kelib

chiqadi. Chunki axborot xavfsizligini ta'minlashda birinchi navbatda o'quvchilarni dasturlashga chuqur o'rgatish zarur bo'ladi.

Dasturlash jarayoni bevosita san'atga o'xshab ketadi. Bunda ham dasturlovchi oddiy harflar va belgilar orqali o'z tasavvurida yaratadigan olami bu dasturdir. Dasturni ishga tushirganda Siz o'ylagan narsalar qay darajada bajarilishini his qila boshlaysiz, hech qachon xayolingizga kelmagan xatoliklar paydo bo'la boshlaydi. Siz fikrlashni boshlaysiz, algoritmni o'zgartirasiz, yaxshilaysiz va yangi algoritmlarni kashf qilasiz. O'quvchilar dasturlash jarayonida ijodiy fikrlashni, murakkab vaziyatlarni yakka tartibda yoki jamoa bo'lib bartaraf etishni o'rganadi, eng so'nggi texnologiyalarni o'zlashtirib, ularni o'z dasturiy mahsulotlarida qo'llashga harakat qiladi. Bularning hammasi o'quvchilarni aqliy rivojlanishiga sabab bo'ladi.

E'tibor bering, bularning barchasi innovatsion faoliyatning o'zidir, chunki innovatsiya, bu-yanada mukammalroq holatga o'tish uchun yaratiluvchi yangiliklardan iborat bo'lib, o'ylab topish, ishlab chiqarish va ixtiro qilish lozim bo'lgan yangi vosita, yangi usul, yangi mahsulot, yangi texnologiyalar demakdir. Bu borada O'zbekiston Respublikasi Prezidenti Shavkat Mirziyoyevning —"Innovatsiya – bu kelajak degani" so'zlari katta ma'noga ega bo'lib, innovatsiya kelajakda jamiyat talab qilgan iqtisodiy, ijtimoiy, ekologik, ilmiy-texnik yoki boshqa turdagi samaraga erishish maqsadida ilmiy yangiliklarni joriy etishning yakuniy natijasi bo'lib hisoblanadi.

Aytish joizki, davlatimiz rahbari Shavkat Mirziyoyevning [2] keltirilgan qarori bu boradagi ishlarni zamon talabi darajasida takomillashtirishda muhim ahamiyat kasb etadi. Ayni kunda mazkur qarorning 3-ilovasi bilan "2018-2021 yillarda O'zbekiston Respublikasi Xalq ta'limi tizimini yanada takomillashtirish bo'yicha chora-tadbirlar" dasturi ishlab chiqilgan. Unga muvofiq, darslik va ilmiy-metodik adabiyotlar yaratish, nashrga tayyorlash va tajriba sinovdan o'tkazish tartibi Xalq ta'limi vazirligi tomonidan ishlab chiqilmoqda. Kelgusida maktab darsliklarini ushbu tartib asosida yaratish ko'zda tutilgan.

Shunday qilib, maktab darsliklarining sifatli bo'lishini ta'minlash bugungi kunning dolzarb vazifasiga aylanmoqda. Chunki bu darsliklar aziz farzandlarimiz bilimini boyitish, ma'naviy yetuk va barkamol qilib tarbiyalashda muhim ahamiyatga ega. Ularni sifatli, mazmunan boy va mukammal ilmiy xulosalar asosida yaratish esa mutaxassislarning asosiy vazifasidir.

Agar biz informatika fani doirasida to'liq dasturlash tilini joriy qilishni tushungan bo'lsak, endi qaysi dasturlash tilini kiritish haqida fikr yuritsak.

Informatika sohasida mavjud muammolardan biri – bu axborot xavfsizligidir. Bu soha ko'p qirrali bo'lib, ushbu sohada tayyorlanadigan mutaxassislarga qaysi dasturlash tillarini o'rgatishni oldindan belgilab qo'yish zarur. Hozirgi kunda Assembler, C++, Python, PHP, Java dasturlash tillari va ularninng har xil versiyalari ushbu sohada keng qo'llaniladi. Ammo, amaliy matematika sohasidagi masalalarni yechishda, masalan, Fortran dasturlash tili hamon qo'llanilib kelinmoqda. Buning asosiy sababi – Fortran tili kuchli amaliy dasturiy ta'minot paketiga ega ekanligida.

Yillar davomida to‘planib kelingan tajribadan kelib chiqqan holda va o‘quvchilarning malakasini inobatga olgan holda Python dasturlash tilini tavsiya qilish mumkin. Unda dasturlash texnologiyalarining barcha imkoniyatlari mujassamlashtirilgan. Python bu umumiy maqsadli dasturlash uchun keng tarzda foydalaniladigan yuqori darajali dasturlash tili bo‘lib, uni o‘rganish oson va u qulay sintaksisga ega. Undan tashqari skriptli dasturlash tillariga kiradi. Python dinamik tiplarni hosil qilishi, obyektga yo‘naltirilgan, funksional va strukturali, avtomatik ravishda xotirani boshqarish va albatta ko‘p oqimli dasturlash tillaridan biri. Dunyoning rivojlangan mamlakatlari universitet va kollejlarida o‘qitishda Python dasturlash tili qo‘llaniladi. Shuningdek erkin va ochiq kodli dasturiy ta’minotdir. Ko‘plab platformalarda hech qanday o‘zgartirishlarsiz ishlay oladi. Aynan shu sababdan, Python tilida ishlovchilar dunyoning yirik axborot kompaniyalarida nihoyatda yuqori talabga ega. Albatta, e’tiroz sifatida, ertaga boshqa dasturlash tillariga talab oshib ketsa, unda qanday ish yuritamiz. Bunga, javob sifatida, dasturlash doirasida darsliklarda algoritmlarga ko‘proq e’tibor berilishi zarur va uning negizida dasturlash tili o‘rganiladi. Shuning uchun, ushbu jarayonda, avvalo, o‘quvchilarga dasturlashning asosiy tamoyillarini o‘rgatishimiz zarur bo‘ladi. Dasturlashdan fundamental bilimlarga ega bo‘lgan mutaxassis bevosita boshqa tillarni ham tez o‘zlashtira oladi. Amaliyotdan ma’lumkim, agar yoshlarimiz dasturlash tilini o‘rganishda mustaqil ishlashni o‘rganmasa, bu sohani chuqur egallay olmaydi.

Shunday qilib, informatika fanidan maktab darsliklarini tubdan yangilash, ularni faqatgina matematika nuqtayi nazar hisob-kitob uchun emas, balkim til imkoniyatlarini yoritishga qaratilgan misollar bilan boyitish talab etiladi. Maktab darsliklariga qaysi dasturlash tilini kiritishni asosiy muammo qilmasdan, bevosita maktab darsliklarini tubdan yangilash talab etiladi.

ADABIYOTLAR

1.“Xalq ta’limi tizimida ta’lim sifatini baholash sohasidagi xalqaro tadqiqotlarni tashkil etish chora-tadbirlari to‘g‘risida” gi 2018 yil 8 dekabrdagi №997 sonli O‘zbekiston Respublikasi Vazirlar Mahkamasining qarori.

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TWITTER SENTIMENTS BASED ANALYSIS USING PYTHON

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Abstract. In this era, social media has most impact on the world. Every individual and organization are using social media in its own ways. The peoples expresses their opinions or review in the form of sentiments. Sentiment analysis is the process of data (text) analytics, which is used to analyze the tweets (text) based on different emotions of the people. It is an effective way to get public opinion on any interested topic. This paper is addressing the problem for the challenge launched by School of AI-Algiers, which consist of building a system that can classify tweets as Sad or Happy. Then it was tried to transform the tweets into something usable by different machine learning (ML) models, which are more efficient rather than other algorithms. Finally, we tested the trained model to see its efficiency on the new data.

Keywords: sentiments, analysis, analytics, tweets, classify, tweets, machine learning

INTRODUCTION

Now a days, Social media has become the most important tool to promote and boost up businesses, organizations, and educational institutions in their routine works. Social media analytics is the process of collecting the data from social media websites, and then performing different types of analytics or analysis on the collected data. These analytics are performed based on social media analytics tools. There are different social media analysis tools i.e. Facebook insights, Twitter analytics, YouTube Analytics and etc. These tools are applied based on the different algorithms on the datasets. Social media analytics is the significant for an organization to know about its products, feedback based on customers' sentiments i.e. either positive, negative, or neutral. Sentiment analysis is the process, which is used to examine the written text and then identify either it is positive or negative or neutral. It is based on the sentiments of the customers or users of a system or product. This sentiments-based analysis combinedly used natural language processing (NLP) and machine learning techniques (MLT). These are used to measure the public opinions, conduct surveys, and understand customer feedbacks.
In this paper, we are addressing the problem of performing the sentiment analysis on data from a social media analytics tool named twitter. Twitter is one type of social media that is often used and its users use Twitter to convey their tweets to the general public. The number of Twitter users has reached 330 million people worldwide [5]. Moreover, we have performed sentiment analysis of Twitter using machine learning, which can help organization to know about how people are talking by using their products or services. According to the rough idea, there is more than 321 million active users, sending a daily average of 500 million Tweets. Analyzing sentiments for tweets is very important to examine the people's opinion i.e. positive, negative or neutral. In this paper, the closer look is put on these tweets

to perform sentiment analysis using Python for an organization. Such an example is given, if we take this sentence-based tweet: "I don't find the app useful: it's really slow and constantly crashing". A sentiment analysis ML model would automatically tag this tweet as "Negative" user feedback.

This research work is organized as follows: section 2 presents the related work on this field. Section 3 demonstrates the methodology. Section 4 shows the results, discussions and the findings. Finally, section 5 concludes the paper.

Litrature work

In this paper [1], the author has expressed the automatic sentiment analysis to get public opinion on tweets sent from energy consumers to their energy providers. The result of this sentiment analysis is expressed on Twitter by UK energy consumers. Then they optimized these results by combining two functions (lexica) to improve its accuracy. The first lexicon is used to extract the sentiment-bearing terms and negative sentiments. This paper [2] presents comparison of different deep learning methods (CNN and LSTM), which are used for sentiment analysis on Twitter data. This study also contributes to the field of sentiment analysis by analyzing the performances, advantages and limitations of the above methods. Moreover, this paper presented configurations based on an approved dataset about sentiment analysis which is created from Twitter data under a single testing framework.

This paper [3] has addressed the people's sentiments about a trend, product or brand. It is based on Twitter API, which is used to access the tweets directly from twitter. These accessed bag of words (tweets) were in form of txt files was taken to compare the tweets, and then classify them into positive, negative and neutral tweets. The results of this analysis about the people's opinions (in the form of tweets) by using visualization techniques i.e. histogram and Pie chart. The author of this paper [4] presents an online system for real-time twitter sentiment analysis and classification. The proposed system required that a user enter the query and get a graphical representation of the tweets polarity based on tweets categories (positive, negative, and neutral). They have used these classification algorithms: Simple Voter and Naïve Bayes algorithms to classify tweets.

This paper [5] has presented the process of sentiment analysis based on two techniques lexicons and multiplication polarity. The better accuracy results are presented by using above discussed techniques, but its accuracy is lower than using machine learning algorithm. The paper [6] has presented a model-based analysis, which can be used to perform sentiment analysis on real-world data collected from Twitter. This Data is based on two organizations (McDonalds and KFC) to show, which restaurant has more popularity. The above said model is using the supervised and unsupervised machine learning algorithms together i.e. (Naïve Bayes, SVM, Random Forest etc.). Moreover, the extracted tweets are then classified based on their sentiment into positive, negative or neutral.

In this paper [7], the authors have presented the sentiment analysis based on open source approach, in which they have collected tweets from Twitter API (data from E-health care peoples). These tweets are then pre-processed, analyzed and visualized using R. The classification of tweets into ten categories (disgust, fear,

anger, anticipation, sadness, trust, surprise, positive and negative). The paper [8], has presented the extraction of sentiment from a microblogging website named Twitter (data from movie data set). The results for the Twitter collected data are then presented as (positive, negative and neutral sentiments).

In this paper [9], the author has expressed an approach, which is based data mining classifiers and used for analyzing the sentiments of the users. This paper has used these classifiers (K-nearest neighbor (IBK), Random Forest, Bays Net, and Naive Bayes) to classify tweets and predicting their accuracy. The author has proved that k nearest neighbour (IBK) classifier gives very high predictive accuracy. This survey paper [10] has presented and compared different sentiment analysis types/techniques and their methodology. These are used to perform sentiment's extraction from tweets. This paper has also showed the improved accuracy based on semantic analysis and by using machine learning techniques i.e. SVM, Naïve Bayes and maximum entropy.

In this paper [11], the author expressed comparative analysis of Support Vector Machine (SVM) algorithm i.e. SMO, SMOTE and NBM. The author has performed this analysis by using Weka Tool with machine learning algorithms for data mining. This tool is also used to preprocess and classify the datasets. In this paper [12], the author has presented predictive model based on data mining tools for predicting box office performance of movies based on data from social media and web sources movie databases. They performed this sentiment analysis (predictions) based on three categories, (Hit, Neutral and Flop), using Weka's K-Means and J48 algorithms.

This paper [13] has presented the sentiment analysis to be performed on women's e-commerce reviews from Amazon using Weka tool. These algorithms classify text into two broad categories good or bad, its further categories are: angry, sad, unhappy, joyous, satisfactory, and etc. In this paper [14], the author has presented an approach based on visual analysis of Twitter timeseries data to explore it. This approach is used to combine the sentiment and stream analysis with geo and time-based interactive visualizations for the exploration of Twitter data streams.

The paper [15] has proposed the Possibilistic Fuzzy C-Means with SVM to improve accuracy on movie tweets and worked on up to 3-grams. The author also has applied these two major techniques, which are classification and clustering to perform sentiment analysis of twitter data. To provide better results and accuracy, then this paper uses new set of features extraction, using machine learning technique and hybrid dictionary (afinn, lexicon).

Methodology

In this section, tweets-based dataset is shown, on which we have performed Twitter based sentiment analysis using python programming language. A machine learning-based system was built, which is classified tweets as 'Sad' or 'Happy'. Natural Language Processing Tool Kit (NLTK) is used to pre-process the tweets, which are wasting the memory and extract the useful sentiments. After it, the data through machine learning algorithms was prepared and them formulated the results in the form of accuracy.

In the following model (figure 3), firstly the tweets were extracted tweets from the data set named train and test from Kaggle website. Secondly, a method is applied to find all the text (visualize), which contained @expressions in the tweets by users. Thirdly, analyzed the emoticons (uses symbols i.e. 'xd', ';)' ':(') included in this dataset, then tried to classify them as 'happy' and 'sad'. After analyzing the tweets in the dataset, it was noticed that there is lot of data, which is garbage (useless in the memory). Fourthly, we removed the garbage data (process of data pre-processing) by using NLTK some techniques i.e. tokenize all the extracted tweets, stop words, stemming, lemmatization (Porter Stemmer algorithm) and etc.

In the Fifth phase, the data was prepared by bag of words algorithm and pipeline for transforming data into more practical form. Bag of words uses Term Frequency - Inverse Document Frequency (TF-IDF), which counts the how many times a term is presented. Building pipelines is process, where Transformer-Mixin and Base-Estimator algorithms are used. In the sixth phase, a classifier naïve Bayes classifier is selected to perform above discussed task of tweets-based classification. This classifier is used with these algorithms: Logistic Regression, Bernoulli NB, and Multinomial NB to perform classification.

In the seventh phase, after training the model the test of this model was done through inputting the different tweets and calculating their probability of happy and sad. It assigned the calculated probability to each tweet, how much a tweet is happy and sad in the form of percentage.

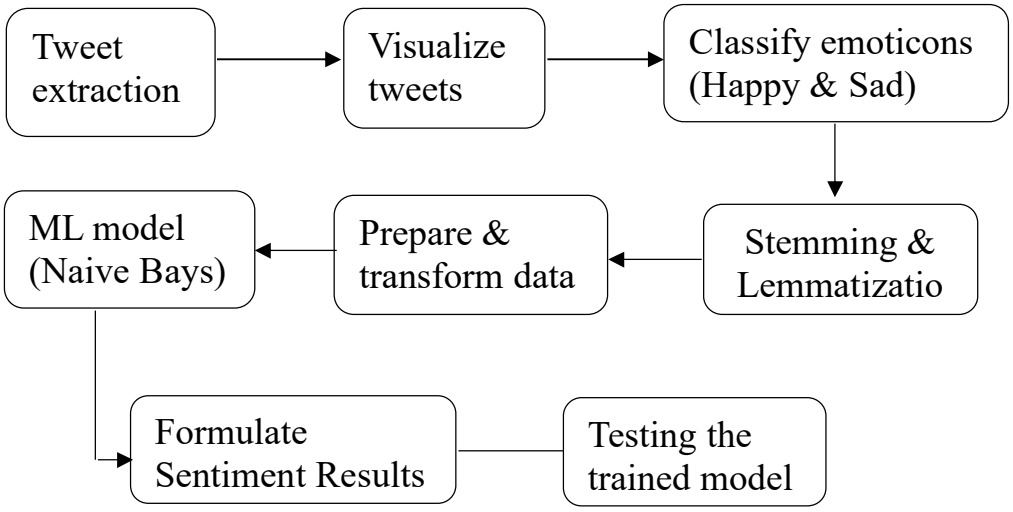

Figure 3. Model for twitter-based sentiment analysis by using naïve bays.

RESULTS AND DISCUSSIONS

In this section, the results are shown of the model which is formulated through different phases (described in the previous section). The data set contained columns are: Id, Label, and Tweet text. Its total size is 99989 rows × 3 columns, which shown below in the table 1.

Table 1. Extracted tweets from dataset.

Id	Label	Tweet
1	0	@user when a father is dysfunctional and is s...

2	0	@user @user thanks for #lyft credit i can't us...
3	0	bindery your majesty
4	0	#model i love u take with u all the time in ...
5	0	Facts guide: society now #motivation
...	...	...
31962	0	thank you @user for you follow

In the third phase (Table 2), where the list of extracted emoticons (tweets) are classified into happy and sad emoticons. This classification is based on the matching symbols that were used during writing of tweets by users. This is initial classification without using any algorithm.

Table 2. A list of extracted emoticons from tweets and then classify as happy and sad.

List of emoticons	Happy emoticons	Sad emoticons
(2297, ': '), (954, 'x '), (500, 'xc'), (448, 'xp'), (360, ':)'), (137, ':('), (132, 'xx'), (119, 'xo'), (82, ':-'), (70, ':d'), (45, ':-)'), (38, 'xd'), (36, ':3'), …	'xd', ';)', ';-)', ':-)', ':)', '; d', ': p', ': d', ': d'	':(', ':|', ':/', ":'("

Here in the (Figure 3), the results of twitter sentiment analysis-based on these tasks are: data pre-processing (using NLTK), data preparation, building pipelines (transform), selecting the naïve Bayes classifiers (*Logistic regression*, *BeroulliNB*, *MultinomialNB*). The accuracy scores of these classifiers are shown below in table III, the *logistic regression* has accuracy score on the learning data = 0.9443972645599606). The *bernoulliNB* classifier has scored on the learning data (accuracy) =0.9308988512939704. The *multinomialNB* classifier has scored on the learning data (accuracy) = 0.9388101729763554. According to this data set, the logistic regression classifiers has highest accuracy score, which is 0.94 or 94%.

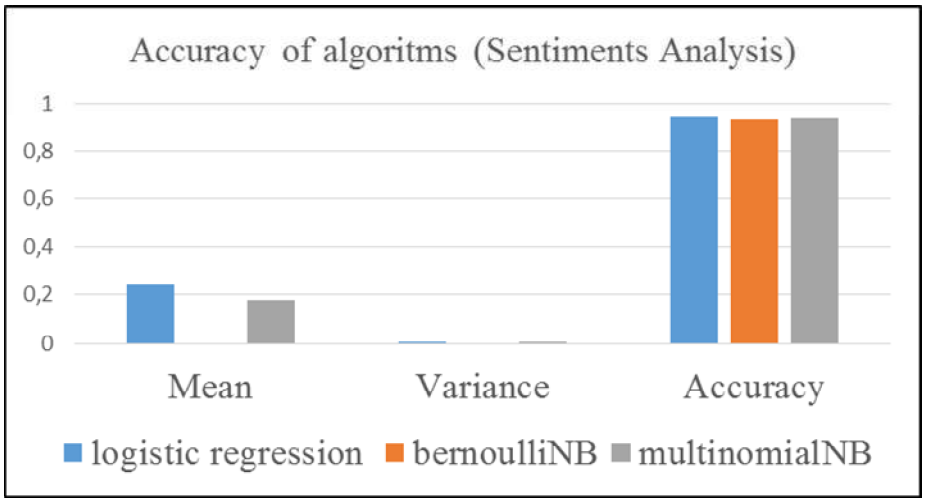

Figure 4. The results of twitter-based sentiment analysis using these naïve bayes based algorithms.

In the following (Table IV), the results of selected test data set performed on our above described trained model are shown. Here we input a tweet (text), then new test model classified the tweets based on the trained model. This test model also calculated and assigned the sad and happy probabilities to the input tweets. On the basis of these probabilities, it was seen that which tweet has the percentage of sadness and happiness.

Table 3. The result of testing model, which gives probability (happy and sad) on input tweets.

Tweet (Text)	Sad (Prob.)	Happy (Prob.)	Sentiments
is so sad for my APL friend.....	0.9997	0.0002	Sad
omg its already 7:30 :O	0.9923	0.007634	Sad
it was amazing	0.150	0.849	Happy
Feeling like shit right now.	0.7096	0.29	Sad
thanks to all the haters up in my face all day!	0.1697	0.8302	Happy
I must think about positive.	0.4115	0.5884	moderate

Conclusion

Now a days, Twitter consist lot of data in the form of tweets, which is expressed by the people. This data needs to be analyzed based on the people's sentiments that can be happy or sad. In this paper, the solution is proposed in the form of Twitter based sentiment analysis by using dataset. This analysis was implemented in the python language by using these tasks i.e. NLTK, pre-processing, preparation data, and naïve Bayes based classifiers. A model was presented, which is used to classify tweets as it has happy or sad sentiments. This model has used these three classifiers: *Logistic regression*, *BeroulliNB*, *MultinomialNB*. The logistic regression classifier has highest probability (94%). On the basis of this trained model, a test model was developed that was used to perform the classification of new tweets into happy or sad (sentiments) probabilities.

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YAQIN QO‘SHNILAR USULIDA KLASSIFIKATSIYALASH MASALASI.

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Annotatsiya. *Tezisda suniy intelektda turli toifadagi sinflarni to’gri ajratishning k yaqin qo’shnilar usuli haqida malumot berilgan.*

Kalit so’zlar: *klassifikatsiya, obyekt, sinf.*

Аннотация. *Тезис предоставляет информацию о методе k близких соседей по искусственному интеллекту для правильного различения разных классов.*

Ключевые слова. *классификация, объект, класс.*

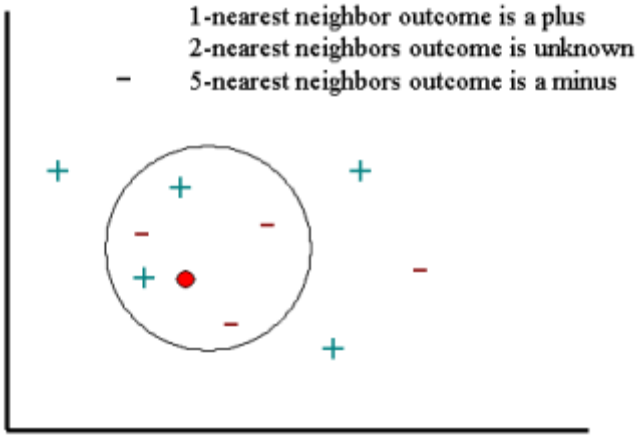
Annotation. *The thesis provides information on the k-nearest method of correctly distinguishing different classes of classes in artificial intelligence.*

Keywords. *classification, object, class.*

k yaqin qo‘shnilar usuli (angl. *k-nearest neighbor algorithm*) – obyektlarni avtomatik tarzda klassifikatsiyalash usulidir. Yaqin qo‘shnilar usulining asosiy tamoyili (prinsipi) shundayki, berilgan elemeintning qo‘shnilari orasida eng keng tarqalgan sinfga obyekt beriladi.

Qo‘shnilar sinflari oldindan ma’lum bo‘lgan obyektlarning to‘plamidan olinadi, va , shu usul uchun muhim bo‘lgan k ning qiymatidan kelib chiqib ular orasida qaysi sinf ko‘p sonli ekanligi hisoblab chiqiladi.

Klassifikatsiyalash. *k yaqin qo‘shnilar usuli*ning ishlash prinsipini ko‘z oldimizga keltirish uchun biror miqdordagi oldindan ma’lum misollar (so‘rov nuqtalri) orasidan yangi obyektlarni klassifikatsiyalash masalasini o‘rganamiz. Bu masala quyida tasvirlangan; misollar (oldindan ma’lum ekzemplyarlar) "+" yoki "-" ishora bilan, so‘rov nuqtalari esa qizil doiracha bilan belgilangan. Bizning maqsadimiz ularning eng yaqin qo‘shnilarining maxsus tanlangan sonidan foydalanib so‘rov nuqtasi aks-sadosining klassifikatsiyasini baholashdan iborat. Boshqacha aytganda, biz so‘rov nuqtalarini "+" yoki "-" belgilaridan qaysi biri yordamida klassifikatsiya qilish kerakligini bilmoqchimiz.



Boshida bitta eng yaqin qo‘shni bo‘lgan holda *k ta eng yaqin qo‘shnilar usuli* tahlili protsedurasi ishining natijasini ko‘rib chiqamiz. Bu holda so‘rov nuqtasining aks-sadosi plyus ishorasi bo‘lishi oldindan ma’lum ekanligi tushunarli (chunki eng yaqin qo‘shni nuqta plyus ishorasiga ega). Endi foydalanilayotgan eng yaqin qo‘shnilar sonini ikkitaga yetkazamiz. Bu gal *k ta eng yaqin qo‘shnilar usuli so‘rov nuqtasi aks-sadosini* klassifitsikatsiya qila olmaydi, bunga sabab ikkinchi eng yaqin qo‘shni minus ishorasiga ega va ikkala ishoralar teng kuchli (ya’ni bir hil miqdordagi ovozlar bilan g‘olib bo‘ladi).Keyingi qadamda foydalanilayotgan eng yaqin qo‘shnilar sonini 5 taga yetkazamiz.Shunday qilib, so‘rov nuqtasi atrofining butun bir atirofi topiladi.(grafikada uning chegarasi qizil aylana bilan ko‘rsatilgan).Sohada 2 ta nuqta “+”va 3 ta nuqta “-” ishora bilan bo‘lganligi uchun k ta eng yaqin qo‘shnilar usulining algoritimi so‘rov nuqtasining aks-sadosi “-ishorasini beradi.”

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AXBOROT KOMMUNIKATSION TIZIMLARI YORDAMIDA BILIMLAR NAZORATINI TADBIQ QILISH

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Annotatsiya: *Xozirgi kunga kelib axborot texnologiyalari jadal rivojlanib bormoqda shu munosabat bilan o'quvchilarni bilimini nazorat qilish mexanizmlarini ko'rib chiqish va yaratish talab qilinyapti.*

Kalit so'zlar: *Multimediya, dastur, Ispring, Easy Quizzy, test, PHP, YII, Codeigniter, Laravel freymvorklari*

Аннотация: *В наше время, с быстрым развитием информационных технологий, необходимо рассмотреть и создать механизмы контроля знаний студентов.*

Ключевые слова: *мультимедиа, программное обеспечение, Ispring, Easy Quizzy, тест, PHP, YII, Codeigniter, фреймворки Laravel*

Abstract: *Nowadays, with the rapid development of information technology, it is necessary to consider and create mechanisms for controlling students' knowledge.*

Keywords: *multimedia, software, Ispring, Easy Quizzy, test, PHP, YII, Codeigniter, Laravel frameworks*

Bilimlar nazoratini tadbiq qilish dasturini yaratishda dasturchi oldida asosan 2 xil usul mavjud bo'ladi.

1) Multimediyali test yaratish dasturlaridan foydalangan holda
2) Dasturchi o'zi uchun yangi dasturiy ta'minot yaratish yordamida

Har bir usul o'z navbatida qator qulayliklarga ega. Bugungi tezisda asosan shu usullar haqida so'z yuritiladi.

Multimediyali test yaratish dasturlari horijiy dasturlash kompaniyalari tomonidan yaratilgan dasturlar hisoblanadi. Ularga Ispring quiz maker, Easy Quizzy dasturlarini misol keltirish mumkin. Bu dasturlarning afzallik taraflari:

- Dastur yordamida turli murakkablikdagi, turli ko'rinishdagi testlar yaratilishi;
- Testlarga rasm, multimediya vositalarini qo'yish juda oson tarzda amalga oshirilishi;
- Nostandart ko'rinishdagi ko'pchilik talabalar uchun yangilik bo'lgan javobni tartiblash, mozaika, moslikni topish, geografik xaritalarni ko'rsatish kabi test ko'rinishlari mavjudligi;
- Baholash mezonini mustaqil tarzda yaratish;
- Javob variantlarini tartibini almashgan holda keltirish;
- Individual ko'rinishdagi testlar yaratish;
- Testni exe, html, swf kabi kengaytmalarda saqlash;
- Testlarning xalqaro standartlarga mos kelishi
- Natijalarni jamlash va tahlil qilish

- Hisobot va qaydnomalarni bosmaga chiqarish
- Mashq va o'qitish rejimilarida ishlashi.

Lekin shu bilan bir qatorda ko'pchilik dasturlardan foydalanish uchun dastur litsenziyasini sotish olish zarur. Litsenziya olinmagan holda dasturdan foydalanish qonunga xilof hisoblanadi

Respublikamizda Axborot kommunikatsiya texnologiyalarini rivojlantirish borasida qator ishlar amalga oshirilmoqda. Buning yaqqol misoli qilib O'zbekiston Respublikasi ta'lim darajasini oshirish bo'yicha 165 ta davlat ichida ikkinchi o'rinda turganligi buning yaqqol dalilidir. Bu esa mustaqillik yillaridagi ta'lim sifatini oshirishga bo'lgan harakatlar bejizga ketmaganligini bildiradi. O'zbekiston Respublikasining "Ta'lim to'g'risida" gi qonuni, kadrlar tayyorlash milliy dasturi va Prezidentimizning 2012-yil 28-maydagi "Malakali pedagog kadrlar tayorlash hamda o'rta maxsus kasb-hunar ta'limi muassasalarini shunday kadrlar bilan ta'minlash tizimini yanada takomillashtirishga oid chora-tadbirlar to'g'risida"gi qarori va boshqa ta'lim sohasiga oid qonunlar ta'lim jarayoniga yangi pedagogik texnologiyalarni tadbiq etish zaruratini yanada orttirdi.

Prezidentimiz I.A.Karimov 2012-yil 28-maydagi qarorida "ta'lim jarayonida ilg'or pedagogik uslub va texnologiyalarni ("case stady" uslubi, loyixalar uslubi, hamkorlikda o'qitish, amaliy o'yin, interfaol ta'lim uslubi va boshqalar), axborot kommunikatsiya texnologiyalari, elektron ta'lim resurslari va multemediya taqdimotlaridan foydalanish borasida chet el tajribasini chuqur va har tomonlama o'rganib chiqish" lozimliligi haqida alohida ta'kidlab o'tgan.

Test dasturlarini yaratishning yana bir usuli bu dasturchi o'zi mustaqil tarzda ishlovchi test dasturini yaratishidir. Test dasturini yaratish uchun c++, java dasturlash tillaridan foydalangan holda yoki web interfeys uchun mo'ljallangan holda yaratish variantlari mavjud. Men bulardan web interfeys uchun mo'ljallangan holda yaratishni tanlab oldim. Buning bir necha sabablari mavjud:

- Web interfeysda ishlovchi test dasturidan foydalanish uchun hech qanday ortiqcha dasturiy ta'minotlar kerak emas. Faqatgina web brauzer hamda tarmoqqa chiqish imkoniyati yaratilsa kifoya
- Bu dasturlar krossplatformali hisoblanadi, ya'ni dasturlar ham Windows, Linux, Unix deyarli barrcha operatsion tizimlarda ishlashi mumkin. Bu imkoniyat yuqorida sanalgan ba'zi multimediyali test yaratish dasturlarida ham mavjud emas
- Boshqarish imkoniyati to'laligicha administrator qo'lida ekanligi;
- Testlarni doimiy tarzda dasturiy kodlarsiz yangilab, kiritib turish imkoniyati mavjudligi;

Bunday dasturiy ta'minot yaratish uchun men PHP freymvorklar orasidan YII, Codeigniter, Laravel freymvorklarini imkoniyatlari bilan tanishib chiqdim hamda ular orasidan Laravel freymvorkini tanladim. Laravel yordamida test dasturini yaratish usullari haqida kelgusi maqolalarimda to'la to'xtalib o'tmoqchiman.

ZAMONAVIY INFORMATIKA - ZAMONAVIY JAMIYATNI BOSHQARISH KALITI

Xushvaktov A.A., Nabiyev F.A. SamVMI akademik litseyi informatika fani o'qituvchisi. O'zbekiston.

Annotatsiya: *Maqolada zamonaviy jamiyatni boshqarishda zamonaviy kompyuter texnologiyalari, axborot manbalari, texnik tizimlarning o'rni hamda ularni tadbiq etishning ayrim huquqiy jihatlari keltirlgan.*

Kalit so'zlar: *Zamonaviy, jamiyat, kompyuter, axborot.*

Аннотация: *В статье рассматривается проблема использования информационных источников, технических устройств современным обществом, а также применение современных компьютерных технологий в некоторых правовых аспектах.*

Ключевые слова: *современность, общество, компьютер, информация.*

Annotation: *The article describes the role of modern compyuter technology, information sources, technical systems in managing modern society and some legal aspects of their application.*

Keywords: *Modern, society, computer, information.*

Hozirgi kunda zamonaviy jamiyat deganda – barcha faoliyat sohalariga intelektual mehnat quroli sifatida dunyoviy bilim manbalariga, axborot fondlariga kirish, ulardan samarali foydalanish, ixtiyoriy axborotni juda qisqa muddat ichida qayta ishlash, jarayonlarni, voqealarni va hodisalarni modellashtirish imkonini beruvchi kompyuter va boshqa axborot texnologiyalari kiritilgan jamiyatni tushunamiz.

Zamonaviy jamiyatda inson axborotlarni qayta ishlashda zamonaviy vositalar bilan ishlashga o'zini tayyorlashi kerak. Bu shuni ko'rsatadiki inson axborotlarga murojaat etishda ma'lum darajadagi axborot madaniyatiga ega bo'lishi lozim.

Axborot madaniyati - axborotlar bilan maqsadga intilib ishlashni bilish va axborotlarni olish uchun, qayta ishlash, kompyuter texnologiyalari va zamonaviy texnik vositalarni va usullarni qo'llashni anglatadi. Bu esa barcha tarmoq yo'nalishlarifagi boshqaruv masalalarini tezlik bilan xal etish imkonini beradi va jamiyatning ravnaq topishida muhim o'rin egallaydi.

Axborot texnologiyalari rivojlanishining zamonaviy darajasi shundan iboratki, respublikada jahon axborot makonining infratuzilmalari va milliy axborot-hisoblash tarmog'i integrasiyasiga mos keluvchi milliy tizimni yaratish iqtisodiyot, boshqarish, fan va ta'lim samaradorligining muhim omili bo'lmoqda. Bu muammolar ancha murakkab va ayni paytda respublikamiz uchun dolzarbdir. Hozirda olib borilayotgan iqtisodiy, tuzilmaviy va boshqa o'zgarishlarni amalga oshirish natijalari respublikada axborotlashtirish bilan bog'liq muammolarning qanday va qaysi muddatlarda hal etilishiga ham bog'liqdir.

Respublikamizda ham mustaqillikning dastlabki yillaridayoq axborot texnologiyalarini tadbiq etish va rivojlantirish uchun ko'plab qonun va qarorlar qabul qilindi. Bu esa o'z navbatida hozirgi zamonaviy jamiyatni boshqarishda o'z so'zni aytmoqda. Davlat boshqarish organlari, oliy va o'rta maxsus o'quv yurtlari, ishlab chiqarish korxonalari va firmalarda kompyuter texnikasi, aloqa vositalari, dasturiy va axborot ta'minoti, axborot tizimlari bo'yicha malakali kadrlar ishlamoqda.

Yangi O'zbekistonni rivojlangan davlatlar qatoridan mustahkam o'rin egallashi uchun zamonaviy kompyuter texnologiyalarini jamiyatimizning barcha sohalariga joriy etish zarur.

Gap informatika to'g'risida ketganida, har bir kishi qandaydir axborotlar haqida so'z borayotganligi va bu axborotlar nimagadir yoki kimgadir tegishli ekanligini tushunadi. Bu axborotlar qayerdan olingan, qanday saqlangan va ularning manbai qayerda ekanligi ko'pchilikni qiziqtirishi tabiiy hol. Hozirgi kunda har kuni yangi bir qurilmaning yaratilayotganligini hisobga olsak ular yodamida uzatilayotgan va qayta ishlanayotgan axborotlarning ko'lami tasavvur qilish qiyin emas.

Yurtimizda ham zamonaviy jamiyatni axborot texnologiyalari yordamida boshqarish bo'yicha ko'plab ishlar amalga oshirilmoqda. Jumladan, O'zbekiston Respublikasi Prezidentining "Axborot kommunikatsiya texnologiyalari sohasidagi loyihalarni boshqarish tizimini yanada takomillashtirish chora-tadbirlari to'g'risida" 2017 yil 29-avgustdagi PQ-3245 son qaroriga muvofiq, shuning "Xavfiz shahar" loyihasini amalga oshirish borasida yagona texnologik yondashuvni ishlab chiqish va amalga oshirishning bosqichlarini belgilash maqsadida Vazirlar Mahkamasining "Buxoro, Samarqand, Xiva va Shahrisabz shaharlarida xavfsiz turizmni ta'minlash chora-tadbirlari to'g'risida" 2017-yil 23-noyabrdagi 939-son va "Samarqand shahrida "112" yagona raqami orqali shoshilinch operativ xizmatlarni chaqirish tizimini tshkil qilish to'g'risida" 2017-yil 5-dekabrdagi 966-son qarorlariga muvofiq amalga oshirilayotgan "Xavfsiz turizm" hamda "Samarqand shahridagi 112 yagona navbatchilik-dispetcherlik xizmati" loyihalari hamda Yo'l harakati qoidalarining buzilishlarini maxsus avtomatlashtirilgan texnik foto va videofiksatsiya vositalari yordamida qayd qilish tizimi "Xavfsiz shahar" apparat-dasturiy kompleksi yaratildi.

Bunday ishlarning samarasini esa yo'llarda yo'l transport hodisalarining keskin kamayganligi hamda yurtimizga tashrif buyurayotgan chet ellik sayyohlar oqimidan ham bilish mumkin. Har qanday jamiyatda ham inson sog'lig'i, xavfsizligi oliy o'rinda turadi. Zamonaviy jamiyatni boshqarishda zamonaviy kompyuter texnologiyalarini qo'llash, inson olimini kamaytirish, vujudga kelayotgan vaziyatlarni tez va yuqori aniqlikda bartaraf etishga xizmat qiladi.

Hozirgi kunda dunyo hamjamiyatini "Koronavirus" atalmish balo tashvishga solib qo'yganligi hammamizga kundek ravshan. Mana shunday og'ir vaziyatda ham axborot oqimi ko'paysa ko'paydiki kamaygani yo'q. Turli xil ijtimoiy tarmoqlar, OAV, qo'yingki, oddiy aholi o'rtasida ham bugunki kun mavzusi shu.

Ushbu kasallikni O'zbekistonga kirib kelishi va tarqalishini oldini olish bo'yicha olib borilayotgan ishlarni yanada kuchaytirish maqsadida 2020 yil 28

yanvar kuni Vazirlar Mahkamasida Bosh vazir boshchiligida Epidemiyaga qarshi kurash favqulotda komissiyasining yig'ilishi o'tkazildi. Unda qilinayotgan ishlar muhokama qilinib, qo'shimcha amalga oshirilishi kerak bo'lgan profilaktik chora-tadbirlar belgilanib ijroga qaratildi.

Koronavirus infeksiyasi tarqalishining oldini olish faqat hukumat yoki sog'liqni saqlash tizimi xodimlarining ishi emasligini barchamiz tushunib etdik. Lekin ming afsuslar bo'sinki, birinchi kunlardagi odamlar orasida tarqalgan mish-mishlar, asossiz gaplar bizning axborot oqimidan qay darajada foydalana olayotganligimizni ko'rsatrib berdi. Ayrim ijtimoy tarmoqlarda oz'lariga piar yaratish uchun turli xil bo'hton gaplarni ham tarqatishdi. Bu esa albatta aholi o'rtasida vaxima keltirib chiqardi.

Hozirgi kunda ijtimoy tarmoqlarda koronavirus haqida turli xil asossiz axborotlar tarqalishining oldini olish bo'yicha ham maxsus komissiya ish olib bormoqda. OAV, vazirliklar va jamoatchilik saytlari orqali koronavirus haqida ishonchli ma'lumotlar berib borilmoqda. Har qanday jamiyatning asosida ishlab chiqarish muhim o'rin tutadi. Hozirgi vaziyatda korxona va tashkilot xodimlarining masofadan turib ish faoliyatlarini uzluksiz olib borishlari juda muhim. Bu ishlarni albatta zamonaviy kompyuter texnologiyalari, axborot tizimlarisiz amalga oshirishning iloji yo'q.

Inson organizmida qon qanchalik muhim o'rin tutsa zamonaviy jamiyatni boshqarishda ham zamonaviy kompyuter texnologiyalarining o'rni beqiyos.

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РОЛЬ ИНФОРМАТИЗАЦИИ В СОВРЕМЕННОМ МИРЕ

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Аннотация: *Как всем уже известно на сегоднешный день одним из основных факторов влияния научно-технического прогресса на все сферы деятельности человека является широкое использование новых информационных технологий. Среди важнейших сфер, в которых информационные технологии играют решающую и главную роль, особое место занимает не только сфера управления а в сфере образования тоже имеет очень важный роль. В данной статей описаны вопросы взаимосвязи информатики и управления, а также роль, которая отводится информатике в процессах образование а так в сфере услуг.*

Ключевые слова: *Информационные технологии, информатика, управления, предприятие, стратегия, инновация.*

Annotation: *As everyone already knows today, one of the main factors influencing scientific and technological progress on all spheres of human activity is the widespread use of new information technologies. Among the most important areas in which information technologies play a decisive and main role, not only the management sphere occupies a special place, but also has a very important role in education. This article describes the relationship between computer science and management, as well as the role that computer science plays in education and in the service sector.*

Key words: *Information technology, computer science, management, enterprise, strategy, innovation.*

В настоящий время компьютерные технологии рассматривается не как устройство, позволяющее организовать конкретную практическую деятельность на более высоком профессиональном уровне, а именно один из путей повышения эффективности профессиональной деятельности за счет более полного и широкого применения возможностей различных методов, программ и систем. Термины «информация» и «информатика» — одни из самых популярных в нашей время. Информацию можно воспринимать по-разному: сохранит в памяти или записать на различных ресурсах. Сегодня информация осознана современным обществом как необходимое условие для любой целесообразной деятельности так же как в обществе так и в образование. Она становится важным стратегическим ресурсом [5]. Можно пометить что информационные ресурсы — это знания, подготовленные людьми для использования в обществе, в образование также различных сфере деятельности и зафиксированные на технических ресурсах или материальных носителях. Информационные ресурсы всей раны, региона, организации все больше всего рассматриваются как стратегические ресурсы, аналогичные по

значимости запасам сырья, энергии, ископаемых и прочим ресурсам. Развивающие мировые информационные ресурсы позволяет:

Перевернут деятельность по оказанию информационных услуг в широко популярную глобальную человеческую деятельность;

Сформулировать всемерный и внутригосударственный рынок информационных услуг [6];

Повысить эффективности, обоснованности и оперативности принимаемых решений в фирмах, банках, биржах, промышленности, торговле и др. за счет своевременного использования необходимой информации.

Решение проблемы, связанные с работой таких объединений инновационной инфраструктуры, как инновационный центр, бизнес инкубатор, технопарк, наукоград, технополисов и т.д [7].

Как нам уже известно термены "управление" и "информатика" связаны между собой [3]. Объекты, изучаемые информатикой, имеют много общего с объектами, изучаемыми теорией управления. Чтобы понят связь между теории управления с информатикой, нужно пометит основную категорию управления - цель. В понятие определении информатики в явной форме не содержатся цели алгоритмизации, анализ, принятие и выработка решений, контроль по принципу обратной связи и оценка "качества" достижения цели [8].

Следует обратить внимание, что в настоящее время получили огромную популярность социальные сети, которые стали уже неотъемлемой частью жизни большого количества людей, поэтому предприятию следует обратить внимание на такой вид рекламы, как реклама в социальных сетях. Имеет смысл поручить одному из менеджеров по продаже вести страницу компании в социальных сетях (Инстаграме, ВКонтакте, Твиттере, Фейсбуке, Одноклассниках) [4]. Там можно рассказывать интересные истории, общаться со своими покупателями или публиковать информацию о новых товарах или акциях, также можно работать в сфере образование, например создать группы для кафедры где будет приставлена все информации.

Актуальной является задача создания единого информационного управления для получения и исследования информацией во всей сфере [9].

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MAPLE DASTURIDA TENGLAMA VA TENGSIZLIKLARNI YECHISH.

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Annotatsiya: *Ushbu maqolada matematik paket Maple dasturida oddiy tenglamalarni, 132oppish132ic132ic tenglamalarni shuningdek tenglamalar sistemasini yechish ko'rib chiqildi.*

Kalit so'zlar: *Maple, solve, fsolve, tengmala, tengsizlik, 132oppish132ic132ic tenglama, interval*

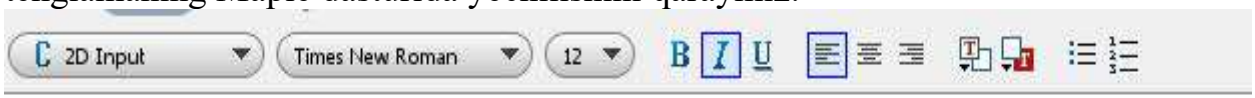
Annotation: *In this paper, we have solved simple equations, trigonometric equations and systems of equations in Maple.*

Keywords*: Maple, solve, fsolve, equation, inequality, trigonometric equation, interval.*

Аннотация: *Эта статья обсуждает решение простых уравнений, тригонометрических уравнений и систем уравнений в Maple.*

Ключевые слова:*Maple,solve,fsolve, уравнение, неравенства, тригонометрических уравнение, интервал.*

Maple dasturiy paketida tenglamalarni yechish uchun universal buyruq solve(t,x) mavjud, bu yerda t – tenglama, x – tenglamadagi noma'lum o'zgaruvchi. Bu buyruqning bajarilishi natijasida chiqarish satrida ifoda paydo bo'ladi, bu ana shu tenglamaning yechimi hisoblanadi. Quyida oddiy tenglamaning Maple dasturida yechilishini qaraymiz:



$$> solve(a \cdot x + b = c, x)$$

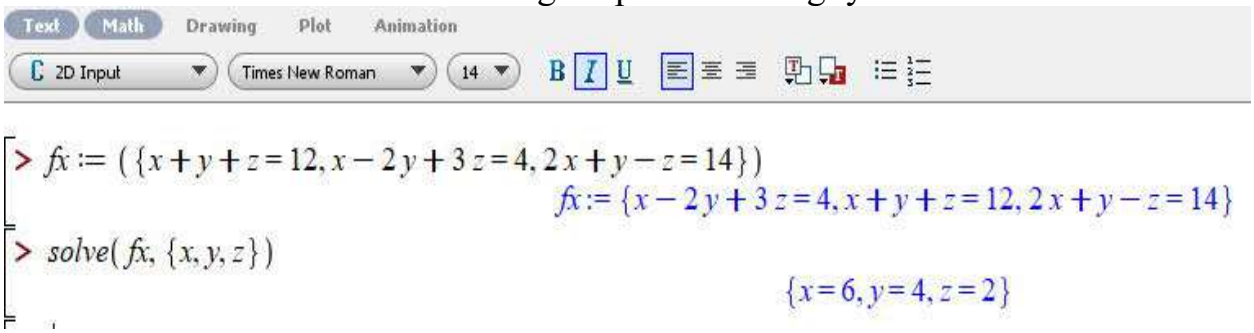
$$-\frac{b-c}{a}$$

Agar tenglama bir nechta yechimga ega bo'lsa va undan 132oppis hisoblashlarda foydalanish kerak bo'lsa, u holda solve buyrug'iga biror-bir nom name beriladi. Tenglamaning qaysi yechimiga murojoat qilish kerak bo'lsa, uning nomi va kvadrat qavs ichida esa yechim nomeri yoziladi: name[k].

Maple dasturida tenglamalar sistemasini ham xuddi shunday usulda solve({t1,t2,…},{x1,x2,…}) buyrug'I yordami bilan yechiladi, faqat endi buyruq 132oppish132ic sifatida birinchi figurali qavsda bir- biri bilan vergul bilan ajratilgan tenglamalar, ikkinchi figurali qavsda esa noma'lum o'zgaruvchilar ketma-ketligi yoziladi.Quyidagi tenglamalar sistemasini Maple dasturda yechamiz:

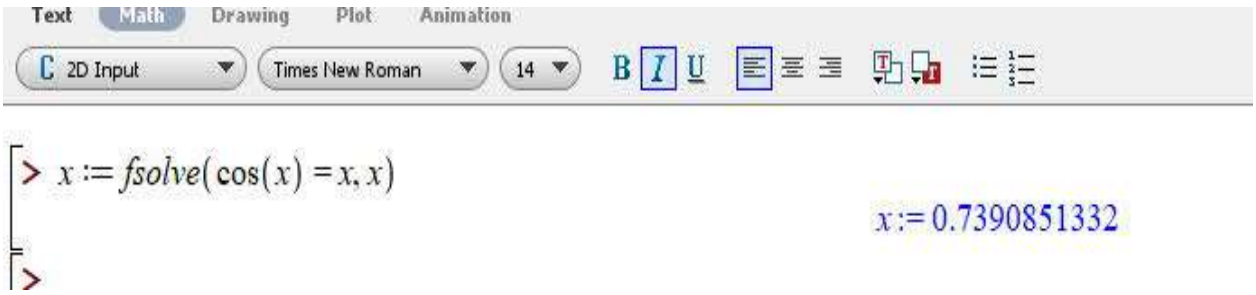
$$\begin{cases} x+y+z=12 \\ x-2*y+3*z=4 \\ 2*x+y-z=14 \end{cases}$$

Sistemaning Maple dasturidagi yechimi:



Agar transsentdent tenglamalar analitik yechimga ega bo'lmasa, u holda tenglamaning sonli yechimini 133oppish uchun maxsus buyruq **fsolve(eq,x)** dan foydalaniladi, bu yerda ham parametrlar solve buyrug'I kabi ko'rinishda bo'ladi.

Masalan:



Trigonometrik tenglamalarni yechish. Trigonometrik tenlamani yechish uchun qo'llanilgan solve buyrug'I faqat bosh yechimlarni, ya'ni $[0, 2\pi]$intervaldagi yechimlarni beradi. Barcha yechimlarni olish uchun oldindan

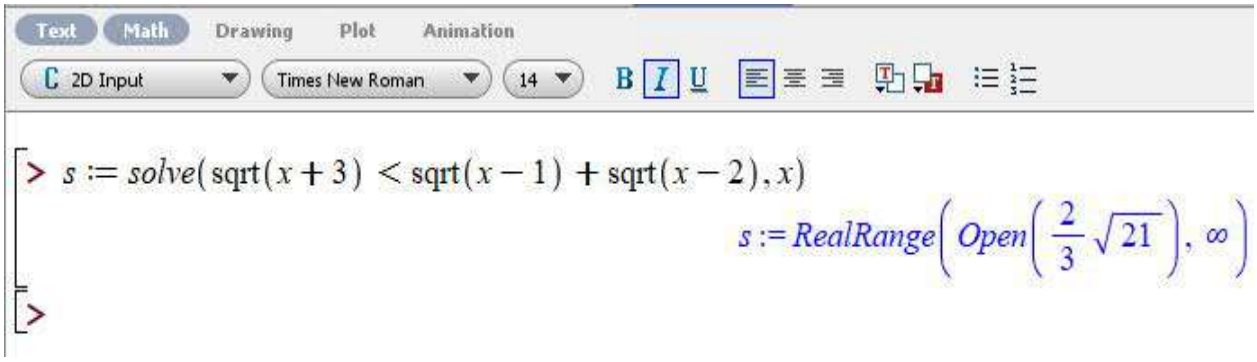
EnvAllSolutions:=true qo'shimcha buyruqlarni kiritish kerak bo'ladi.Quyidagi misolni ko'rib chiqamiz: $Sinx = Cosx$

Tenglamaning Maple dasturida yechilishi:

Maple muhitida _Z~ belgi butun turdagi o'zgarmasni anglatadi, shuning uchun ushbu tenglama yechimining odatdagi ko'rinishi x:=π/4+πn bo'ladi, bu yerda n – butun son.

Maple dasturida tengsizliklarni yechish.

Solve buyrug'I oddiy tengsizliklarni hisoblashda ham ishlatiladi. Tengsizlik yechimi izlanayotgan o'zgaruvchining o'zgarish intervali ko'rinishida beriladi. Bunday holda, agar tengsizlik yechimi yarim o'qdan iborat bo'lsa, u holda chiqarish joyida RealRange(–∞ , Open(a)) ko'rinishdagi konstruksiya paydo bo'ladi, ya'ni x∈ (–∞ , a), a – biror son. Open so'zi interval ochiq chegarali degan ma'noni bildiradi. Agar bu so'z bo'lmasa , u holda mos chegaralar ham yechimlar to'plamiga kiradi. Quyidagi $\sqrt{x+3}<\sqrt{x-1}+\sqrt{x-2}$ tengsizlikni Maple dasturida yechamiz:



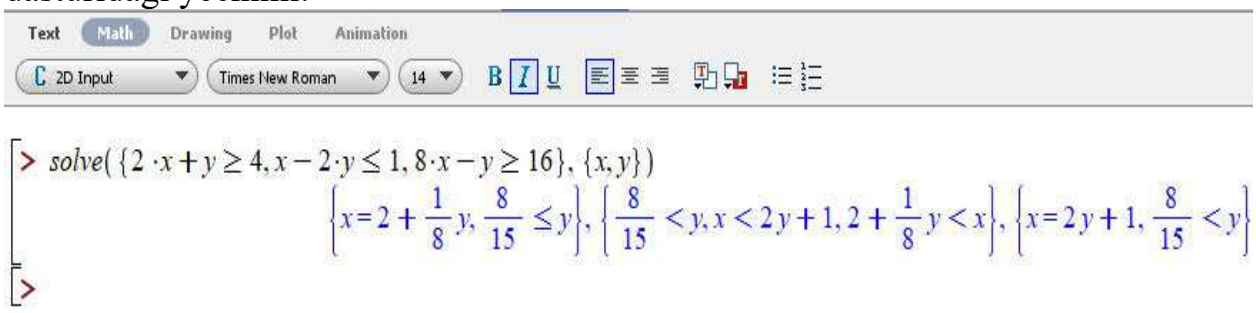
Kvadrat ildiz Maple dasturida sqrt buyrug'I bilan kiritiladi.

Shuningdek solve buyrug'I yordamida tengsizliklar sistemasini ham yechish mumkin. Bizga

$$\begin{cases} 2*x+y>=4 \\ x-2*y<=1 \\ 8*x-y>=16 \end{cases}$$

tengsizliklar sistemasi berilgan bo'lsin bu sistemani Maple dasturida yechamiz.

Buning uchun yana solve buyrug'idan foydalanamiz.Sistemaning Maple dasturidagi yechimi:



Maple dasturida tengsizliklar sistemasini yechishda solve buyrug'ida birinchi { } qavs ichiga tengsizliklar sistemasi kiritiladi va ikkinchi { } qavs ichiga tengsizliklar sistemasi qaysi argumentlar bo'yicha yechilishi kerak ekanligi kiritiladi.Ko'rib turganimizdek solve buyrug'I Maple dasturidagi tenglama va tengsizliklarni yechishdagi asosiy buyrug' hisoblanadi.

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COVID-19 DETECTION WITH DEEP LEARNING ALGORITHM

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Abstract. *This particular study aims to evaluate the detection performance of deep learning algorithms. There are many algorithms are available but CNN algorithm is specifically selected for detection of pandemic disease which is known as COVID-19 or Novel Corona Virus. According to the latest figures for this disease, millions of people are infected with this pandemic disease and thousands of people have been losing their lives. Initially, the small dataset has been taken with the two major classes, class one contains the X-ray images of affected people with COVID-19, and class two represent the people who are not infected with this particular disease. In the implementation with this dataset, three models of CNN algorithm are used and they provide the distinctive results respectively. ResNet model prevails on the other two models with an accuracy of 98%, as usual, it is prominent for image classification. Moreover, this study indicates that if we increase the size of the dataset than the results may differ from the current results.*

Keywords: *COVID-19, Novel Corona Virus, Convolutional Neural Network (CNN), MobileNet, ResNet and DenseNet*

1. INTRODUCTION

The earlier corona virus was found in the Wuhan city Hubei province and later on, it was spread out in other cities of China and all over the world. In December 2019 the infection was simply in China and within the 1 to 2 months it came to nearly in each nation of the world. In January 2020 the wellbeing crisis was announced by the World Health Organization (WHO) and they suggested that actualize the lockdowns and take the preemptive measures in the influenced zones. The WHO named the disease as COVID-19 which is brought about by the novel corona virus as corona virus disease 2019. It was basic to anticipated in light of the fact that it's previous side effects were difficult to examine and that is the reason the testing units were inadequate and other innovative sorts of hardware were likewise not financially savvy. But it is possible with the help of Machine Learning and Deep Learning, it is conceivable to recognize the contaminated patients through chest x-beam or chest ct-filter pictures as information contribution to anticipate the outcomes as order. In this specific usage, a little dataset was taken from the online open source which is valid and reliable. The dataset contains two classes as COVID-19 and healthy. The class COVID-19 contains the X-ray images of affirmed influenced or tainted patients, while then again, the healthy class contains the chest X-beam pictures of non-contaminated mean ordinary x-beam pictures. The Deep Learning algorithm CNN is generally utilized for grouping the clinical and non-clinical pictures. The usage of CNN gave adequate and expected outcomes anyway the three the prominent models of CNN were utilized Mobilenet, ResNet, and DenseNet individually. The results of these three models are adequate

and ResNet provides the best accuracy about 98% which is acceptable. However deep analysis of this system showed that the better and affective results can be achieve through the chest ct-scan images dataset.

2. LITERATURE REVIEW

COVID-19 detection is a hot topic for researchers and this is also a required thing to do because there is no sophisticated method to accomplish this task effectively. There is a lot of work on this topic and most of them used the chest x-rays images or chest ct-scan images as input data with the deep learning Convolutional Neural Network(CNN) algorithm. Ioannis et al proposed a COVID-19 detection system in which he take chest X-ray images as input and used VGG-19 method for detection and got the 93.48% accuracy. Similar to this Work Wang and Wong also take the chest X-ray images dataset and used the COVID-19 meethod for detection and got the accuracy 92.4%. Narin et al perform the same task but he take chest ct images as dataset and implemented the two models Deep CNN and ResNet-50 and he achieved the 98% accuracy. In our proposed system we have implemented the same thing with X-ray images dataset and used three models MobileNet, ResNet and DenseNet and we have achieved best accuracy from the DenseNet which is 98%.

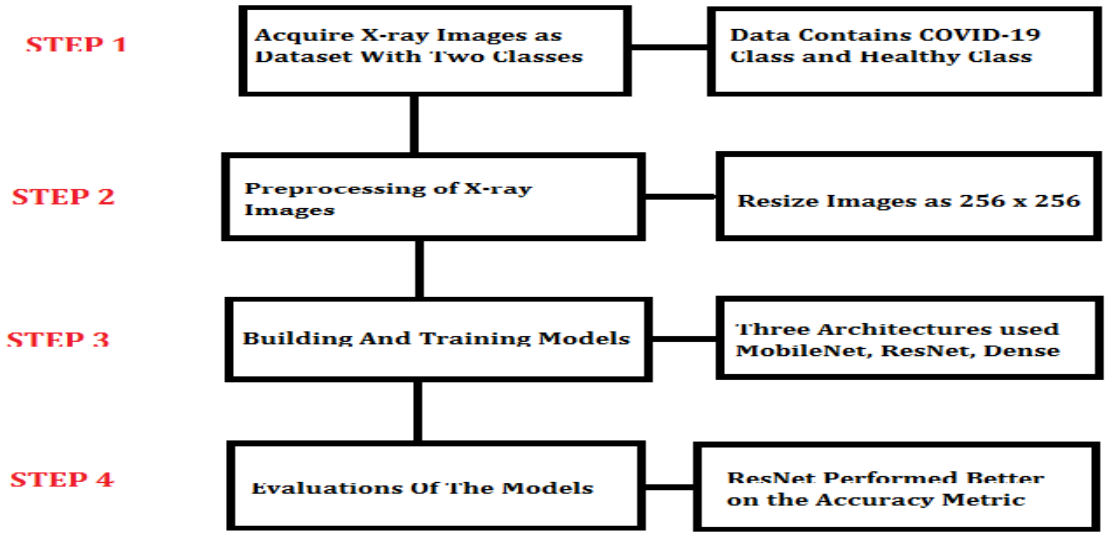
3. METHODOLOGY

The implementation of this work is divided into four major parts are as follows:

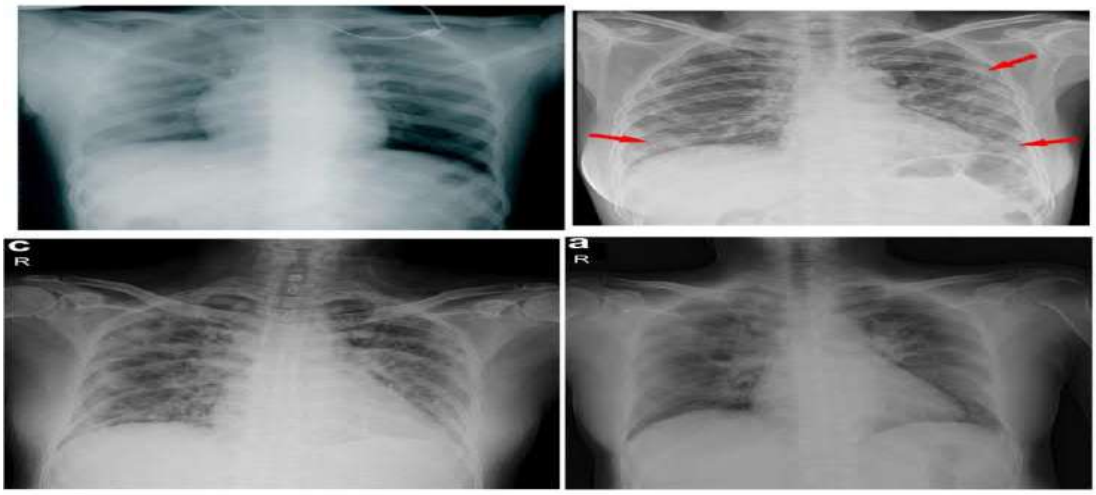
- Acquisition of Data
- Data Preprocessing
- Building and Training the Models
- Evaluation

There is a framework which follows the these steps sequentially.

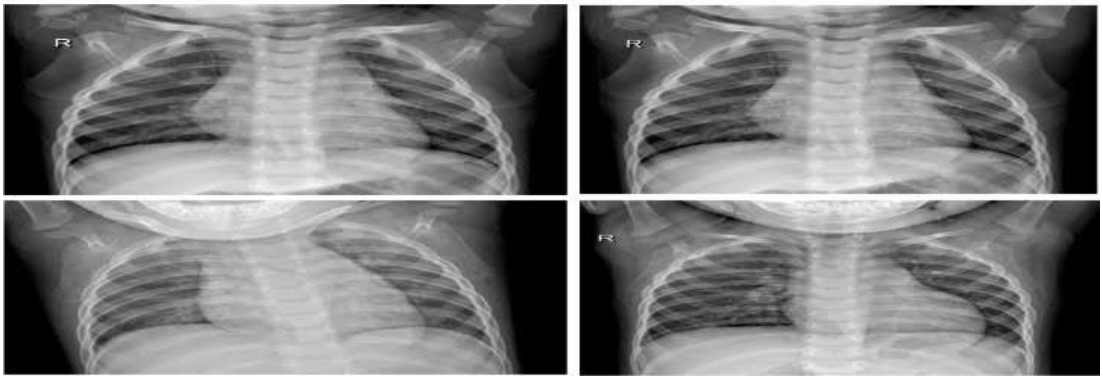
3.1 FRAMEWORK



Step 1: In this phase we firstly collect the data from a reliable source which is valid and contains two classes COVID-19 class and Healthy class are as follows:



The COVID-19 class contains the images of infected patients.



The Healthy class contains the images of normal mean non-infected patients.

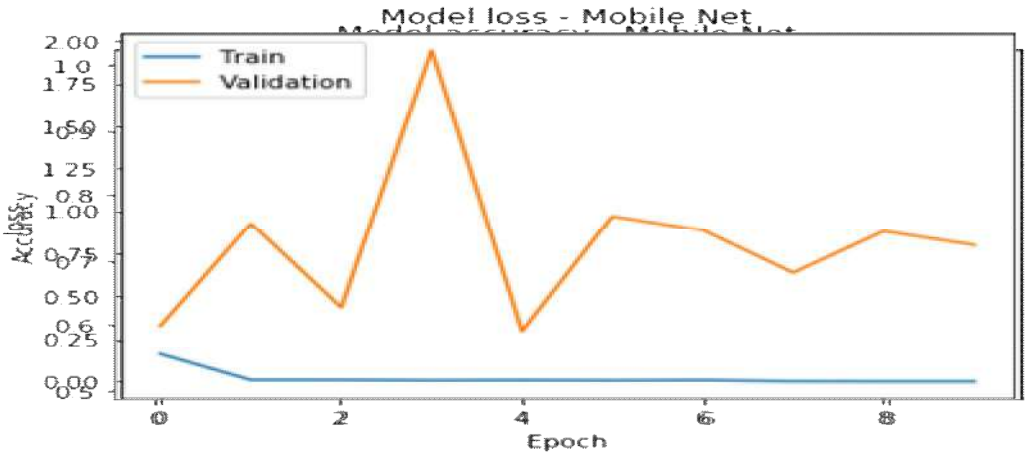
Step 2:

In this preprocessing phase the images of both the classes are resized as 256x256. The another step is split the dataset into train, validation and test. Now the data is ready for processing.

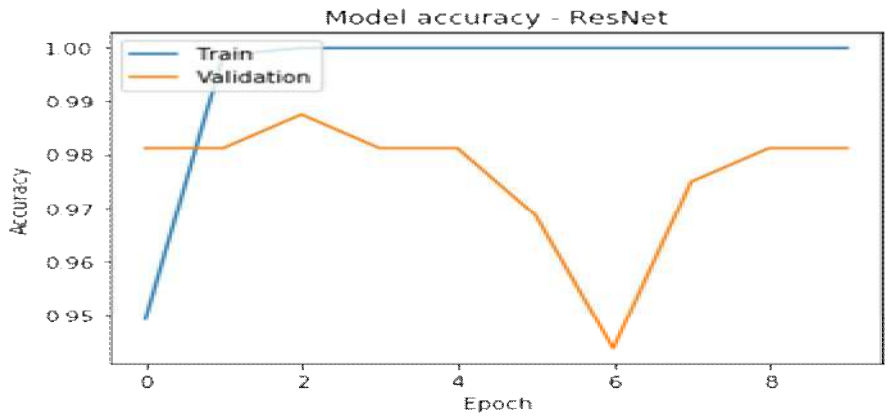
Step 3:

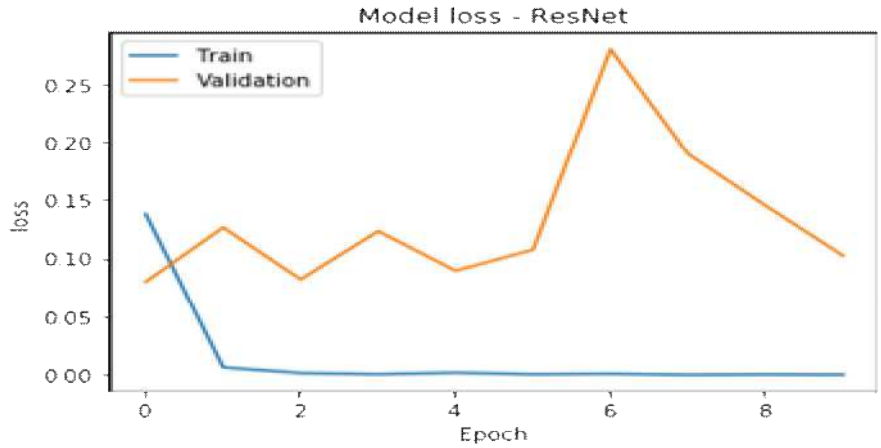
In this phase we have implemented the three architectures MobileNet, ResNet and DenseNet.

1. Training and Validation of MobileNet

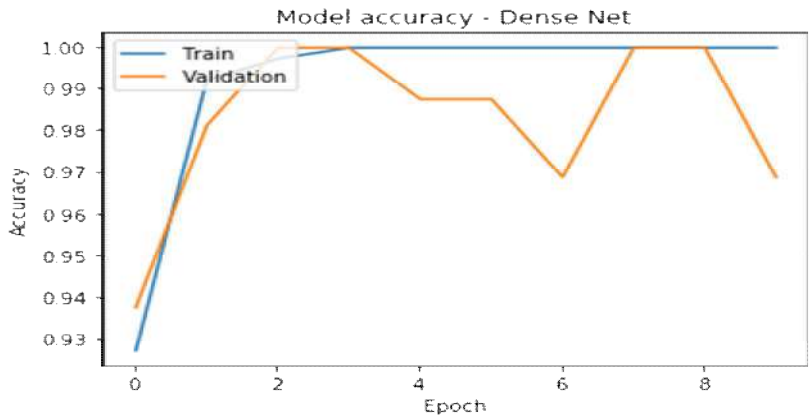


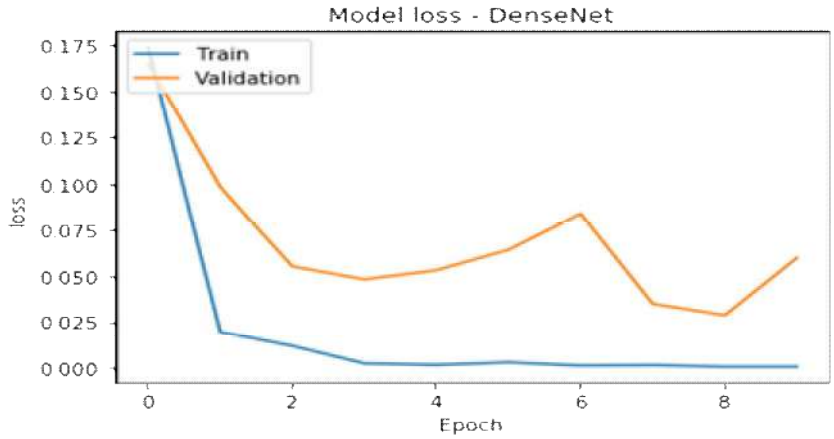
2. Training and Validation of ResNet





3.Training and Validation of DenseNet





Step 4:

In this phase we have determined the models performance and the results shows that best accuracy is achieved by the ResNet however the DenseNet reduce the loss effectively. The models evaluation also supporting the concept of deep learning especially in the detection of COVID-19. And the performance of these models can be improve with the more sophisticated datasets and by testing the other deep learning algorithms and models.

4. Results and discussion

--------MobileNet---------
Loss: 0.74
Accuracy: 0.69

---------ResNet----------
Loss: 0.11
Accuracy: 0.98

---------DenseNet----------
Loss: 0.07
Accuracy: 0.96

The results clearly indicate that the best accuracy got by the ResNet and best loss result got by the DenseNet. However MobileNet got less accuracy as compare to both the other models. There is a possibility that large dataset may provide different results, because this dataset was small in size. Moreover the performance of all the models are acceptable and it can be improve through big datasets or by choosing the other models or techniques as well. This study ensures that deep learning has a key role in COVID-19 automatic detection system. Moreover it is also needed to develop more capable and efficient models which are able to do the distinction between COVID-19 disease and other similar diseases for instance common pneumonia and SARS etc.

5. Conclusion and Future work

The proposed system of detection provided the desired outcome ResNet got 98% accuracy, DenseNet got 96% accuracy and MobileNet got 69% accuracy. These results clearly indicate that deep learning and machine learning has an key role in detection system and the results with the following models are not also bad. In future work we can take large dataset and can try more algorithms and models for better results. However it is very hard to tackle this pandemic disease because it is changeable and vary in different countries and also in different cities as well. This pandemic will pass like others but it is our responsibility to learn from the situation that can be used in future because similar situation can occur again. It is our responsibility to take the preemptive measure like social distancing, self isolation etc.

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MS WORD ДАСТУРИДА ЗАМОНАВИЙ ИШ ХУЖЖАТЛАРИ ТАЙЁРЛАШ

Раҳмонов М.Ш., Саидова Н.К. Андижон давлат университети Ўзбекистон.

Аннотация: *Ушбу мақолада MS Word дастурда замонавий иш хужжатлар тайёрлаш учун керакли тавсиялар баён этилган.*

Калит сўзлар: *Word, Times New Roman, Calibri, Сарлавҳалар.*

Аннотация: *В данной статье докладываются необходимые рекоментдации для подготовки современных робочих документов в программа Word.*

Ключевые слова: *слово, Times New Roman, калибр, заголовки.*

Abstract: *This article provides recommendations for the preparation documents in the Word program.*

Keywords: *Word, Times New Roman, Caliber, Headings.*

Ушбу Word дастури тўғрисидаги мақола ўқув машғулотлар давомида, ўз хужжатларимиз устида ишлаш давомида пайдо бўлди. Барчамизга маълумки Word дастурининг бугунги кунда Word 2007, 2010, 2013, 2016 версиялари оммавий равишда ишлатилмоқда. Word 2007 версиядан олдин Word 2003 версияси фойдаланувчилар томонидан кенг қўлланилган эди. Бу версияда буйруқлар бош меню қатори деб номланган менюда жойлашган эди. 2007 версиядан бошлаб бош меню ўрнига лента қатори пайдо бўлди. 2003 версияда ишлаб юрган фойдаланувчилар 2007 ва ундан юқори версияларга ўтишда кўп қийинчиликларга дуч келди. Айниқса керакли буйруқни қидириш учун лента қаторидаги бўлимларга бирма-бир кириб чиқишларига тўғри келди.

Ҳаммага маълумки иш хужжатларининг барчаси деярли “Times New Roman” шрифтида ёзилади ва хужжатни керакли жойларга тақдим этиш учун ҳам айнан шу шрифтда бўлиши кераклиги уқтирилади. Microsoft компанияси дастурчилари бу “Times New Roman” шрифтни стандарт сифатида ишлашини билармикан. Чунки охирги версияларда (Word 2013, 2016) дастур ишга туширилганда турғун холда бу стандарт шрифт юкланмайди. Аксинча унинг ўрнига турғун холда “Calibri” шрифт юкланади.

Агар сизнинг компьютерингиз хужжатни тўғри расмийлаштириш талабларига созланиши ва Word дастурининг охириги версияларига ўтиш учун ушбу мақола ёрдам беради деб ўйлаймиз. Бу тавсиялар кўмагида сиз ўз компьютерингизни ва иш жойидаги компьютерларни талаб этилган энг муҳим параметрлар асосида созлай оласиз. Фойдаланувчилар Word дастуридаги муаммоларни турли хил усуллар билан хал этадилар. Бу каби муаммоларни баён этувчи бошқа муаллифлар умуман бошқа рецептни

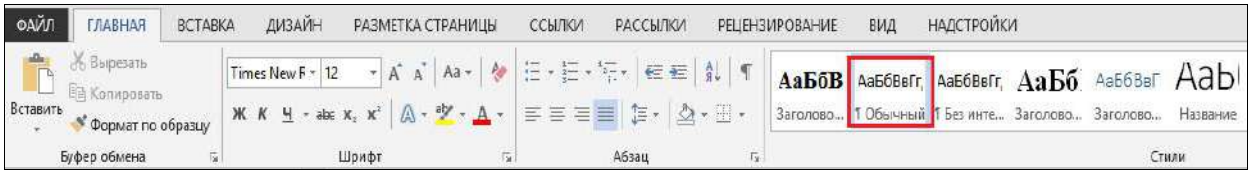
таклиф этишлари мумкин. Биз ҳам бу мақолада Word дастуридаги муаммоларни ҳал этишни босқичма-босқич баён этамиз.

Times New Roman шрифтни турғун холатга ўрнатиш.

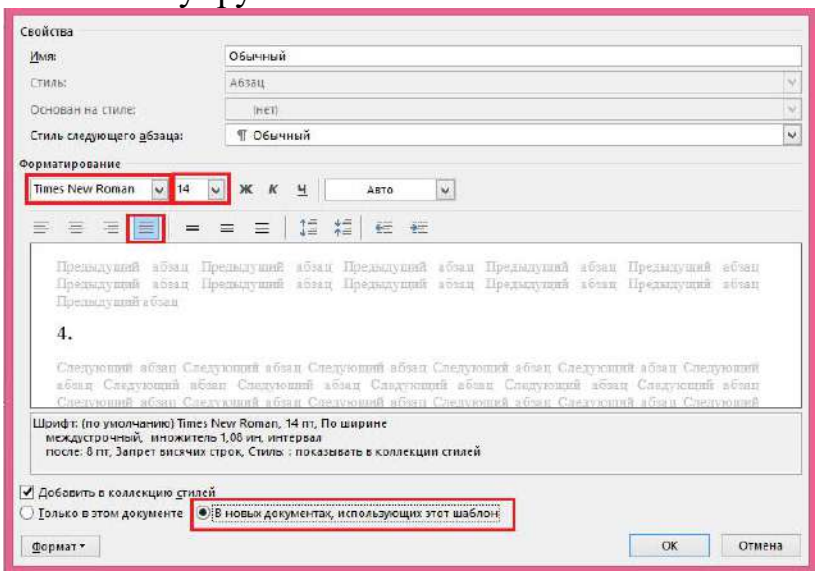
Ўзбекистондаги барча барча хужжат юритиш талабларида фақат Times New Roman шрифтда ёзиш инструкция келтирилади. Бу шрифтни бу каби стандант бўлиб қолиши Microsoft Wordнинг дастлабки версияларида стандарт сифатида қўлланилган. Бироқ Word 2007 версия ва ундан кейинги версияларидан бошлаб турғун холатда Calibri шартини ишлата бошлади. Бу муаммони хал этиш ва Times New Roman шрифтни тугғун холда ишга тушишини созлаш учун қуйидаги амалларни бажаришга тўғри келади:

1. Word дастурини (янги версияларнинг барчаси учун) ишга туширинг. Стандарт созлов билан янги хужжат яратинг (CTRL + N ёрдамида, ёки Файл-“Создать”-“Новый документ” буйруқни бажаринг.)

2. Главная лента қаторига ўтинг. Стили рўйхатдан “Обычный” стилни топинг.



3. “Обычный” стил устида сичқонча ўнг тугмасини босинг. Контекст менюдан “Изменить...” буйруғини танланг.



4. Диалог ойнадан шрифт номини “Times New Roman” га, шрифт катталигини 14 га, текислаш режимини “по шрине” га ўзгартиринг.

5. “В новых документах, использующих этот шаблон” бўлимни фоаллаштиринг. OK кнопкани босинг.

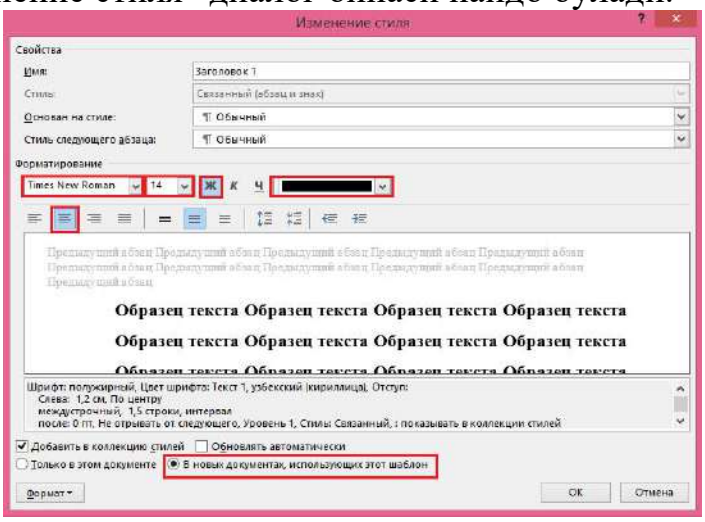
Сарлавҳаларни (Заголовок 1, Заголовок 2, Заголовок 3 ва бошқа) стандартга мослаш

Иш хужжатлари билан ишлашда сарлавҳалар жуда кўп ишлатилади. Чунки тайёрланаётган ҳар бир иш хужжатида бир ёки бир нечта сарлавҳалар Заголовок 1, сарлавҳаостлари (Заголовок 2, Заголовок 3) қўлланилади. Чунки бу сарлавҳалар мундарижа тайёрлашда, хужжатнинг керакли сарлавҳаларига тез ўтишда зарур бўлади. Турғун холатда бу сарлавҳалар ишлатилганда

Calibri Light (Заголовки) шрифтда, кўк рангда ифодаланади. Шунинг учун бу сарлавҳа ва сарлавҳа остларини ўзимиз қўлда созлаб олишимиз зарур бўлади.

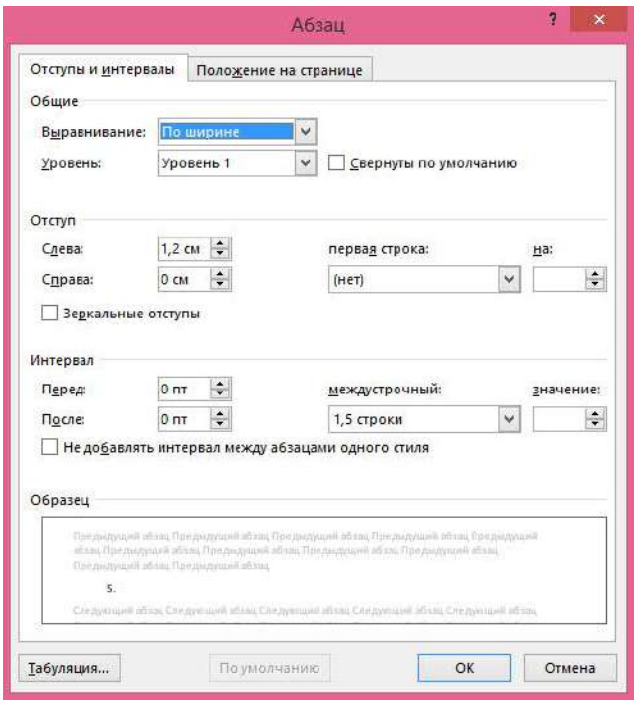
1. Ўзингизга қулай бўлган вариатда янги хужжат яратинг.

2. “Главная” лента қаторидаги стиллар галереясидан созланиши зарур бўлган “Заголовок 1” стилни топинг. Унинг устига сичқонча ўнг тугмасини босинг. Пайдо бўлган контекст менюдан “Изменить” буйруғини танланг. Натижада “Изменение стиля” диалог ойнаси пайдо бўлади.



3. Шрифт ўлчамини ўзингизга мосланг (стандартда 14), шрифт номини “Times New Roman” га ўзгартиринг, рангни қорага мосланг, қўйиқ ёзувни танланг, текислашни марказга мосланг (Ўзбекистонда сарлавҳалар марказга текисланади, чапга эмас)

4. Бу созлов кейинги янги хужжат учун ҳам қўлланиши учун “В новых документах, использующих этот шаблон” бўлимни фоаллаштиринг.



5. Сўнгра диалог ойнанинг қуйи қисмида жойлашган “Формат” кнопкасини босинг.

6. Абзац устида керакли созлашларни амалга ошириш учун “Отступ” ва “Интервал” бўлимларига ўтинг. Иш жойингиздаги хужжатлар шаблогига мос равишда бу параметрларни созланг.

7. Ишни тамомлаш ва тастиқлаш учун ОК кнопкани босинг.

Хулоса қилиб шуни таъкидлаш мумкинки, MS Word дастури иш хужжатлари қоидаларига деярли мос келмайди. Дастур имкониятлари юқори бўлгани сабабли форматлашнинг ихтиёрий вариатини созлаш, иш хужжатларига мослаш имконияти бор. Ушбу мақолани корхона рахбарлари, ўқув муассасалари ходимлари, ўқитувчи ва талабалар ўқиб фойдаланса, иш хужжатларини тайёрлашнинг аниқ тартиб ва қоидаларини ўз компьютерларига созлаб оладилар деб умид билдирамиз.

Баъзи корхона ва ташкилотлар ўзларининг иш хужжатлар юритиш қоидалари мавжуд бўлса, корхона раҳбари марказлашган холатда MS Offise фойдаланувчиларига юқоридаги каби созлаш ишларини топшириши мумкин. Ёки корхонанинг ички шаблонини диққат билан тайёрлаб ва амалий вариантда қўллаб кўргандан сўнг, бу шаблонни корхонанинг барча иш жойларига “тарқатиш” мумкин бўлади. Бу иш эса корхона ходимларини иш хужжатлари устида ишлаш вақтини тежашга ва иш унумдорлигига олиб келади.

КОМПЬЮТЕРНОЕ МОДЕЛИРОВАНИЕ ТРАНСПОРТИРОВКИ ЖИДКОСТИ В ТРУБОПРОВОДЕ РАЗЛИЧНОЙ МОДИФИКАЦИИ

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Аннотация: *В статье рассматривается разные варианты конструкции гидродинамических моделей процесса транспортировки жидкости в канале и турбопроводе, в магистрали которого существует зоны возвратные струи.*

Ключевые слова: *Интенсивность транспортировки, потенциал скорости, дисперсная смесь, внешние силы.*

Аннотация: Maqolada kanal va trubo quvurlarida suyuqlik tashish jarayonining gidrodinamik modellari uchun turli xil variantlari ko'rib chiqiladi va ularning asosiy qismida qaytish zonalari mavjud.

Kalit so'zlar: tashish intensivligi, tezlik potentsiali, tarqalgan aralashma, tashqi kuchlar.

Abstract: *The article discusses various design options for hydrodynamic models of the process of transporting fluid in a channel and a turbine line, in the main of which there are return jet zones.*

Keywords: *transportation intensity, speed potential, dispersed mixture, external forces.*

В данной работе рассматривается разные варианты конструкции гидродинамических моделей процесса транспортировки в канале, в магистрали которого существует зоны возвратные струи, наличие насосов, которые позволяют дальнейшие движения потока среды, на определенном расстоянии, разветвлять на два потока, направленные в по течению жидкости (рис. 1).

Движение транспортируемой жидкости нефти или других видов, моделируется идеальной несжимаемой жидкостью. Учитывая экспериментальные наблюдения за процессом транспортировки определяются ряд особых точек D, D_1, K_0, где течение разветвляется и появляются зоны возвратной струи $E_1, D_1, G; K_0, L, F_z$, которые моделируются как квитанционная модель Эфроса, предполагая течение стационарным, потенциальным, жидкость несжимаемой, и считая что внешние и поверхностные силы отсутствуют.

В этом случае из уравнения неразрывности и условия потенциальности течения устанавливается гармоничность функций потенциала скорости и тока в области, что соответствует аналитичности комплексного потенциала в области течения:

$$W(z) = \varphi(x, y) + i\psi(x, y)$$

Областью изменения этой функции будет ноль полоса, со многими вырезами. Задача решается известным методом Жуковского, путем введения параметров канонической области (верхняя полуплоскость G_t (рис.2), ($t=\xi+i\eta$), действительная ось которой соответствует области течения G_{z_t}. В целом пользуясь методом особых точек получим:

$$\frac{dw}{dt}=\frac{q}{\lambda}\frac{(\varsigma-a)(\varsigma-1)(\varsigma-d_1)}{(\varsigma-q_0)(\varsigma-\lambda)(\varsigma-e)\varsigma}$$

Введя функцию Жуковского, $\omega=\ln\frac{\overline{V}_0}{\overline{V}}c$ и пользуясь гадографом области изменения этой функции G_ω, являющейся многоугольником и формулой Кристофеля-Шварца [1] ее функцию в области G_t

$$\omega=F(t)$$

Значения этой функции будут записаны: для более простых случаев.

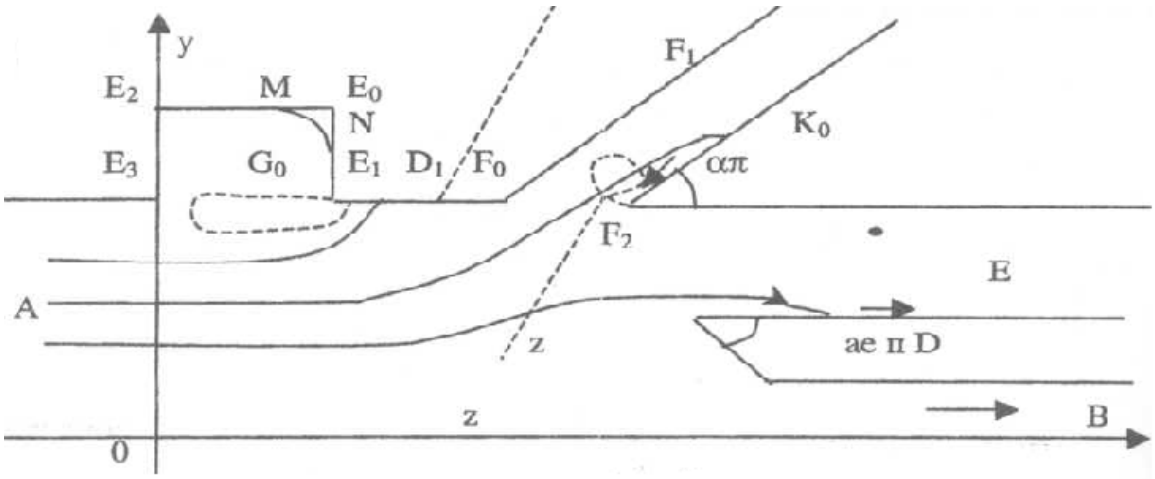
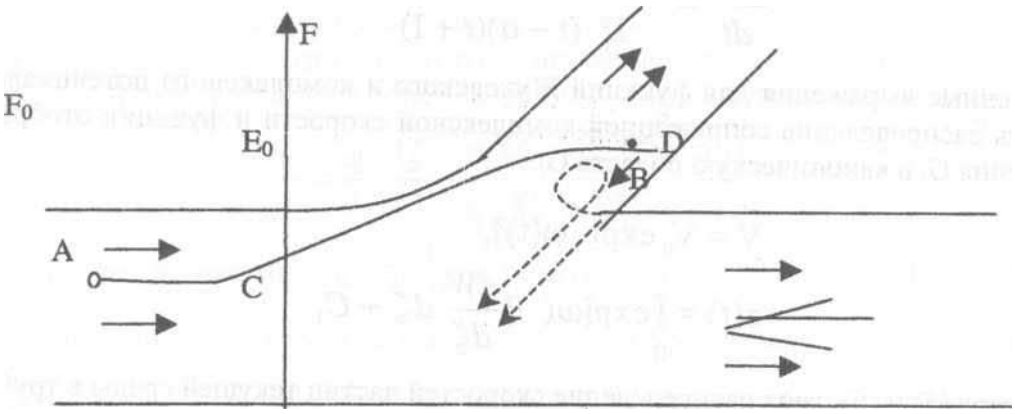


Рис.1. Естественная область движения транспортируемой жидкости нефти или других жидкостей.

а) Задача течение жидкости в аванкамеру. В этом случае функция Жуковского имеет вид:

$$\omega=C_1\int_1^t\frac{\sqrt{\varsigma-\lambda_0}\sqrt{\varsigma-f_0}}{(\varsigma+\lambda)(\varsigma-d)\sqrt{\varsigma^2-1}}d\varsigma+C \qquad (2)$$

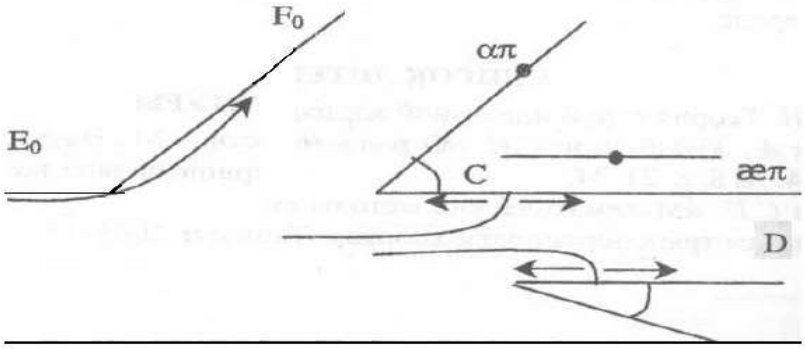
$$\frac{dw}{dt}=\frac{qf_0}{\pi}\frac{(\varsigma-d)(\varsigma+1)}{(\varsigma-a_0)(\varsigma-f_0)(\varsigma+1)}$$



б) Задача о транспортировке жидкостей в регулируемом трубопроводе. Функция Жуковского имеет вид:

$$\omega(t) = \ln\frac{\varsigma+1}{\varsigma+l_1} + \alpha\ln\frac{\varsigma-1}{\varsigma+1} \qquad (3)$$

$$\frac{dw}{dt} = -\frac{q_H}{\pi}\frac{(\varsigma-l_1)}{(\varsigma+f)(\varsigma+f_0)}$$



С) Задача о течении жидкости регулируемом притоком и клапаном:

$$\omega = C_1\int_1^t \frac{\sqrt{\varsigma-m}(\varsigma-a)d\varsigma}{(\varsigma+d)(\varsigma-e_0)\sqrt{\varsigma^2-1}} + C_2$$

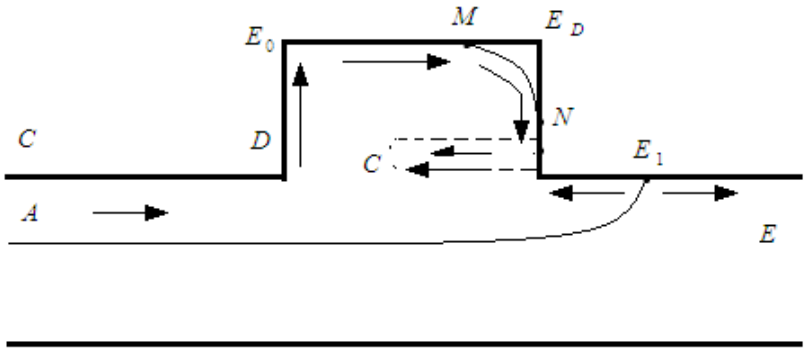
$$\frac{dw}{dt} = -\frac{q_E}{\pi}\frac{(\varsigma+d)}{(\varsigma-a)(\varsigma+1)} \qquad (4)$$

Полученные выражения для функций Жуковского и комплексного потенциала позволят определить распределение сопряженной комплексной скорости и функции отображения области течения G_z в каноническую область G_t.

$$\overline{V} = \overline{V}_0 \exp\left[\omega(t)\right] \qquad (5)$$

$$z(t) = \int_1^t \exp\left[\omega(\varsigma)\right]\frac{dw}{d\varsigma}d\varsigma + C_1 \qquad (6)$$

Равенства (5) и (6) дают распределение скоростей частиц текущей среды в трубопроводе.



Таким образом, моделирование процесса транспортировки сплошной среды (на аванкамере позволяет выбирать необходимые геометрические и механические параметры, обеспечивающие непрерывную, стабильную транспортировку с учетом различных физических процессов в среде.

По окончании выполнения математических расчётов построим график функции с помощью компьютерного моделирования для транспортировки жидкости в канале. Блок графика построен в программе Matchad и приобретает вид параболы (рис.2).

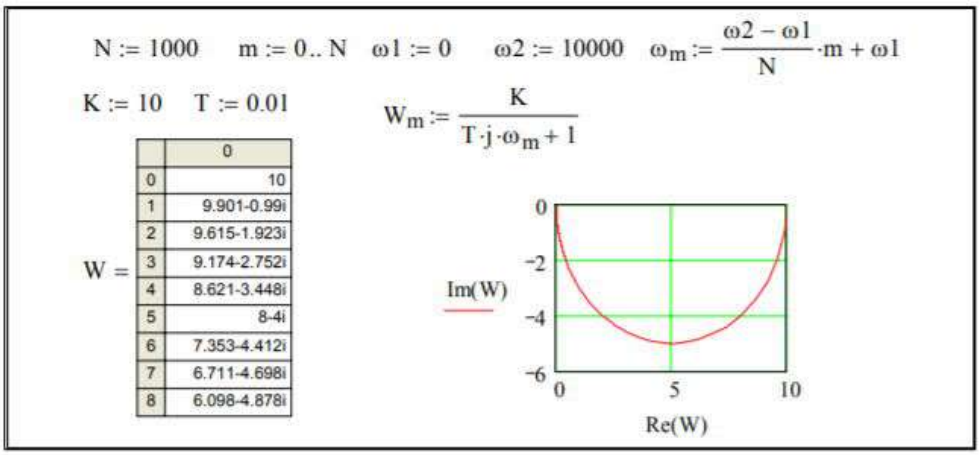


Рис.2. Изменение скорости жидкости в зависимости от размера поперечного сечения трубопровода.

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ZAMONAVIY DASTURLAR ASOSIDA, NUTQ SIGNALLARIGA DASTLABKI ISHLOV BERISH MUAMMOLARI.

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Annotatsiya. *Ushbu maqola nutq signallarini qayta ishlash, tahlil qilish va sintez qilish algoritmlariga asoslangan aqlli tizimlarni rivojlantirish bilan bog'liq hozirgi paytda eng dolzarb muammolardan birini tavsiflashga bag'ishlangan. Maqolada nutq interfeysi bilan aqlli tizimlarning asosiy afzalliklari, shuningdek ularning ko'lami muhokama qilinadi. Hozirgi vaqtda nutq signallarini qayta ishlashning eng muhim yo'nalishlari va ularning algoritmlari berilgan. Shuningdek, nutq signallarining sintezi va tahlilini yanada o'rganish zaruriyatini asoslaydi va ushbu jarayonlar bilan bog'liq asosiy muammolarni tahlil qiladi. Nutqni aniqlash va uni tahlil qilish hozirda shubhasiz juda dolzarb masaladir, buni biz nutqni tanish algoritmlariga asoslangan dasturlar asosida amalga oshirishimiz mumkin. Bu aqlli algoritmlardan foydalanish nima uchun zarur, chunki ularning funksionalligi, soddaligi va foydalanish qulayligi, shuningdek ularni qo'llash mumkin bo'lgan juda ko'plab hayotiy doiralarning mavjudligidir. Biroq, nutq signallarini qayta ishlash jarayoni bilan bog'liq bo'lgan bir qator muammolar mavjud. Maqolada asosiy fikirlar sifatida: nutqni qayta ishlash algoritmlari hozirgi kunda eng istiqbolli va aniq ko'rinishi, shuningdek ularning qisqacha tavsifi berilgan. Aytib o'tish joizki shu vaqtga qadar nutq signallarini qayta ishlash, tahlil qilish va sintez qilish muammolariga bag'ishlangan bir qancha maqolalar, monografiyalar va dissertatsiyalar yozilgan. Ushbu orttirilgan tajribalar asosida, bizni fikrimizcha nutq signallari ustida amalga oshiriladigan ishlar hali juda ko'p, ushbu maqolada nutq signallarini qayta ishlashda duch keladigan bir qancha muammolar ko'rib chiqilgan.*

Kalit so'zlar: *radiotexnika, aqlli tizimlar, nutqni aniqlash tizimlari, nutqni qayta ishlash, ovozli interfeys, nutqni qayta ishlash algoritmlari, to'lqin tahlili.*

Annotation. *This article is devoted to describing one of the most pressing issues currently facing the development of intelligent systems based on algorithms for processing, analyzing, and synthesizing speech signals. The article discusses the main advantages of smart systems with a speech interface, as well as their scope. At present, the most important directions of speech signal processing and their algorithms are given. It also justifies the need for further study of the synthesis and analysis of speech signals and analyzes the main problems associated with these processes. Speech detection and analysis is undoubtedly a very topical issue right now, which we can do on the basis of programs based on speech recognition algorithms. Why use these smart algorithms is because of their functionality, simplicity and ease of use, as well as the fact that there are so many vital areas in which they can be applied. However, there are a number of problems associated with the process of processing speech signals. The main points of the*

article are: the most promising and accurate view of speech processing algorithms today, as well as a brief description of them. It should be noted that so far a number of articles, monographs and dissertations have been written on the problems of processing, analysis and synthesis of speech signals. Based on these gained experiences, we think that there is still a lot of work to be done on speech signals, and this article discusses a number of problems encountered in the processing of speech signals.

Key words: *radio engineering, intelligent systems, speech recognition, speech applications, speech interface, the processing algorithms of speech.*

Аннотация. *Данная статья посвящена описанию одной из наиболее актуальных проблем, в настоящее время связанных с разработкой интеллектуальных систем на основе алгоритмов обработки, анализа и синтеза речевых сигналов. В статье рассматриваются основные преимущества интеллектуальных систем с речевым интерфейсом, а также их область применения. В настоящее время приведены наиболее важные направления обработки речевого сигнала и их алгоритмы. Также обосновывается необходимость дальнейшего изучения синтеза и анализа речевых сигналов и анализируются основные проблемы, связанные с этими процессами. Идентификация и анализ речи, несомненно, является сейчас очень актуальной проблемой, которую мы можем сделать с помощью программ, основанных на алгоритмах распознавания речи. Почему эти умные алгоритмы используются из-за их функциональности, простоты и легкости использования, а также из-за большого количества жизненно важных областей, в которых они могут быть применены. Однако существует ряд проблем, связанных с процессом обработки речевых сигналов. Основными пунктами статьи являются: наиболее перспективный и точный взгляд на алгоритмы обработки речи на сегодняшний день, а также краткое их описание. Следует отметить, что до настоящего времени был написан ряд статей, монографий и диссертаций по проблемам обработки, анализа и синтеза речевых сигналов. Основываясь на этом накопленном опыте, мы считаем, что предстоит еще много работы с речевыми сигналами, и в этой статье обсуждается ряд проблем, возникающих при обработке речевых сигналов.*

Ключевые слова: *радиотехника, интеллектуальные системы, системы распознавания речи, обработка речи, голосовой интерфейс, алгоритмы обработки речи, волновой анализ.*

XXI – asr ishonch bilan aytish mumkinki “Axborot texnologiyalar asri”, chunki hozirda insoniyat va kompyuter o’rtasidagi aloqa tobora mustahkamlashib bormoqda. Kompyuter inson hayoti jabhalariga shu qadar tez kirib kelmoqdaki buni hayotimizning juda ko’plab ko’rinishlarida guvoh bo’lib turibmiz. Misol uchun savdo-aloqa munosabatlarini olasizmi yoki tibbiyot yo’nalishini olasizmi buni yaqqol ko’rish mumkin. Shu munosabat bilan nutqni aniqlashning intellektual tizimlari xam borgan sari hayotimizga chuqurroq kirib

kelmoqda. Misol uchun ovozli buyruqlar asosida ko'plab amallarning bajarilishi. XX – asrning oxiri va XXI – asrning boshlarida nutqni tanish tizimlarida bir qancha ilmiy izlanishlar amalga oshirilgan, xususan bu yo'nalishda ilmiy ish olib borgan ba'zi bir olimlarning asarlari e'tirofga loyiqdir: B.M. Lobanova, T.K. Vintsyuk, A.V. Frolova, L.R. Rabinra, R.V. Shafer, U.A. Li, D.H. Kletta, X.D. Xuang, H.- W. Hon, A. Acero va boshqalar [1].

Ko'plab tadqiqotchilarning ta'kidlashicha nutqni aniqlash algoritmlari tobora rivojlanishda davom etadi. Sababi uning juda ko'plab hayotiy doiralarda qo'llanilishidir. Misol uchun nutq tizimlari yordamida inson hech qanday jismoniy kuch ishlatmasdan kompyuterga ma'lumotlarni kiritishi yoki undagi mavjud ma'lumotlarni qayta ishlashi mumkin. Bundan tashqari, kitoblar, xabarlar va ovozli hujjatlar bilan tanishishi mumkin. Qo'shimcha qilganda chet tillarini o'rganishda nutqni tanish algoritmlarining foydasi ko'zga ko'rinarli darajada salmoqlidir. Biron bir ovozli bo'lmagan ma'lumotni operator tomonidan qayta ishlash ma'lum bir vaqtni talab qiladi, nutqni tanish va qayta ishlash tizimi yordamida shu vaqtni sezilarli darajada kamaytirish va tezlashtirish mumkin [2].

Yuqorida qayd etilgan vaziyatlardan tashqari nutqni qayta ishlash texnologiyalaridan foydalanib, sud amaliyotida, ko'zi ojiz va ovoz bilan nogironligi bor shaxslar bilan ishlashda foydalanish mumkin [3]. Bunda olingan nutq signallarini qayta ishlash orqali yangi signallarni hosil qilish va shu orqali ma'lum bir ma'lumotlarni olish mumkin bo'ladi.

Shunday qilib biz yuqoridagi materiallarni umumlashtiradigan bo'lsak, nutq signallarini sintez qilish va tahlil qilish orqali ma'lum bir sohalarda qo'llashimiz mumkin bo'ladi, ya'ni :

- Qog'ozsiz tizimlar: kompyuterda matnli fayllarni shakllantirish.
- Nutq texnologiyalari asosida yaratilgan interfeyslar: nogironlar, ko'zi ojiz shaxslar yoki ko'rish qobiliyati cheklangan foydalanuvchilar.
- Kompyuter telefoniya tizimlari: telefonda ma'lumot almashish, avtoservis, telefon raqamlarini ovozli terish, nutqli elektron pochta.
- Turli xil jarayonlarni boshqarish tizimlari: axborot va navigatsiya tizimlari, dispetcher, yer usti va havo transportini boshqarish tizimlari.
- Ma'lumotlar bazasi tizimlariga kirishni ta'minlash: ovozli tugmachani ishlatish orqali.
- Nutqni aniqlovchi tizimlar : ya'ni ovozni aniqlab beradigan tizimlar
- Ovozli xabarlarni qayta ishlash va himoya qilish tizimlari.
- O'qish tizimlari: ularning eng yaxshi ko'rinishlaridan biri, jamoat transportida e'lonlarning ovozli ko'rinishi yoki favquloddagi vaziyatlarda ovozli ogohlantirish.
- Nutqni aniqlash va u orqali shaxsini topish tizimlari: sud ekspertizasida qo'llash uchun.
- Chet tillarini o'qitish tizimlari: ovozli lug'atlar, ovozli iboralar. Xorijiy so'zlar va tovushlarning to'g'ri talaffuzi.
- Xar xil turdagi kompyuter oýinlari: masalan bolalarni intellektual rivojlantirish uchun qo'llaniladigan o'yinlar [4].

Shu va boshqa ko'rinishlarni keltirib o'tishimiz mumkin.

Texnika tizimlari doimiy ravishda rivojlanib va takomillashib bormoqda. Bu bir tomondan operatsion tizimning ishlashini ta'minlash bo'lsa, ikkinchi tomondan uning, boshqaruvning hilma-xilligi va moslashuvchanligini ta'minlash zarurligini bildiradi. Biz intellektual tizimlarning asosiy afzalliklarini sanab o'tamiz:

1.Nutq interfeysi. Agar bu interfeys ishga tushsa inson va kompyuter o'rtasidagi ishlash faoliyatini sezilarli darajada tezlashtiradi. Xattoki hech o'qitilmagan odam xam bunday interfeysdan foydalana oladi. Masalan yosh bolalar xam. Gapirishni bilishning o'zi kifoya. Asosiy ishni bu yerda nutqni tanish va qayta ishlash algoritmlari amalga oshiradi.

2. 1-banddan ko'rinadiki bu jarayon kompyuter va foydalanuvchi orasidagi masofani kamaytirishi mumkin. Bu degani ovozni eshitsa kifoya.

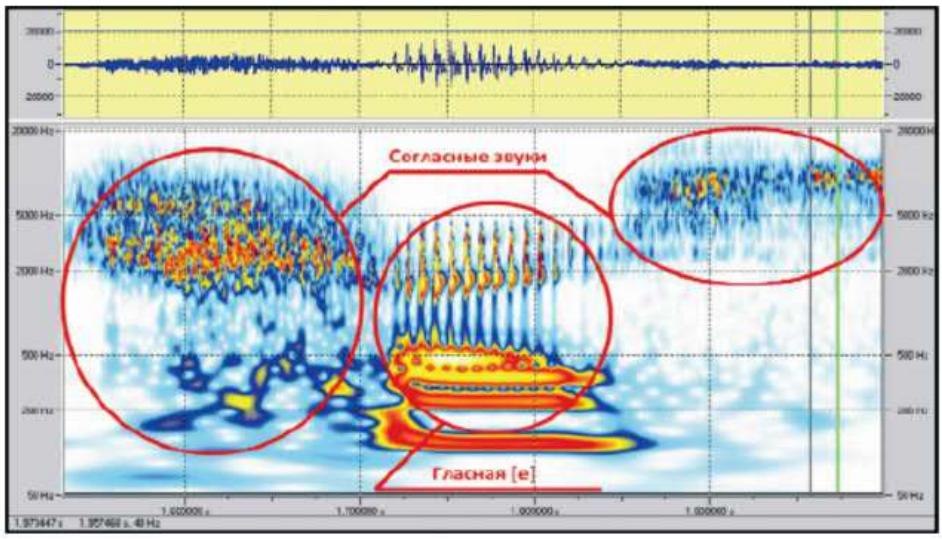
3.Nutq interfeysining afzalliklari. Bunda kompyuter bilan aloqa qilish qobiliyati sezilarli darajada ortadi. Masalan ko'rish qobiliyati tushgan vaqtlari ya'ni tunda kompyuter bilan ishlash. Yoki ko'zi ojiz shaxslarning kompyuterdan foydalanishi va boshqalar. Nutqni tanish algoritmlari foydalanuvchi nutqi orqali ko'rsatilgan funksiyalarni amalga oshiradi [5].

Shunday qilib, hozirgi vaqtda ilmiy tadqiqotlar bilan bog'liq nutqni aniqlash muammolari nafaqat dolzarbligi bilan balki uni yanada rivojlantirish zarurligi bilam ahamiyatga egadir. Nutqni tanish texnologiyalarini quyda bir qancha ko'rinishi bilan tanishib chiqamiz:

1.Akustik nutq signalidagi so'zlar va belgilar zanjirini o'zgartirish. Bunday tizimlarni tavsiflashda, bir qator parametrlarni hisobga olish lozim bular: so'zlarni jamlanmasi lug'atlar, undagi dinamiklar soni, talaffuz uslubi, gipotezalar sonini aniqlash, nutqning katta yoki kichik hajmdaligini aniqlash, signalda shovqining nisbatini tasniflash, aloqa kanallari bo'yicha va boshqalar.

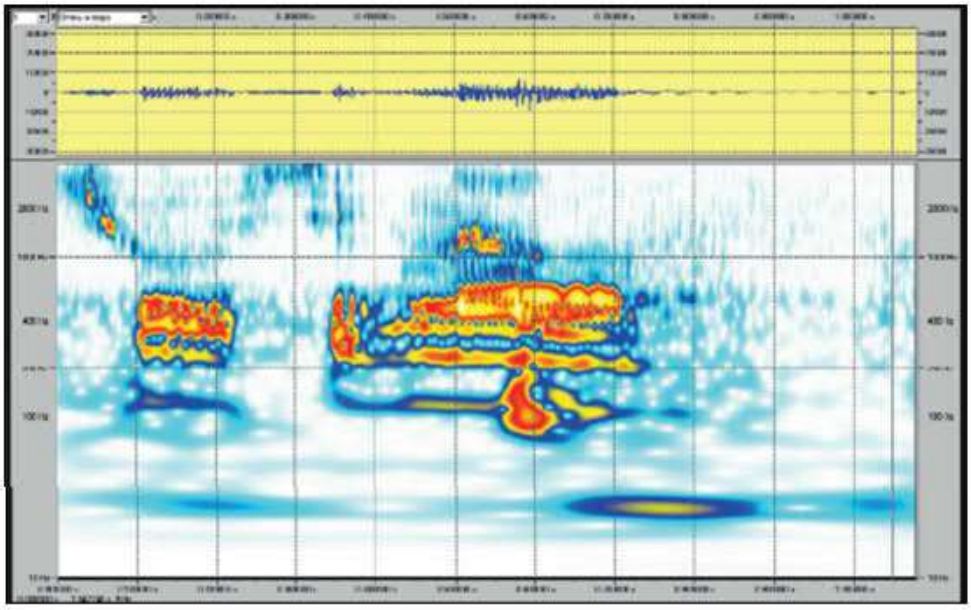
Shuni alohida ta'kidlash kerakki bunday usulda nutq tizimini sifatli ishlashi uni qanchalik aniqlik foiz ko'rsatgichiga bog'liq.

2.Gapiruvchining ya'ni notiqning psixofiziologik yoki hissiy holatini baxolash. Bu yerda nutq signallarini baholashda, bu yerda eng kuchli ovdagi stressni baholovchi detektorlardan foydalanishni bildiradi (REGAN-VSA). Ushbu kompleksli dasturiy ta'minotda gapiruvchining hissiyotini baholash uchun hech qanday stress holatisiz "olti" raqamini gapirgandagi vaziyat tasvirlangan. Bu yerda ovoz chastotasining mayin va past aytilganligi sababli hech qanday "titroqsiz" gapirgani tasvirlangan. So'zlovchi tomonidan nutq bir tekisda amalga oshirilgan.



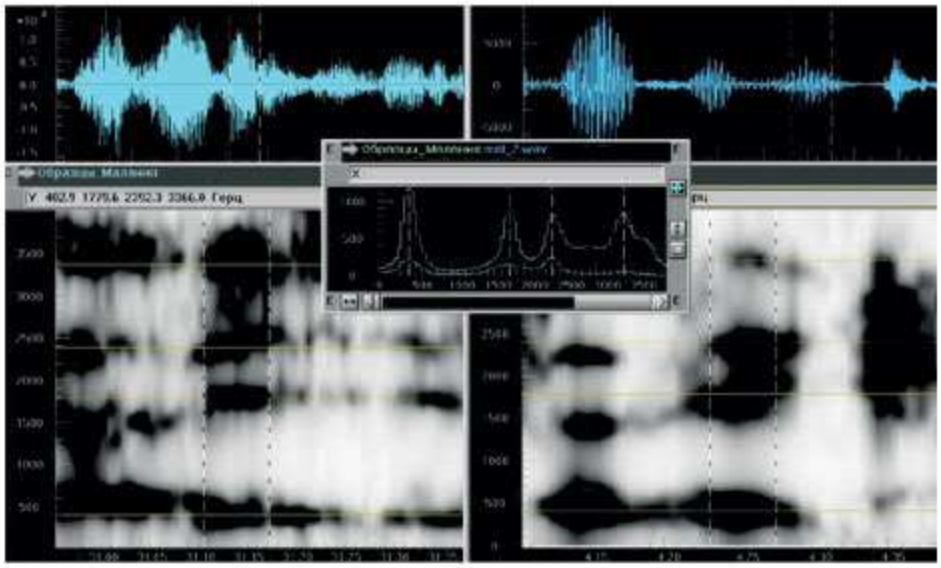
1-rasm. "Olti" so'zining to'lqinli sonogrammasi. Hissiy yoki stresssiz gapirgandagi holati.

Endi esa ikkinchi holat bilan yuqorida ko’rsatilgan holatni solishtirib ko’ramiz. Bu yerda so’zlovchi xavotir bilan ya’ni qandaydir hissiyot bilan nutqni amalga oshirgan. Ushbu sonogrammada biz hissiy zo’riqish belgilarini ko’rishimiz mumkin. Bundan tashqari so’zlovchini nutqida chastotalarning bir tekis emas qandaydir buzilganligini ko’ramiz (24-28 Hz) bu esa stressni boshidan o’tkazayotgan inson uchun xarakterli xususiyatdir.



2-rasm. So’zlovchining xavotirdagi nutq signalining to'lqinli sonogrammasi.

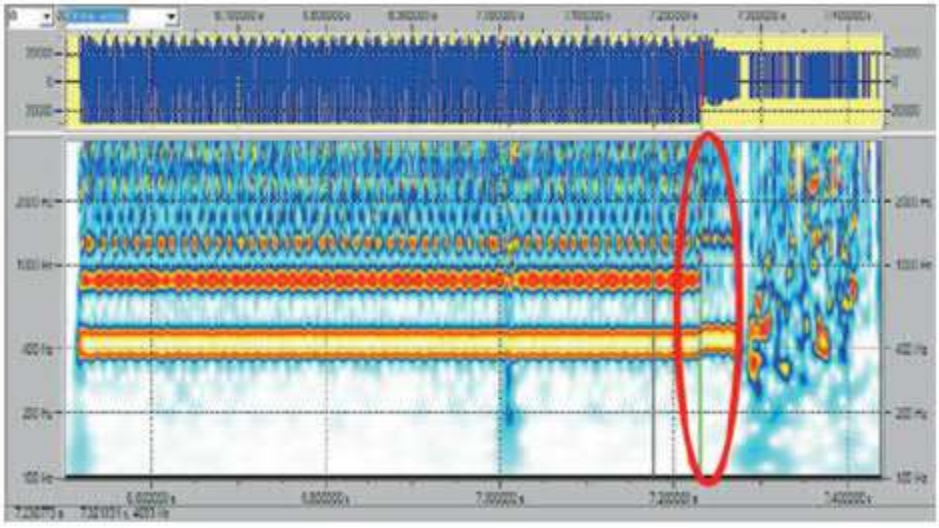
3. Spikerni ya’ni so’zlovchining shaxsini aniqlash. Zamonaviy texnologiyalar asosida bu jarayon muvaffaqiyatli amalga oshirilmoqda. Xususan sud ekspertizasi ishlarida. Bunday vaziyatlarda bu tizimlarning aniq ishlashi ko’p jihatdan dasturiy ta’minotning nutqni qayta ishlashni sifatli amalga oshirishiga bog’liq. 3-rasmda siz ikki insonning nutqini formal taqqoslanganini ko’rishingiz mumkin.



3-rasm. Ikkita so’zlovchining nutqining taqqoslanishi.

Bu yerda jarayon asosan chastotani aniqligini ko’paytirish orqali amalga oshiriladi.

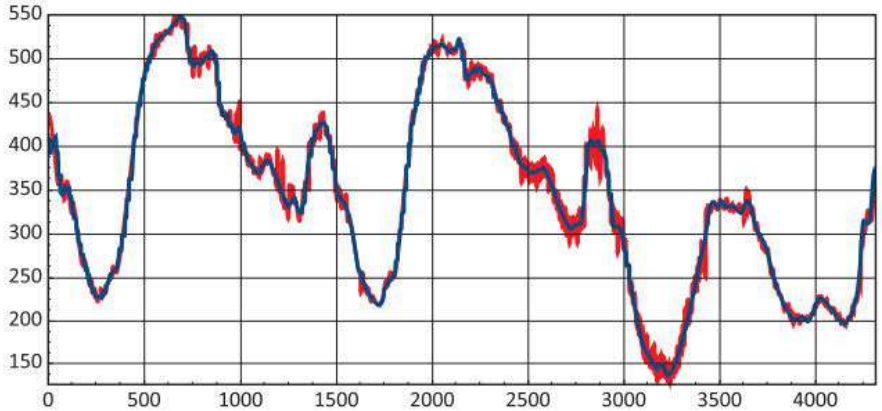
4.Fonogrammaning ya’ni yozilgan nutqning haqiqiyligini aniqlash. Nutq texnologiyasi tobora mustahkam o’rnashib bormoqda inson hayotida. Bu esa ovoz yozuvlarining ishonchligini ta’minlash lozimligini anglatadi. Bu jarayon ayniqsa fonskopiya mutaxassislari amaliyotida eng muhim masalalardan biri hisoblanadi. Buni maxsus ovozni yozib olish uchun yaratilgan kompyuter dasturlari yordamida amalga oshirish mumkin. Sun’iy ravishda yozib olingan fonogrammada ba’zan noto’g’ri ma’lumotlar xam saqlangan bo’lishi mumkin. Yoki talaffuzning noto’g’ri talqin qilinishi va boshqalar. 4 – rasmda fonogrammaning ko’p darajali to’lqin tahlili namunasi ko’rsatilgan. Ushbu tahlilning maqsadi berilgan fayl orqali uning haqiqiyligini aniqlashdir. Bu yerda yuqori chastotalar yordamida tahlilni amalga oshirish ko’rsatilgan. Unda alohida ajralgan qism qizil rang bilan belgilangan.



4-rasm. Fonogramma signalini ko'p darajali to’lqinini tahlil qilish. Haqiqiyligini tekshirish.

5. Nutqni siqish texnologiyalari. Bu texnologiyalar yordamida nutqni ma'lum darajada siqib undagi ma'lumotlar saqlanadi. Bu ko'proq internetda ishlashga mo'ljallangan.

6.Nutq signallarini shovqindan tozalash ya'ni ma'lum bir filtrdan o'tkazish. Bu yerda nutqni shovqindan ajratib olishda chastotali mintaqaning koeffitsiyentlari qanchalik past bo'lsa ya'ni ular noldan qanchalik kam farq qilsa, bu usul shunchalik samarali ishlaydi. 5-rasmda, nutqni shovqindan ajratib olish ko'rsatilgan bu yerda qizil rang asl signalni, ko'k rang esa shovqinni ifodalaydi.



5-rasm. Shovqinli signalni to'lqinli tahlil qilish. Signalni shovqindan ajratib olish.

Nutq signallari bilan ishlashda ya'ni uni qabul qilish va qayta ishlashda hozirgacha aniq va to'laqonli ma'lum bir texnologiyalarni mavjud emasligi bu sohada hali ancha ishlar amalga oshirilishi dolzarbligini anglatadi. Hozirgi vaqtda nutqni tanib olishni turli xil usullari mavjud biroq shu bilan birgalikda ma'lum bir muammolar xam bor. Ushbu masala bo'yicha oldin olib borilgan ilmiy ishlar natijasida ular bilan tanishish orqali, nutqqa ishlov berish usullarini bir qancha guruhlarga bo'lish mumkin:

- ✓ Furye transformatsiyasidan foydalanish;
- ✓ To'lqin transformatoridan foydalanish;
- ✓ Empirik usulda parchalanishdan foydalanish va Xilbert - Xuang o'zgarishlari;
- ✓ Kepstrumdan foydalanish (septstral tahlil);
- ✓ Chiziqli bashoratdan foydalanish;
- ✓ Korrelyatsiya funktsiyasidan foydalanish (korrelyatsion tahlil);
- ✓ Neyron tarmoqlaridan foydalanish;
- ✓ Yashirin Markov modellaridan foydalanish;
- ✓ Dinamik o'zgarishlardan foydalanish [5].

Hozirgi kunda bu guruhga kirganlarning ko'pchiligining o'ziga yarasha afzalliklari va kamchiliklari mavjud, hech biri mutlaqo ideal emas. Lekin, Furye o'zgartirish usuli, kepstral tahlili hozirgi paytda nutq signallarini qayta ishlash va tahlil qilishning aniqroq usuli hisoblanadi. Ammo, eng to'g'ri deb chiziqli bashorat qilish usuli hozirgi paytda istiqbolli deb baholanmoqda bir qancha mutaxassislar tomonidan [6].

Nutq signallarini tanib olish, sintez qilish, ishlov berish va qayta ishlashda, nutq signallari ustida ish olib borayotgan mutaxassislar duch keladigan asosiy muammolarni sanab o'tamiz.

1.Nutqni tanish algoritmlarida shovqini aniqlash va uni bartaraf etish. Ya'ni kerakli bo'lgan signalni sifatiga ziyon yetkazmagan xolda ajratib olish. Nutq signallaridan shovqinli akustik muhitida xam foydalanish.

2.Nutqni aniqlash davomida so'zlovchilarning mustaqilligini ta'minlash. Ya'ni bu ma'lum bir kishilar tomonidan aytilgan so'zlarni emas, balki xohlagan insonning nutqini tanish va uning ustida ishlay olish. Bu jarayon mutaxassislar tomonidan juda og'ir baholangan faoliyatdir. Chunki bunday natijaga erishish uchun, nutq signalining past balandligi va kerakli so'zlarning ombori shakillantirilganligiga bog'liq.

3. Nutq signallari orqali shaxsni taniy olish algoritmlari ishonchliligini ta'minlash muammolari. Bu orqali yagona, mukammal va aniq eng maqbul natijani berish [7].

Xulosa o'rnida shuni ta'kidlash joizki, yuqorida belgilab o'tilgan muammolarga yechim topish va nutq signallari ustida ilmiy ishlarni olib borish dolzarb va istiqbolli yo'nalishlardan biri hisoblanadi. Shu munosabat bilan hozirgi kunda turli soha vakillari hamkorligida mutaxassislar bilan nutq signallari ustida ilmiy izlanishlar olib borish davom ettirilmoqda.

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КОМПЬЮТЕР ТАРМОҚЛАРИДА ХИМОЯНИ ТАЪМИНЛАШ УСУЛЛАРИ

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Аннотация: *Хозирги вақтга келиб компьютер тармоқлари химоясини таминлаш долзарб бўлиб қолмоқда. Компьютер тармоқларида ахборотни химоялашни бир неча усуллари мавжуд мавзуни ўрганиш мобайнида биз усулларга тўхталиб ўтамиз.*

Калит сўзлар: *Ахборот, телекоммуникация, тизим, идентификация, аутентификация.*

Аннотация: *В наше время важно обеспечить защиту компьютерных сетей. В ходе изучения предмета нескольких методов защиты информации в компьютерных сетях мы остановимся на методах.*

Ключевые слова: *информация, телекоммуникации, система, идентификация, аутентификация.*

Abstract: *Nowadays it is important to protect computer networks. In the course of studying the subject of several methods of protecting information in computer networks, we will focus on the methods.*

Key words: *information, telecommunications, system, identification, authentication.*

Компьютер тармоқларида ахборотни химоялаш деб фойдаланувчиларни рухсатсиз тармоқ, элементлари ва захираларига эгалик қилишни ман этишдаги техник, дастурий ва криптографик усул ва воситалар, хамда ташкилий тадбирларга айтилади.

Бевосита телекоммуникация каналларида ахборот хавфсизлигини таъминлаш усул ва воситаларини қуйидагича таснифлаш мумкин:

Усуллар					
Тўсқинлик	Эгаликни бошқариш	Ниқоблаш	Тартиблаш	Мажбурлаш	Ундамоқ

Юқорида келтирилган усулларни қуйидагича таърифлаш қабул қилинган.

Тўсқинлик аппаратларга, маьлумот ташувчиларга ва бошқаларга киришга физикавий усуллар билан қаршилик кўрсатиш деб айтилади.

Эгаликни бошқариш — тизим захиралари билан ишлашни тартибга солиш усулидир.

Ушбу усул қуйидаги функциялардан иборат:

- тизимнинг хар бир объектини, элементини ндентификациялаш, масалан, фойдаланувчиларни;
- идентификация бўйича объектни ёки субъектни хақиқий, асл эканлигини аниқлаш;
- ваколатларни текшириш, яъни танланган иш тартиби бўйича (регламент) хафта кунини, кунлик соатни, талаб қилинадиган захираларни қўллаш мумкинлигини текшириш;
- қабул қилинган регламент бўйича ишлаш шароитларини яратиш ва ишлашга рухсат бериш;
- химояланган захираларга қилинган мурожаатларни қайд қилиш;
- рухсатсиз харакатларга жавоб бериш, масалан, сигнал бериш, ўчириб қўйиш сўровномани бажаришдан воз кечиш ва бошқалар.

Ниқоблаш – маълумотларни ўқиб олишни қийинлаштириш мақсадида уларни криптография орқали кодлаш.

Тартиблаш — маълумотлар билан ишлашда шундай шарт-шароитлар яратиладики, рухсатсиз тизимга кириб олиш эхтимоли камайтирилади.

Мажбурлаш – қабул қилинган қоидаларга асосан маълумотларни қайта ишлаш, акс холда фойдаланувчилар моддий, маъмурий ва жиноий жазоланадилар.

Ундамоқ — ахлоқий ва одобий қоидаларга биноан қабул қилинган тартибларни бажаришга йўналтирилган.

Юқорида келтирилган усулларни амалга оширишда қуйидагича таснифланган воситаларни тадбиқ этишади.

Расмий воситалар — шахсларни иштирокисиз ахборотларни химоялаш функцияларини бажарадиган воситалардир.

Норасмий воситилар — бевосита шахсларни фаолияти ёки унинг фаолиятини аниқлаб берувчи регламентлардир.

Техникавнй воситалар сифатида электр, электромеханик ва электрон қурилмалар тушунилади. Техникавий воситалар ўз навбатида, физикавий ва аппаратли бўлиши мумкин.

Аппарат-техник воситалари деб телекоммуникация қурилмаларига киритилган ёки у билан интерфейс орқали уланган қурилмаларга айтилади. Масалан, маълумотларни назорат қилишнинг жуфтлик чизмаси, яъни жўнатиладиган маълумот йўлда бузиб талқин этилишини аниқлашда қўлланиладиган назорат бўлиб, автоматик равишда иш сонининг жуфтлигини (назорат разряди билан биргаликда) текширади.

Физикавий техник воситалар — бу автоном холда ишлайдиган қурилма ва тизимлардир. Масалан, оддий эшик қулфлари, деразада ўрнатилган темир панжаралар, қўриклаш электр ускуналари физикавий техник воситаларга киради.

Дастурий воситалар – бу ахборотларни химоялаш функцияларини бажариш учун мўлжалланган махсус дастурий таъминотдир. Ахборотларни химоялашда биринчи навбатда энг кенг қўлланилган дастурий воситалар

хозирги кунда иккинчи даражали химоя воситаси хисобланади. Бунга мисол сифатида пароль тизимини келтириш мумкин.

Ташкилий химоялаш воситалари — бу талекоммуникация ускуналарининг яратилиши ва қўлланиши жараёнида қабул килинган ташкилий-техникавий ва ташкилий-хуқуқий тадбирлардир. Бунга бевосита мисол сифатида қуйидаги жараёнларни келтириш мумкин: биноларнинг қурилиши, тизимни лойихалаш, курилмаларни ўрнатиш, текшириш ва ишга тушириш.

Ахлоқий ва одобий химоялаш воситалари — бу хисоблаш техникасини ривожланиши оқибатида пайдо бўладиган тартиб ва келишувлардир. Ушбу тартиблар қонун даражасида бўлмасада, уни тан олмаслик фойдаланувчиларни обрўсига зиён етказиши мумкин.

Қонуний химоялаш воситалари — бу давлат томонидан ишлаб чиқилган хуқуқий хужжатлар саналади. Улар бсвосита ахборотлардан фойдаланиш, кайта ишлаш ва узатишни тартиблаштиради ва ушбу қоидаларни бузувчиларнинг масъулиятларини аниқлаб беради.

Масалан, Узбекистон Республикаси Марказий банки томонидан ишлаб чиқилган қоидаларида ахборотни химоялаш гурухларини ташкил қилиш, уларнинг ваколатлари, мажбуриятлари ва жавобгарликлари аниқ ёритиб берилган.

Хавфсизликни таьминлаш усуллари ва воситаларининг ривожланишини уч босқичга ажратиш мумкин:

1) дастурий воситаларни ривожлантириш;

2) барча йўналишлар бўйича ривожланиши;

3) ушбу босқичда қуйидаги йўналишлар бўйича ривожланишлар кузатилмоқда:

- химоялаш функцияларини аппаратли амалга ошириш;
- бир неча химоялаш функцияларини қамраб олган воситаларни яратиш;
- алгоритм ва техникавий воситаларни умумлаштириш ва стандартлаш.

Бевосита тармоқ бўйича узатиладиган маълумотларни химоялаш мақсадида қуйидаги тадбирларни бажариш лозим бўлади:

- узатиладиган маълумотларни очиб ўқишдан сақланиш;
- узатиладиган маълумотларни тахлил қилишдан сақланиш;
- узатиладиган маълумотларни ўзгартиришга йўл қўймаслик ва ўзгартиришга уринишларни аниқлаш;
- маълумотларни узатиш мақсадида қўлланиладиган дастурий узилишларни аниқлашга йўл қўймаслик;

- фирибгар уланишларнинг олдини олиш.

Ушбу тадбирларни амалга оширишда асосан криптографик усуллар қўлланилади.

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ДАВОЛАШ МУАССАСАЛАРИ АХБОРОТ ТИЗИМИНИНГ ТАШКИЛИЙ ВА АХБОРОТ МУҲИТИ

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Аннотация: *Ушбу мақолада даволаш муассасалари ахборот тизимининг умумий таркибий тузилиши, унинг муҳитида ечиладиган масалалар, ахборот тизимига ташқи муҳит билан бўладиган алоқалар асосида кўйиладиган талаблар келтирилган. Шунингдек, даволаш профилактика муассасаларининг интеграллашган моделини ишлашини амалга ошириш учун ахборот муҳитни ифодаловчи формаллаштирилган еттилик маълумотлар базаси таркиби тавсия этилган.*

Калит сўзлар: *Тиббий муассаса, ахборот тизими, ахборот муҳити, таркиб, талаб, интеграллашган модел, маълумотлар базаси.*

Аннотация: *В данной статье рассматривается общая составная структура информационной системы лечебних учреждений, задачи выполняющиеся в этой среде, а также приведены поставленные требования информационной системы на основе связей с внешней средой. Также, рекомендован састав формализованной семизначной базы данных выражающие информационную среду для реализации интегрированной модели лечебно-профилактических учреждений.*

Ключевые слова: *Медицинская учреждения, информационная система, информационная среда, структура, требование, интегрированная модель, база данных.*

Annotation: *This article discusses the General structure of the information system of medical institutions, the tasks performed in this environment, as well as the requirements of the information system based on links with the external environment. Also, it is recommended to create a formalized seven-digit database expressing the information environment for the implementation of an integrated model of medical institutions.*

Keywords: *Medical institution, information system, information environment, structure, requirement, integrated model, data base.*

Маълумки ҳозирги вақтда тиббиёт муассасаларида ахборот тизимларидан унумли фойдаланиш етарлича йўлга қўйилмаган, айрим тиббий муассасалардагина ўзларининг хусусий ахборот тизимларидан фойдаланилмоқда. Шу сабабли кўпгина даволаш–профилактика муассасаларида маълумотларнинг асосий ташувчиси қоғозлар ёки оддий файллар бўлиб қолмоқда. Бундай шароитда куйидаги муаммолар пайдо бўлади.

Масалан даволаниш учун килиникага келган бемор бошқа ҳудудда рўйхатда турган бўлса, ушбу клиникада беморнинг шахсий тиббиёт варақаси

мавжуд бўлмаса, шифокорларнинг бемор ҳақидаги барча маълумотларни, жумладан, беморнинг ўзига хос касалликлари ҳақида маълумотларни тезда олишга имкон бўлмайди.

Айрим фавқулодда вазиятларда ушбу маълумотларга тезкор эга бўлмаслик бемор ҳаётини сақлаш учун ҳал қилувчи рол ўйнаши ҳам мумкин. Ушбу мулоҳазалардан кўриниб турубдики, соғлиқни сақлаш соҳасида тиббий ахборот тизимларини қўллаш долзарб муаммолардан ҳисобланади.

Даволаш профилактика муассасалари (ДПМ)да ахборот тизимларини жорий этиш бемор ҳақида маълумот олиш муаммосини ҳал қилиш, ДПМларнинг ўзаро алоқаларини осонлаштиради ва ҳатто даволаш муассасаларини ҳамкорлик қилишга даъват этадиган бемор ҳақидаги маълумотларни тарқалган ҳолда сақлайди (таксимланган маълумотлар базасини ташкил этиш). Демак, бемор ҳақида тўлиқ маълумотларга эга бўлишлик учун барча ДПМларини боғловчи тиббиёт тармоғини шакллантириш лозим.

Бунинг учун маълум бир структурага кирувчи ДПМларининг ҳар бири ўзининг ахборот тизимига эга бўлиши ва умумий структурага кирувчи ДПМлари тармоғига уланиши керак бўлади. Бундай тизимларнинг яратилиши ДПМларда беморни текшириш ва даволашда сарфланадиган вақтни қисқартиради, ортиқча қоғозбозликни олдини олади, ҳамда шифокорларнинг фаол ахборот оқимига эга бўлиш ишини осонлаштиради, уларни маъмурий талабларга эмас, балки беморларга диққат қаратишига ёрдам беради. Тахлиллар шуни кўрсатадики [1-4], ДПМлар ахборот тизимларига қўйиладиган асосий талаблар қуйидагилар:

- ташқи муҳит билан ахборот алмашиниш қобилятига эга бўлиши керак. Ташқи муҳит бу бошқа ДПМ бўлиши ҳам мумкин;
- тиббий ахборот тизими ДПМларининг барча ходимлари ва беморларнинг ахборот эҳтиёжларини қондириши керак.

Ушбу талаблар шуни кўрсатадики, барча ДПМ ахборот тизимлари ягона ахборот мухитида ишлаши ва ташқи муҳит билан ягона форматда ахборот алмашиниш имкониятига эга бўлиши лозим.

ДПМ ахборот тизимга ташқи муҳит билан алоқаси ечиладиган масалалар учун талабномалар, масалаларни ечиш учун бирламчи маълумотлар, шунингдек, масала ечимини натижалари ва уларни юбориш керак бўлган манзиллар бўлиши мумкин.

ДПМ ахборот тизими доирасида ташқи талаблар асосида ечиладиган масалаларга типик мисоллар сифатида қуйидагиларни келтириш мумкин:

-ДПМда ҳар бир танланган профил бўйича врачларнинг умумий сони ва рўйхатини танлаш;

-ДПМда кўрсатилган мутахассислик бўйича хизмат кўрсатувчи персоналлар сони ва рўйхатини аниқлаш;

-ҳар бир профил бўйича тоифаларга эга бўлган врачлар умумий сони ва рўйхатини аниқлаш;

-бирор давр ичида клиникада даволанган беморлар таркибини яшаш манзили, ташхиси, даволовчи врачи ва бошқа кўрсатгичлари бўйича синфларга ажратиш;

-ДПМдаги ва бўлимлардаги бўш коекаларни ва бўш палаталарни аниқлаш;

-талаб этилган врач кузатувида бўлган беморлар рўйхатини аниқлаш;

-врачларнинг жорий вақтдаги юкламасини (жорий вақтда врачга бириктирилган беморлар сони) ва бандлик коэффициентини аниқлаш ва шу кабилар.

Алоҳида ДПМ учун тиббий ахборот тизимининг ички таркибий тузилишини [5-7]ларга асосланган ҳолда қуйидаги расмдагидек ифодалаш мумкин. Ушбу ахборот тизимининг фаолият кўрсатиши учун ДПМнинг ягона ахборот муҳити [8] мавжуд булиши керак.

Бу ердаги *Поликлиника модули* беморларни дастлабки кўрикдан ўтказишга мўлжалланган. Бу беморларга даволаниш жараёнини бошлашига ёки оғир ҳолларда стационарга ётқизишга йўлланма берилади. Амбулатория шароитида, ҳар бир текширув пайтида, беморнинг аҳволини кузатиш учун дастлабки учрашувда бошланган диагностика харитаси такомиллаштирилади.

Агар бемор клиникада даволанишга рози бўлса, Поликлиника модулидан Стационар модулига ўтказилади. Бу қарор қабул қилинса, беморга Стационар модули томонидан даволаниш дастурлари учун қулай имкониятларни тақдим этиш имконити яратилади.

• Бу бўлимда стационар томонидан аниқ бемор бўйича ўтказиладиган тадқиқотларга доир мурожатлар ўрганилади. Натижалар беморнинг картасига

ташхис натижалари бўйича ёзилади. Диагностика модули ўтказиладиган ташхиси тадқиқотлар турлари (радиация диагностикаси, биокимёвий таҳлил, тиббий аппаратуралардаги текширув натижалари) бўйича бир неча қисмлардан иборат бўлиши мумкин.

• Ечим қабул қилишни қўлловчи модул юборилган маълумотлар асосида турли кассалликлар синфлари бўйича фаолият кўрсатувчи диагностик эксперт тизимлардан иборат бўлиб, стационар томонидан юборилган касалликлар синфи коди бўйича юборилган маълумотлар асосида фаолият кўрсатади ва ташхисий ечим қабул қилади, ҳамда стационар модулига тавсия этади. Ушбу модул асосини продукцион ва эҳтимолий моделлар ташкил этади [7].

• Ечимга мос мулоажа вариантини танлаш модули танланган ечим, яъни ташхис бўйича унга мос мулоажа вариантларини тавсия этади.

ДПМ даражасида ахборот окими харакатини моделлаштириш мураккаб масала булиб, бир неча турдаги моделларни интеграциялаш оркали амалга оширилиши мумкин. Бизнинг таклифимиз буйича интеграциялашган модел , куйидаги таркибда бўлиши мумкин.

Интеграллашган модел структураси [9]:

Мо = {Мс, Мф, Ми, ММ}, (1)

бу ерда *Мо* - даволаш жараёнининг умумий модели;

Мс -таркибий модел;

Мф - функционал модел;

Ми - информацион модел;

Мм –даволаш-диагностик ечимлар кабул килиш бўйича математик ва мантикий моделлар.

• Ушбу моделлар тизими ташхислаш ва даволаш жараёнини мураккаб тизим сифатида караб тулик тахлил килиш имкониятини беради.

• Таркибий модел сифатида даволаш жараёнининг графлар тизими каралган бўлиб, жараённинг асосий элементлари ва улар орасидаги алокаларни ифодалайди.

• Тиббий ёрдам кўрсатиш жараёнининг функционал моделини IDEF-диаграммалар кўринишида ифодалаш мумкин. Информацион модел йўналтирилган граф ва функционал моделлар асосида ифодаланади.

Бутун ДПМ ларининг информацион модели қуйидаги формаллаштирилган еттилик маълумотлар базаси асосида тўлиқ фаолият кўрсатади:

$$X=\{\{P\},\{D\},\{O\},\{P^*\},\{O^*\},\{S\},\{R\}\}; \quad (2)$$

бу ерда {P} –тиббий кўрик натижасида аниқланадиган параметрлар тўплами; *{D}* –ушбу параметрларнинг диапазонлари тўплами; *{O}* – параметрлар диапазонлари баҳолари тўплами; {P*} – диапазонларнинг мумкин бўлган комбинациялари тўплами; {O*} – шу комбинациялар баҳолари тўплами; *{S}* – мулоажалар вариантлари; *{R}* – даволашдаги тайинлавлар (мулоажалар).

Ушбу (2) еттиликни шакллантириш (1) интеграллашган моделни амалга ошириш имкониятини яратади, ҳамда бемор ҳақидаги ушбу шаклдаги барча маълумотлари у даволанган ДПМси маълумотлар базасига киритилади ва сақланади.

Агарда бир хил ахборот муҳитида фаолият кўрсатувчи ДПМлараро тармоқлар мавжуд бўлса, бемор турли ДПМларига мурожат қилганида унга тегишли маълумотларга тезкор эга бўлиш имкониятини яратади. Бу эса ўз навбатида ташхислаш ва даволаш жараёни тезкорлиги ва самарадорлигини ошириш имкониятини беради. Шунингдек, ДПМнинг ахборот тизими ички ва ташқи ҳисоботларни тезкор тақдим этишни ҳам таъминлайди.

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COMPARING HEALTH RISK FACTORS WITH CLINICAL EXPENSES BY USING CLASSIFICATION ALGORITHMS

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Abstract. *Clinical expenses is one of the major costs in a human life. It's a typical information that one way of life what's more, different physical parameters directs sicknesses or infirmities and these infirmities directs clinical costs. According to different studies, main reason for higher medical expenses is personal medical care which include BMI, age factor, and smoking. In this research, we target to discover a correlation between personal clinical expenses and various factors, and compare them by using Weka. In this research we found that higher BMI, age, and smoking have a high relationship with higher clinical expenses which showing they are main considerations in adding to the charges.*

Keywords: *Weka, Clinical expenses, BMI, Smoking, Age*

1. INTRODUCTION

As per WHO, individual consumption on clinical services has been expanding quicker than the general economy [1]. In this expansion has been credited to numerous causes, major of which incorporate ageing, smoking, and increased BMI. In this research, we target to discover a correlation between personal clinical expenses and various factors using dataset of various people with attributes such as number of children, region, smoking, age, and BMI.

We will start from correlation of Clinical charges with each of the attributes such as number of children, region, smoking, age, and BMI .In this research we used classification algorithms such as Linear regression and Random Forest, we will use these algorithms to compare the clinical expense verses other attributes of dataset. With the help classification algorithms we can create different visualize model.

Linear regression is a direct way to deal with displaying the connection between a scalar reactions and one or more explanatory variables. Random forests use a variety of packing whereby numerous autonomous trees are found out from a similar preparing information.

2. Literature Review

There have been different investigations in this field, as the expansion in medicinal services use has been prevailing throughout the years. Heftiness has comparative wellbeing conditions as that which accompany twenty years maturing as Sturm examines in this paper [2]. Here he thinks about the impacts of weight, overweight, smoking, what's more, issue drinking dependent on national review information in the USA. Another comparable paper utilized different relapse and various leveled numerous relapse to discover the determinants and related elements that contribute to medicinal services uses in Korea [6]. The examination classes determinants into debatable and non-debatable variables and finds that the extent of old in the populace is the significant supporter of clinical expenses.

3. Dataset

In this research we used insurance.csv dataset file from Kaggle which contains Clinical cost personal dataset of people. During this research I found many dataset but I used this dataset due its attributes which are simply represented and helpful in my research work.

3.1 Attributes in the dataset

Column	Description
Age	Age of primary beneficiary
Sex	Insurance contractor gender. female/ male
BMI	Body mass index, provides an understanding of body.
Children	Number of children covered by insurance
Smoker	If Insurance primary smokes
Region	The beneficiary's residential area in the US.
Charges	Individual medical costs billed by health insurance.

Figure 10 Attributes in the Dataset

4. Result and discussion

4.1 Implementation of Algorithms

Weka is picked for implementation of algorithms. The target of choosing this tools is to comprehend the fundamental ideas and furthermore utilization of these calculations progressively. Weka is useful in learning the essential ideas of AI with various choices and examines the yield that is being delivered.

We will apply classification algorithms such as linear regression and Random Forest, we will use these algorithms to compare the clinical expense verses other attributes of dataset. With the help classification algorithms we can create different visualize model.

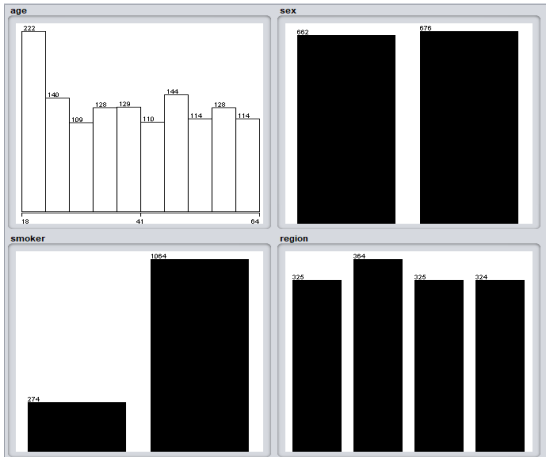


Figure 1 Summary of Dataset Attributes (Age, Sex, Smoker, and Region)

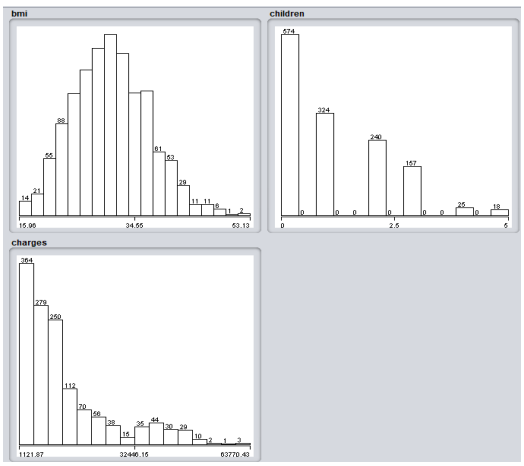


Figure 2 Summary of Dataset Attributes (BMI, Children, and Charges)

4.2 Compression of different attributes of dataset

4.2.1 Linear Regression

```
Linear Regression Model

charges =

    257.0064 * age +
    338.6413 * bmi +
    471.5441 * children +
  23843.8749 * smoker=yes +
    782.7452 * region=northwest,northeast,southeast +
   -858.4696 * region=southeast +
 -12948.1277

Time taken to build model: 0.3 seconds

=== Cross-validation ===
=== Summary ===

Correlation coefficient                  0.864
Mean absolute error                   4211.6025
Root mean squared error               6095.5645
Relative absolute error                 46.2753 %
Root relative squared error             50.2864 %
Total Number of Instances             1338
```

Figure 3 Linear Regression Model shows summary

Results:

Time taken to build the model = 0.3 seconds

Correlation coefficient = 0.864

Total number of instances = 1338

Figure 4 Smoker Vs Chargers

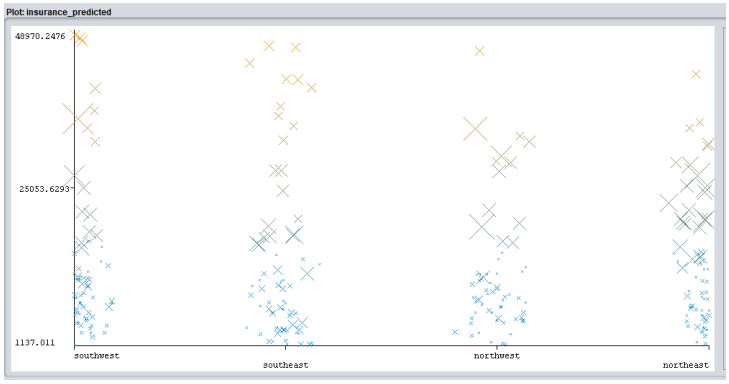


Figure 5 Region Vs Charges

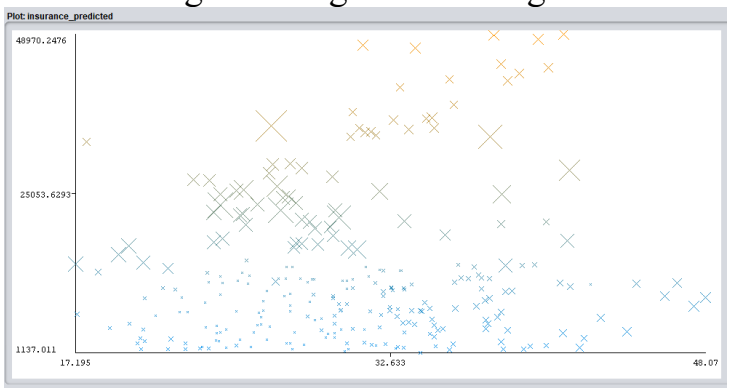
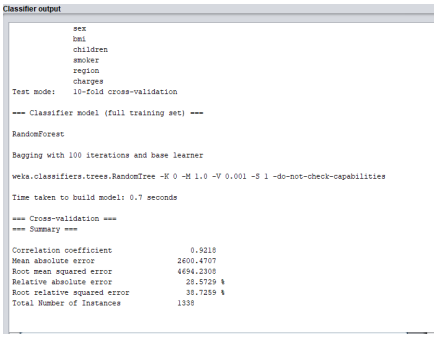


Figure 6 BMI Vs Charges

As we compared different attributes of our dataset using linear regression to find higher clinical expense verses other attributes of dataset.as show in figure 4 the smokers have high ratio of medical expense as compare to non-smokers, also in fig 5 southeast and southwest region have higher expenses than northwest and northeast. In last fig 6 which show if human BMI is less than 48.07 the medical expenses will be high.

4.2.2 Random Forest



```
Classifier output

                sex
                bmi
                children
                smoker
                region
                charges
Test mode:    10-fold cross-validation

=== Classifier model (full training set) ===

RandomForest

Bagging with 100 iterations and base learner

weka.classifiers.trees.RandomTree -K 0 -M 1.0 -V 0.001 -S 1 -do-not-check-capabilities

Time taken to build model: 0.7 seconds

=== Cross-validation ===
=== Summary ===

Correlation coefficient                  0.9218
Mean absolute error                   2600.4707
Root mean squared error               4694.2308
Relative absolute error                 28.5729 %
Root relative squared error             38.7259 %
Total Number of Instances             1338
```

Figure 7 Random Forest Model shows summary

Results:

Time taken to build the model = 0.7 seconds

Correlation coefficient = 0.9218

Total number of instances = 1338

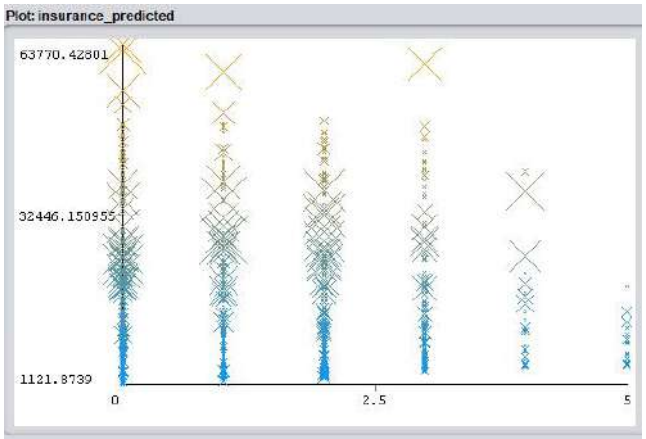


Figure 8 Children Vs Charges

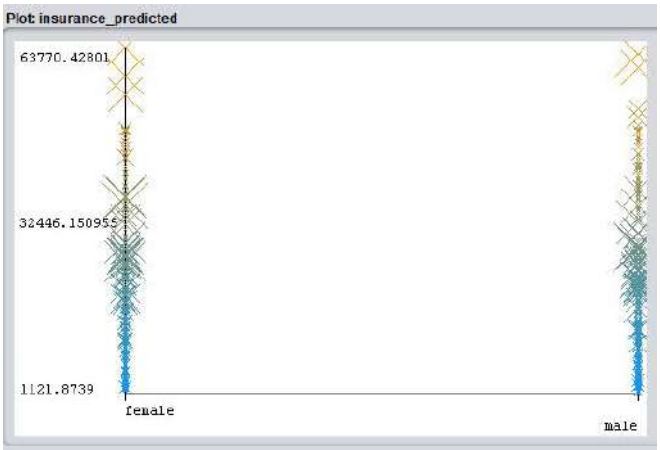


Figure 9 Sex VS Charges

As we compared different attributes of our dataset using Random Forest to find higher clinical expense, It shows in fig 8 that people having less than 5 children have more medical expense and in fig 9 we used sex attribute verses charges which shows even between male and female.

4. CONCLUSION

Through building linear regression & Random Forest models and comparing them by using Weka we were able to predict with relatively high degree of accuracy medical expenses, healthcare costs also have nonlinear dependency significantly across Smokers, Age, and BMI. While other factors such as region and gender have least relevance in the medical expenses based on insurance data. In real insurance considerably more factors are viewed as like, different disease conditions, earlier clinical history etc.

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MA'LUMOTLAR BAZASINI ANDROID TIZIMIDA ISHLOVCHI DASTURIY TA'MINOT UCHUN LOYIHALASHTIRISH QOIDALARI

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Annotatsiya: *Hozirgi kunga kelib kompyuterlarni o'rnini mobil telefonlar egallamoqda shuning uchun android tizimida ma'lumotlar ba'zasini loyixalashtirish muxim axamiyat kasb etmoqda.*

Kalit so'zlar: *Kompyuter, android, online, avtomatlashtirilgan, oracle, My SQL*

Аннотация: *В настоящее время компьютеры заменяются мобильными телефонами, поэтому важно создать базу данных в системе Android.*

Ключевые слова: *ПК, Android, онлайн, автоматизированный, оракул, My SQL*

Abstract: *Currently, computers are being replaced by mobile phones, so it is important to create a database in the Android system.*

Keywords: *PC, Android, online, automated, oracle, My SQL*

Android operatsion tizimi rivojlanib borishi bilan, u tizimda ishlovchi dasturlarga bo'lgan talablar ham ortib bormoqda. Har qanday dasturiy ta'minot yaratishdan oldin dastlab yaratiladigan dastur uchun texnik topshiriq tuzish zarur. Texnik topshiriqning ham eng dastlabki elementi bu ma'lumotlar bazasini loyihalashtirishdir.

Hozirgi kunda yaratilayotgan dasturlar asosan 2 turga bo'linadi :

1) Kompyuterning o'zi yoki biror qurilma uchun xizmat qiluvchi dasturlar
2) Biror bir jarayonni avtomatlashtirish uchun yaratiladigan dasturlar

Avtomatlashgan ish o'rnida jarayon davomida inson ishtirok etmaydi. Barcha jarayonlar avtomatlashgan holda amalga oshiriladi.

Avtomatlashtirilgan ish o'rinlarida esa jarayon davomida inson tarafidan kiritilayotgan malumotlarga asoslanib, vazifani bajaradi.

Avtomatlashtirilgan ish o'rinlarini yaratishda dastlabki vazifa shu jarayonni to'liq o'rganish hisoblanadi, ya'ni ishning qanday tartibda borishi, qaysi holatlarga bog'liq va hokazo. Masalan, oddiy poliklinikada bemorlarni ro'yxatga olishni avtomatlashtirish uchun dastlab ro'yxatga olish qanday tarzda kechishi, ro'yxatga olish uchun qanday ma'lumotlar zarurligi, oldin ro'yxatdan o'tgan bemorga qanday xizmat ko'rsatiladi va shunga o'xshash birja savdosini ham ONLINE tarzda ommaga taqdim etishni har bir jihat alohida e'tibor bilan o'rganilishi zarur.

Dasturning uzoq va samarali xizmat ko'rsatishi uchun shunga o'xshash barcha holatlarni o'rganib, ularning yechimlarini ham yaratib ketish zarur. Hozirgi kunda dasturiy ta'minotlarga bo'lgan ehtiyoj ortib borishi bilan, ularga bo'lgan talab ham ko'paymoqda. Hozir oddiy funksiyaga ega bo'lgan dasturni yaratib, uning ortidan foyda topish juda murakkab hisoblanadi.

Dasturga buyurtma beruvchi tashkilot, firma yoki shaxs dastur uchun mablag' sarflagandan so'ng, unga bo'lgan talabni ham o'ta yuqori darajada qo'ymoqda. Yuqoridagi misolga qaytsak, poliklinikada royxatga olish bo'limi uchun avtomalashtirilgan ish o'rnini yaratish kerak bolsa, u dastur faqatgina kelgan insonlarni ma'lumotlarni yozish bilan cheklanmasligi kerak.

Yaratilgan dastur sun'iy intellektga (aqlga) ega bo'lishi zarur ya'ni dasturda hisobotlarning turli ko'rinishlari, ixtiyoriy turdagi qidiruv tizimi, tezkorlik kabi funksiyalar bo' lishi shart

Bunday imkoniyatlarga ega bolgan dasturiy ta'minot yaratish uchun dastlab qilinadigan ishlar loyihasi quriladi va shunga qarab ma'lumotlar bazasi yaratiladi. Ma'lumotlar bazalarini boshqarish tizimlarini tanlashda yaratiladigan dasturda ma'lumotlarning hajmi, bir vaqtda ko'p foydalanuvchilar bilan ishlashi, ma'lumotlar qidiruvining tezkorligi kabi jihatlarga ahamiyat berish zarur. Masalan agar yaratiladigan dastur ko'pgina foydalanuvcbilarga xizmat korsatsa MySQL, agar bir jadvaldagi malumotlar ko'p bolsa Oracle va shunga oxshash holda. Bu vazifa dasturchining o'z ixtiyorida faqat MBBTni tanlayotgan vaqtda keyinchalik dasturni yaratishda qiyinchiliklar tug'ilmasa kifoya.

MBBT tanlangandan so'ng eng asosiy masalaga o'tiladi bu - ma'lumotlar bazasini loyihalashtirish. Ma'lumotlar bazasi to'g'ri loyihalashtirilgan bo'lsa, dasturni yaratishda chorasiz amal bo'lmaydi.Shu bilan birga dastur yaratib bo'lingandan keyin ham unga qo'shimcha imkoniyatlar qo'shish mumkin bo'ladi. Xo'sh ma'lumotlar bazasini loyihalashtirishda nimalarga e'tibor qaratish zarur?

Ma'lumotlar bazasini loyihalashtirishda asosiy 6 ta qoida mavjud

1) Mos maydon nomlarini tanlash
2) Ma'lumotlarni kerakli qismlarga ajratish
3) Barcha detallarni bir joyda saqlash
4) Bir xil ma'lumotlarni ko'p marta takrorlanishini oldini olish
5) Ortiqcha (keraksiz) ma'lumotlarni yo'qotish
6) Har bir jadvalda kalit maydon hosil qilish

Eng avvalo ma'lumotlar bazasi jadvallardan tashkil topadi. Ma'lumotlar bazasi, undagi jadvallar va jadvaldagi ustun nomlari tanlanayotganda maxsus qoidalarga amal qilish talab qilinadi. Bu qoidalarga asosan quyidagilar kiradi

- undagi jadvallar va jadvaldagi ustun nomlari lotin alifbosi harflari, sonlar, "_" belgisi yordamida tuziladi
- Hech qachon son birinchi o'rinda kelmasligi kerak (1talaba kabi)
- Maydon nomlari probel, ",", "." Belgilarisiz, uzluksiz tarzda keltirilishi zarur
- Kirill alifbosidagi harflardan foydalanish tavsiya etilmaydi.
- Yaratilayotgan maydon nomi haqiqiy ma'lumotga mos holda berilsa maqsadga muvofiq boladi ya'ni masalan bemor familiyasi kiritilishi kerak bolgan maydonni familiya, fam, surname kabi nomlansa keyinchalik ishlash davomida qiyinchiliklar kuzatilmaydi.

Yuqoridaga qoidalarga amal qilingan holda ma'lumotlar bazalari loyihalashtirilsa, har qanday tizimda ishlashga mo'ljallangan dasturiy ta'minot ham qulay, qo'shimcha imkoniyatlarga ega bo'ladi.

КРЕМНИЙ АСОСЛИ ҚУЁШ ЭЛЕМЕНТЛАРИНИ «SENTAURUS TCAD» ПАКЕТИ ЁРДАМИДА МОДЕЛЛАШТИРИШДА ҲАРОРАТНИ ҲИСОБГА ОЛИШ

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Аннотация: *Ушбу мақолада Sentaurus TCAD дастурлар пакети ёрдамида кремний асосли p-n ўтишли қуёш элементларига ҳароратнинг таъсири натижасида фотоэлектрик зарядларни узатиш жараёнларини моделлаштириш масалалари кўриб чиқилган ва мухокама қилинган.*

Калит сўзлар: *Sentaurus TCAD, кремний, қуёш элементи, қуёш батареялари, ҳарорат, модель, моделлаштириш.*

Аннотация: *В работе приведены и обсуждены вопросы моделирования при помощи «Sentaurus TCAD» программной системы влияние температуры на основные фотоэлектрические процессы переноса заряда в кремниевых солнечных элементах с p-n-переходом.*

Ключевые слова: *Sentaurus TCAD, кремний, солнечный элемент, солнечная батарея, температура, модель, моделирование.*

Annotation: *In this article presents and discusses modeling issues using the Sentaurus TCAD software system, the effect of temperature on the main photovoltaic charge transfer processes in silicon solar cells with p-n-junction.*

Keywords: *Sentaurus TCAD, silicon, solar cell, solar battery, temperature, model, simulation.*

Қуёш элементлари ва қуёш батареяларини ишлаб чиқариш ва саноат соҳасида тадбиқ қилишнинг энг муҳим муаммоларидан бири бу қуёш нурларининг тўғридан-тўғри ва мунтазам равишда қуёш элементи сиртига тушиб туриши натижасида қизиб кетишидир. Бундан кўринадики, кремний асосли қуёш элементларнинг фотоэлектрик параметрларига ҳароратнинг таъсирини ўрганиш ҳозирги куннинг долзарб муаммоларидан бир ҳисобланади.

Кремний асосидаги p-n-ўтишли қуёш элементларида ноасосий заряд ташувчиларнинг фотоэлектрик генерация жараёнларини моделлаштириш учун «Sentaurus TCAD» лицензияланган дастурий пакетидан фойдаланилди.

Ушбу пакетнинг бир қанча муҳим жихатлари билан танишамиз. Sentaurus – бу TCAD инструментлари тўплами бўлиб, микроэлектроника ва наноэлектроника асосида яримўтказгичли қурилмаларни ишлаб чиқариш,

тадбиқ қилиш ва ишончлилигини текшириш учун моделлаштириш вазифасини бажаради.

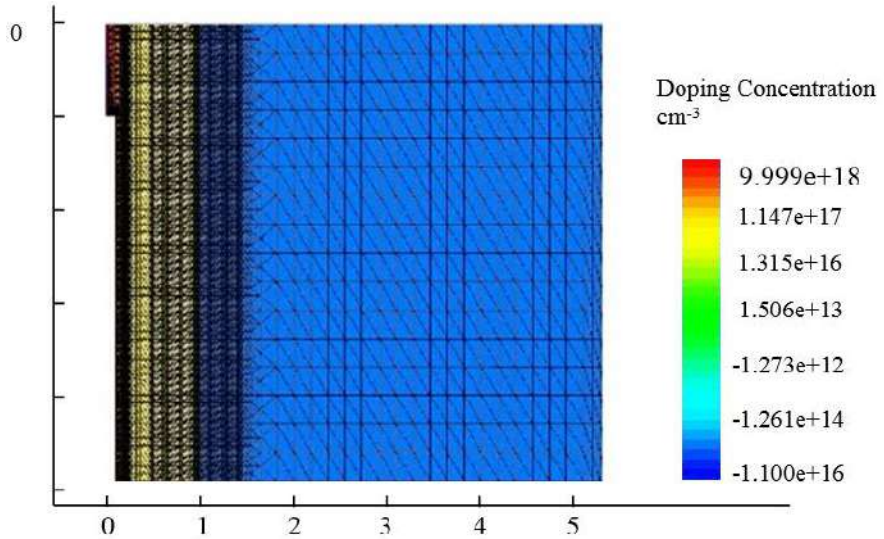
Sentaurus пластиналарни ишлаб чиқариш босқичларини ва қурилмаларнинг ишлаши тақдим этишда физик моделлардан фойдаланади, бу нафақат ўрганиш, балки янги яримўтказгичли қурилмаларнинг янги дизанлари ва параметрларини оптималлаштириш учун имкон беради.

Sentaurus TCAD пакети кенг имкониятга эга бўлган кўплаб дастурий таъминот тўпламларига эга. Олиб борилган тадқиқот ишида Sentaurus TCAD пакетининг SDE, Sentaurus Device ва SVisual модулларини таркибига олган Sentaurus Workbench инфратузилмасидан фойдаланилди.

SDE – бу 2D/3D тахрирлаш мухити бўлиб, геометрик амаллар ёрдамида қурилманинг структурасини яратиш ва тахрир қилиш мумкин. Sentaurus Device – кремнийли ва аралаш яримўтказгичли қурилмалар симуляторидир. У ёрдамида 2- ва 3-ўлчовли кремнийли ва аралаш яримўтказгичли қурилмаларнинг электр, иссиқлик ва оптик ҳарактеристикаларини моделлаштириш мумкин. Бу дастур замонавий функционал яримўтказгичли технологияларни, жумладан, наноўлчамли қуёш элементларни ишлаб чиқаришни ривожлантириш ва оптималлаштиришни қўллаб қувватлайди.

SVisual – бу TCAD ёрдамида бажарилган ишларни визуаллаштириш модули ҳисобланади. Бу дастур фойдаланувчига 1D, 2D ва 3D муҳитида маълумотларни тадқиқ қилишни замонавий интерфаол мухитини тақдим қилади.

Sentaurus Workbench – бу TCAD ёрдамида моделлаштириш, бошқариш ва таҳлил қилиш имконини берувчи тўлиқ график муҳитдир.



Расм 1. SDE ёрдамида яратилган қуёш элементининг геометрик модели

Унинг интуитив график фойдаланувчи интерфейси фойдаланувчиларга TCAD симуляцияси билан боғлиқ бўлган одатий вазифаларни бошқариш ва автоматлаштиришга имкон беради, масалан, маълумот оқимини бошқариш, шу жумладан фойдаланувчи киритиш файлларини қайта ишлаш, лойиҳаларни параметрлаштириш, асбоблар инстансияларини созлаш ва ишга

тушириш ва тегишли кўриш воситаларидан фойдаланиб натижаларни визуализация қилиш имконини беради (расм 1).

Sentaurus қурилмалари қуёш батареясида ҳар хил ҳароратда оптик генерациялар ҳосил бўлиш тезлигини ҳисоблаш имконини беради ва уни электр моделлаштириш билан боғлайди. Sentaurus Device оптик сигналларни ишлаб чиқариш тезлигини ҳисоблаш учун бир нечта усулларни қўллайди. Бундан ташқари, кремний асосли қуёш элементлари параметрларига ҳароратнинг таъсирини ҳисоблаш учун термодинамик моделдан фойдаланилган. Термодинамик моделда панжара ҳарорати қуйидаги формула бўйича ҳисобланади:

$$\frac{\partial}{\partial t}(c_L T) - \nabla(\kappa \nabla T) = -\nabla\left[(P_n T + \Phi_n)\vec{J}_n + (P_p T + \Phi_p)\vec{J}_p\right]$$
$$-\frac{1}{q}\left(E_c + \frac{3}{2}\kappa T\right)\left(\nabla\vec{J}_n - qR_{net,n}\right)$$
$$-\frac{1}{q}\left(E_V + \frac{3}{2}\kappa T\right)\left(-\nabla\vec{J}_p - qR_{net,p}\right) + \hbar\omega G^{opt}$$

бунда:

к – иссиқлик ўтказувчанлиги,

C_L – панжара иссиқлик сиғими,

E_C ва E_V – мос равишда ўтказувчанлик зонаси ва валент зона энергиялари,

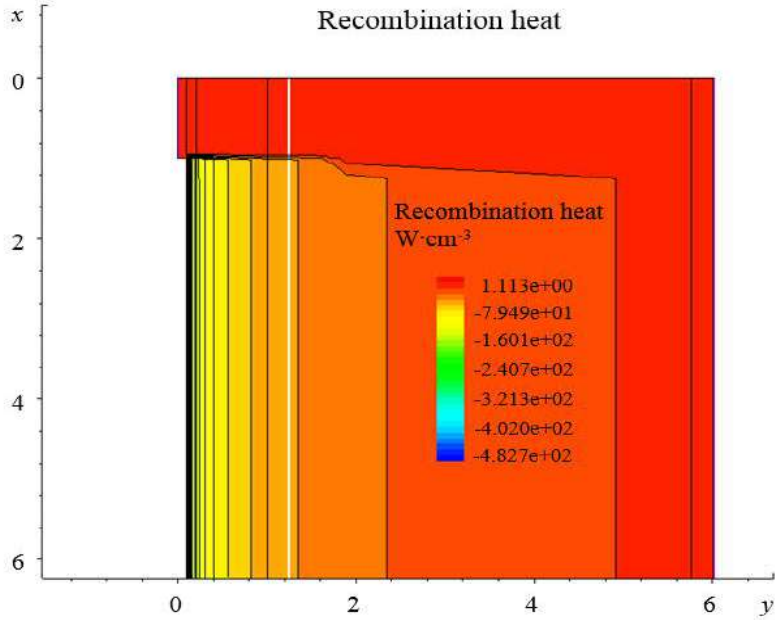
G^{opt} – ω-частотали фотонларнинг оптик генерацияси тезлиги,

$R_{net,n}$ и $R_{net,p}$ – мос равишда электронлар ва ковакларнинг рекомбинация тезлиги,

J_n и J_p – ток оқими зичлиги,

P_n и P_p – Ферми потенциалига эга бўлган термал кучлар.

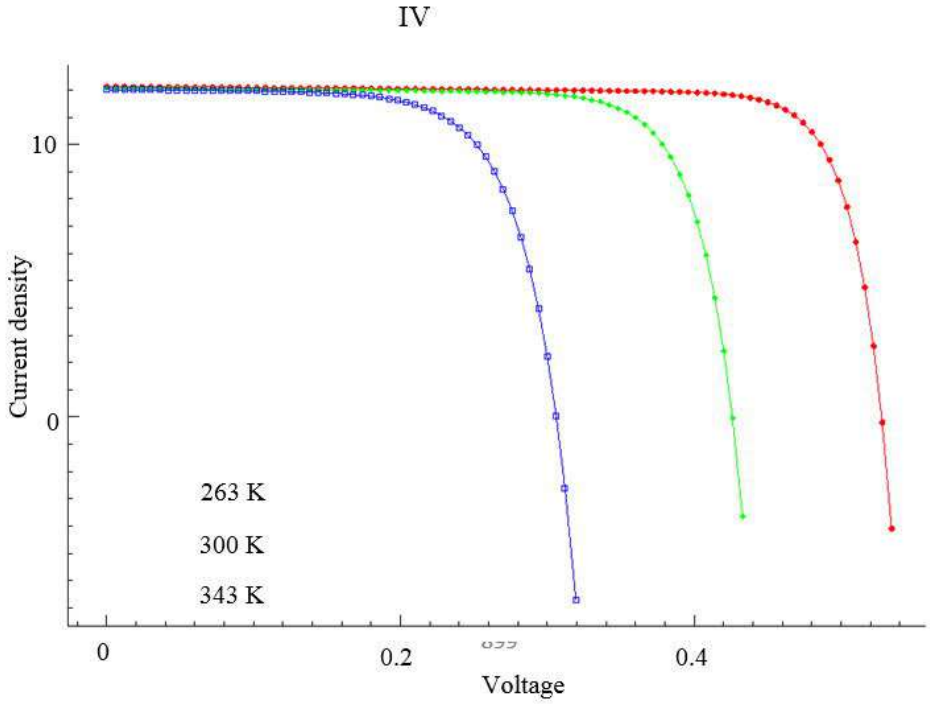
Шунингдек, Жоул иссиқлиги, Томсон иссиқлиги ва рекомбинация иссиқлиги жараёнлари визуаллаштирилди. (расм 2).



Расм 2. Рекомбинация иссиқлигининг визуал тасвири

Кремний асосли қуёш элементини уч хил ҳароратда текширилди(t_1 = -10 ^oC, t_2 = 27 ^oC и t_3 = 70 ^oC). Қуёш элементининг ҳажмий модели конструкцияси, заряд ташувчиларнинг оптик генерацияси жараёни визуализацияси, зарядни ташиш вақтида иссиқликни узатиш ва турли ҳароратда кремний асосли қуёш элементининг вольт-ампер характеристикалари графиклари олинди (расм 3).

Графиклардан кўринадики, ҳарорат ортганда қуёш элементининг самарадорлиги камаяр экан



Расм 3. Турли ҳароратларда вольт-ампер характеристикасининг графиги

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AXBOROTNI QAYTA ISHLASH TIZIMLARIDA MA'LUMOTLARNI MODELLASHTIRISH

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Anotasiya: *Maqolada bo'lajak informatika o'qituvchilariga "Axborot tizimlari" standart kursi doirasida axborot modellashtirish ko'nikmalarini o'rganish va buning uchun maxsus o'quv metodologiyasidan foydalanish zarurligi muhokama qilinadi. Ma'lumotlar bazasini bosqichma-bosqich modellashtirish orqali ushbu metodika elementlari ko'rsatilgan.*

Kalit so'zlar: *axborotni modellashtirish, metodologiya, ma'lumotlar bazasini modellashtirish bosqichlari.*

Анотация*: В статье рассматривается вопрос о необходимости формирования у будущих учителей информатики умений информационного моделирования и использования для этого специальной методики обучения в рамках нормативного курса «Информационные системы». На примере поэтапного моделирования базы данных приведены элементы данной методики.*

Ключевые слова: *информационное моделирование, методика, этапы моделирования базы данных.*

Annotation*: The article discusses the need for the formation of future informatics teachers' information modeling skills and the use of special methodology of teaching in the course "Information Systems". The paper offers some elements of this technology in the process of phase-database modeling.*

Keywords*: information modeling, methodology, database modeling stages.*

Informatika fanining asosiy predmeti - axborotni modellashtirishdir. Axborotni modellashtirish ob'yektlar va jarayonlarni modellashtirish va bilimlarni modellashtirishga bo'linadi. Bundan tashqari, pedagogik kategoriya sifatida axborot modellashtirish uch jihatdan ko'rib chiqiladi: o'rganish vositasi sifatida, bilish vositasi sifatida, o'rganish ob'yekti sifatida. Axborot modellashtirishni o'qitish jarayonida bo'lg'usi o'qituvchi axborot modellarini qanday yaratishni va keyinchalik o'z kasbiy faoliyatida talabalarga qanday o'rgatishni o'rganishi kerak.

Ushbu murakkab muammoni hal qilish uchun o'qituvchilarni tayyorlash rejalariga maxsus "Axborotni modellashtirish" kursini kiritish mumkin masalan, matematika o'qituvchilar uchun. Bundan maqsad talabalarga axborotni modellashtirish usulini va uni turli fan sohalarida qo'llashga o'rgatishdir. Bo'lajak informatika o'qituvchilarini tayyorlashda, bizning fikrimizcha, maxsus kurs talab qilinmaydi.

Biroq, yaxshi natijaga erishish uchun ta'limning asosiy e'tiborini talabalarda axborotni modellashtirish ko'nikmalarini shaklantirishga qaratish kerak.

Hozirgi vaqtda axborotlarni modellashtirish "Axborot texnologiyalari" yo'nalishidan tashqari boshqa yonalishlarda toliq berilmaydi. Biz informatika

o‘qituvchilarini "Axborot tizimlari" standart kursini o‘qitish misolida ma’lumot modellashtirishga o‘rgatish imkoniyatlarini ko‘rsatamiz.

Ma’lumot lar bazasi nazariyasini taqdim etishda asosiy ma’lumotlar ma’lumotlar bazasini boshqarishning turli tizimlaridan (MBBT) foydalangan holda to‘g‘ridan-to‘g‘ri kompyuterda ma’lumotlar bazasini (MB) yaratishning texnologik masalalariga qaratiladi. Ma’lumotlar bazasini ushbu fan sohasining axborot modeli sifatida ko‘rib chiqish bilan bog‘liq muammolar e’tiborga olinmaydi. Bu "ma’lumotlar bazasi" bo‘limini kompyuter fanining boshqa bo‘limlaridan ajratishga olib keladi. Bizning fikrimizcha, «modellashtirish» ning mohiyati «Axborot tizimlari» kursining mavzularini turli xil sohalar uchun ma’lumotlar bazalarini ishlab chiqishda aniqlik kiritish bilan mos keladi. "Modellashtirish bosqichlari", "modellashtirish ob’ektiga moslikni baholash va modellashtirish maqsadlari" kabi nazariy masalalar bu yerda aniq amaliy ahamiyatga ega. Bundan tashqari, ko‘p hollarda talabalar uchun ma’lumot modellarini o‘rganish tayyor modellar (iqtisodiy, biologik va boshqalar),orqali amalga oshiriladi chunki ularning murakkabligi tufayli bunday modellarni mustaqil ravishda ishlab chiqish qiyinchilik keltirib chiqaradi. Tayyor modellarni o‘rgangandan so‘ng talabalar mustaqil ravishda ma’lumotlar bazasi axborotlarini modellashtirishlari mumkin.[1]

Biz shunday modellardan birini taklif qilamiz. Asosiy tushunchalar bilan tanishgandan so‘ng (avtomatlashtirilgan axborot tizimi, ma’lumotlar bazasi, ma’lumotlar bazasi, ma’lumotlar modeli, ma’lumotlarning relyatsion modeli) va axborot tizimlarining tasnifini hisobga olgan holda talabalarga jadvalda keltirilgan modellashtirish bosqichlarini ketma-ket bajarish orqali ma’lumotlar bazasini yaratish tavsiya etiladi. (1- jadval).

1-jadval. Ma’lumotlar bazasini modellashtirish bosqichlari mazmuni

Modellashtirish bosqichi	**Mazmuni**
1. Modellashtirila-yotgan sohani tanlash; axborot tizimini yaratish maqsadini aniqlash.	Taklif etilayotganlardan modellashtirish uchun ob’yekt sohasini tanlash va maqsadni belgilash: ma’lumotlarni ishonchli saqlash va ushbu sohada zarur bo‘lgan ma’lumotlarni qayta ishlash uchun avtomatlashtirilgan axborot tizimini yaratish. Maqsadga erishish uchun zarur bo‘lgan ikkita asosiy vazifani hal qilish: ma’lumotlar bazasini ishlab chiqish (ma’lumotlar bazasini loyihalash va uni kompyuterda amalga oshirish); ma’lumotlar bazasi bilan ishlash uchun qulay interfeys bilan dasturni ishlab chiqish
2. Tanlangan soha bo‘yicha kontseptual modelini qurish	Mavzuni tahlil qilish, ishlab chiqilgan tizimning kelajakdagi foydalanuvchilarining axborotga bo‘lgan ehtiyojlarini aniqlash. Ma’lumotlar bazasida saqlanishi kerak bo‘lgan ob’yekt sohasi haqida ma’lumotlarning batafsil tavsifi. AT yordamida hal qilingan asosiy vazifalarni shakllantirish. Tizimda yaratilishi kerak bo‘lgan chiqish hujjatlarining tavsifi; ma’lumotlar bazasini to‘ldirish uchun asos bo‘lib xizmat qiladigan kirish hujjatlarining tavsifi
3. Mantiqiy ma’lumotlar bazasi modelini yaratish	Mantiqiy ma’lumotlar bazasi modelini yaratish: - ob’yekt sohasida qanday mohiyat-aloqa (ob’yektlar) haqida gapirayotganini belgilash; - yechilayotgan muammo nuqtai nazaridan sub’yektlarning atributlari

	(xususiyatlari) muhimligini ajratib ko‘rsatish; - har bir mantiqiy ob’yektning asosiy kalitini ko‘rsatish: ob’yektning har bir namunasini yagona identifikatsiya qiladigan mohiyat atributini aniqlash (yoki atributlar guruhi); - sub’yektlarning o‘zaro munosabatlarini tahlil qilish, munosabatlar turlarini belgilash; - har bir ob’yekt uchun jadval tuzilishini aniqlash
4. Fizik ma’lumotlar bazasi modelini yaratish	Ma’lumotlar bazasining fizikaviy modelini yaratish, ma’lum bir ma’lumotlar bazasini tanlashdan so‘ng amalga oshiriladi. Tanlangan ma’lumotlar bazasining xususiyatlarini ob’yektlarni nomlash qoidalari, mavjud ma’lumotlar turlari va ma’lumotlar bazasining yaxlitligini qo‘llab-quvvatlash imkoniyatlari bilan tushuntiriladi

Keling, aniq misoldan foydalanib, talabalar o‘qituvchining rahbarligi ostida bajaradigan harakatlar orqali, jadvalning ikkinchi ustunida keltirilgan qadamlarning tarkibini tushuntirib beramiz (1- jadval).

O‘quv ob’yekti sifatida o‘quvchilarga "Poliklinika" bazasi maydoni taklif etiladi. Poliklinikada bemorlar shifokorlar ko‘rigidan o‘tkaziladi. Bir vaqtning o‘zida bitta bemor bir nechta uchrashuvlarni amalga oshira olmasligi sababli, bemorlarning shifokor bilan ko‘rishlari jadvalini tuzish kerak. Uning maqsadi: poliklinikada bemorlarni qayd etish uchun avtomatlashtirilgan axborot tizimini yaratish. Birinchi bosqichda talabalar, ishlab chiqilgan tizim ATning qaysi tizimiga tegishli ekanligini aniqlashi kerak.

Ikkinchi bosqichda talabalar poliklinika strukturasi bilan tanishishi kerak va ATda hal etiladigan asosiy vazifalarni (kerakli ma’lumotlarni to‘ldirish va tahrirlash; kerakli ma’lumotlarni qidirish, masalan, bemorlarning tashhislari, ma’lumotni qayta ishlash) shakllantirish.

Uchinchi bosqichda, ob’yektning zarur asosiy sub’yektlarini aniqlash ("bemor", "vrach", "qabul", “tashhis”,”mutahassislik”) va ushbu ob’yektlarning asosiy xususiyatlarini ko‘rsatib beriladi. Shifokorlar haqida shaxsiy ma’lumotlar, shu jumladan ismi va mutaxassisligi saqlanadi. Bemorlar to‘g‘risidagi ma’lumotlar ism, tug‘ilgan sana, yashash manzili va telefon raqami kabi ma’lumotlarda saqlanadi. Masalan, «bemor» ob’yekti atributlari: FIO, tug‘ilgan sanasi, manzil, telefon). Poliklinika ma’lumotlar bazasining asosiy funktsiyasi, bemorni ro‘yxatga olishni ta’minlash.

Shunday qilib, muammoning bayoni quyidagi shaklga ega:

"Poliklinika" ma’lumotlar bazasini yaratish, bemorlarni shifokorlar bilan uchrashuvlar uchun ro‘yxatdan o‘tkazish kerak. Bunday ma’lumotlar bazasini yaratish uchun biz, bemorlar, shifokorlar, ularning vaqti va uchrashuv natijalari haqida ma’lumotga ega bo‘lishimiz kerak.

Shunday qilib quyidagi jadvalni (ob’yektlar) yaratamiz: Vrach, bemor, tashrif.

Talabalarga ushbu jadvallar qanday bog‘liq bo‘lishi mumkinligini ko‘rsatamiz:

- Vrash va bemor tashrif buyurish jadvali orqali bog‘langan;

- Bitta shifokorga ko‘p tashrif bo`lishi mumkin, va bitta tashrifga bitta shifokor xizmat qiladi, shuning uchun ushbu jadvallar orasidagi bog‘liqlik birga-ko‘p.
- Bitta bemor ko‘p shifokorlarga tashrif buyurishi mumkin, ammo bitta pulli tashrif davomida faqat bitta bemor ko‘rib chiqiladi, shuning uchun ushbu jadvallar orasidagi o‘zaro bog‘liqlik birga-ko‘p bo‘ladi.

Tanlangan ob’yekt bo‘yicha biz o‘zaro munosabatlar jadvalini tuzamiz.

2-jadval. Mohiyat atributlari ro‘yxati

Mohiyat	**Atribut**	**Mohiyat**	**Atributlar**
Vrach	Vrach FIO	Mutahassisligi	Mutahassislik nomi
Tashrif	Tashrif sanasi Tashrif vaqti Narxi Tavsiya	Tashhis	Tashhis nomi
Bemor	Bemor FIO Tug‘ilgan sana Manzil Telefon		

Mohiyatlar o‘rtasidagi munosabatlar turlarini va ularning bo‘g‘liqliklarini aniqlaymiz. Bo‘g‘liqlik ta‘rifi, birinchi ob’yektning mohiyati (yozuvi), albatta, ikkinchi ob’yektning mohiyati (yozuvi) bilan bog‘lanishi kerakligini anglatadi. (2-jadval).

Masalan, mohiyatlar o‘rtasidagi bo‘g‘liklik uchun quyidagi usullar aniqlangan:

Vrach - Tashrif - har bir shifokorga tashrif yozilishi shart emas, lekin har bir tashrifga albatta vrash tayinlanishi kerak (bo‘g‘liklik shart).

Bemor - Tashrifi - har bir bemorga tashrif qayd etilishi shart, ammo har bir tashrif uchun bemor ko‘rsatilishi shart emas.

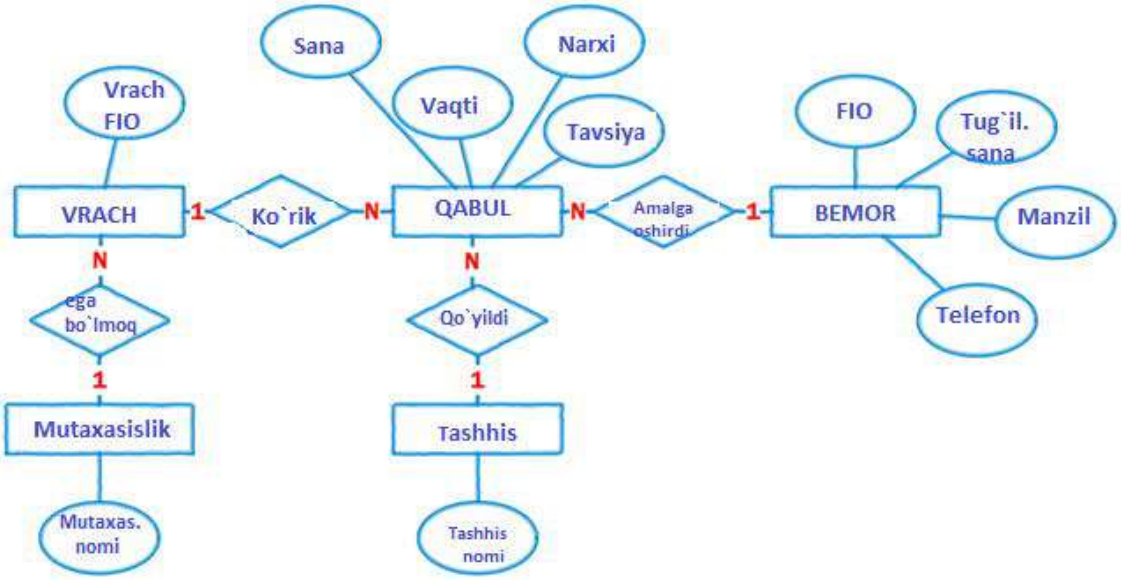
Vrach - Mutaxassis - har bir shifokorning mutahassisligi bo‘lishi kerak, ammo mavjud bo‘lgan har bir mutaxassislik uchun vrach tayinlanishi shart emas.

Tashrif - Tashhis - har bir tashrifda bemorga aniq tashxis qo‘yilmasligi ham mumkin, va har qanday tashxis har bir tashrifda qo‘yilmasligi ham mumkin.

3-jadval. Mohiyat aloqalarining bo‘g‘lanichi

Mohiyat	Munosabat	Mohiyat	Bog‘liqlik
Vrach	Ko‘rik	Tashrif	Birga-ko‘p
Bemor	Amalga ochirdi	Tashrif	Birga- ko‘p
Vrach	Ega bo‘lmoq	Mutahassislik	Ko‘pga- bir
Tashrif	Qo`yildi	Tashhis	Ko‘pga- bir

Keyin talabalar bilan jadvalda ma’lumotlarni taqdim etishning afzalliklari va bunday taqdimotning kamchiliklarini muhokama qilish kerak va taqqoslash uchun ER (Entity-Relationship sxemasi "Entity-Relationship") diagrammasini taklif qilish mumkin.(1 rasm).



1- rasm. ER- diagrammasi.

Mustaqil ish sifatida talabalarga shu baza uchun qurilgan boshqa ma'lumotlar bazalari modellari bilan tanishib, ularni taqqoslashni taklif qilish mumkin.[2,3]

Tahlili shuni ko'rsatdiki, talabalarda axborot modellashtirish ko'nikmalarini samarali shakllantirish uchun - bo'lajak informatika o'qituvchilari uchun maxsus o'qitish metodikasi talab qilinadi. Metodologiyani amalga oshirish "Axborot tizimlari" fanining kursi sifatida amalga oshirilishi mumkin. Bunday metodikaning psixologik-pedagogik asosi - faoliyat yondoshuvi; maxsus didaktik vositasi - bu o'quv vazifalari to'plami, talabalarni axborotni modellashtirish ko'nikmalari, ya'ni faoliyatning taxminiy asoslari, maqsadlarni belgilash, tizimni tahlil qilish, rasmiylashtirishni amalga oshirish va o'zlashtirishga yordam beradi.

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YANGI O‘ZBEKISTONNI RIVOJLANTIRISHDA ZAMONAVIY KADRLARNI AXAMIYATI

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***Annotatsiya**. Ushbu tezisda talabalarni kompetentlik darajalarini rivojlantirish-zamonaviy kadrlarni tayyorlashga doir muammo va ularning yechimi keltirilgan.*

***Kalit sozlar:** talaba, kompetentlik, Kommunikativ kompetentsiya, Axborot, Shaxs, ta’lim samarasi, Interfaol усуллар.*

***Аннотация**. В тезисе изложены проблемы студентов и пути решения компетентности с целью подготовки современных кадров.*

***Ключевые слова:** компетенция, коммуникативная компетенция, информация, личность, эффективность образования, интерактивные методы.*

***Abstract.** The thesis outlines the problems of students and ways to solve competence in order to prepare modern personnel.*

***Key words:** competence, communicative competence, information, personality, effectiveness of education, interactive methods.*

Hozirgi murakkab sharoitda O‘zbekistonni ijtimoiy – iqtisodiy va texnik – texnologik rivojlantirish eng dolzarb masaladir. O‘zbekiston Respublikasi Prezidenti Shavkat Mirziyoyev 2020 yil 20 yanvardagi Oliy majlisga murojatnomasidagi ma’ruzasida alohida takidlanganidek: “Biz yangi O‘zbekistonni xalqimiz bilan birgalikda barpo etamiz, degan ulug‘vor maqsadni o‘z oldimizga qo‘yganmiz. Bu borada **“Jamiyat – islohotlar tashabbuskori”** degan yangi g‘oya kundalik faoliyatimizga tobora chuqur kirib bormoqda.” [1]. Bu asosiy vazifani bajarishni muhim yo‘llaridan biri uzluksiz talim tizimida yangi avlod kadrlarini, ya’nizamonaviy kadrlarni tayyorlashdan iboratdir[2]. Bu masalani muvaffaqiyatli bajarishda oliy ta’lim muassasalarida va boshqa ta’lim tizimidagi tashkilotlarda o‘qitiladigan fanlarni talabalarga va o‘quvchilarga o‘rgatishda innavatsion talim va axborot kommunikatsiya texnologiyalaridan foydalanib, ularning kasbiy kompitentligini rivojlantirish zarur. Shu sababli, talabalarni kompitentlik darajalarini rivojlantirish hozirgi kunni dolzarb masalalaridan biridir. Yosh avlodni va talabalarni zamonaviy kadrlar qilib tayyorlash uchun ularni bilim, ko‘nikma va malakalar bilan qurollantirish bilan birga, ularni kundalik hayotida duch keladigan vazifalar va muammolarni yechishda qo‘llay oladigan qilib tarbiyalash-ta’limda kompetentsiyaviy yondashuv deb ataladi. Kompitentsiya so‘zining lug‘aviy ma’nosi lotincha “kompityentsii” so‘zidan olingan bo‘lib, “mos keladi” ma’nosini bildiradi. Hozirgi kunda olimlar, usulistlar va amaliyotchi o‘qituvchilar tomonidan tayanch kompetentsiyalari oltita deb belgilab olingan.

1. Kommunikativ kompetentsiya.
2. Axborot bilan ishlash kompetentsiyasi.

3. Shaxs sifatida o‘z-o‘zini rivojlantirish kompetentsiyasi.
4. Ijtimoiy faol fuqarolik kompetentsiyasi.
5. Umummadaniy kompetentsiyalar.
6. Matematik savodhonlik fan va texnika yangiliklaridan xabardor bo‘lish hamda ulardan foydalanish kompetentsiyasi.

Talabalarning kompetentlik darajalarini rivojlantirish uchun innovatsion ta’lim texnologiyalaridan samaradorli foydalanish talab etiladi.Hozirgi vaqtda ta’lim jarayonida o‘qitishning zamonaviy usullari keng qo‘llanilmoqda. O‘qitishning zamonaviy usullarini qo‘llash o‘qitish jarayonida yuqori samaradorlikka erishishga olib keladi. Ta’lim usullarini tanlashda har bir darsning didaktik vazifasidan kelib chiqib tanlash maqsadga muvofiq sanaladi.

An’anaviy dars shaklini saqlab qolgan holda, unga turli-tuman ta’lim oluvchilar faoliyatini faollashtiradigan usullar bilan boyitish ta’lim oluvchilarning o‘zlashtirish darajasining ko‘tarilishiga olib keladi. Buning uchun dars jarayoni oqilona tashkil qilinishi, ta’lim beruvchi tomonidan ta’lim oluvchilarning qiziqishini orttirib, ularning ta’lim jarayonida faolligi muttasil rag‘batlantirilib turilishi, o‘quv materialini kichik-kichik bo‘laklarga bo‘lib, ularning mazmunini ochishda aqliy hujum, kichik guruhlarda ishlash, bahs-munozara, muammoli vaziyat, yo‘naltiruvchi matn, loyiha, rolli o‘yinlar kabi usullarni qo‘llash va ta’lim oluvchilarni amaliy mashqlarni mustaqil bajarishga undash talab etiladi. Buning natijasida talabalarda kasbiy kompetentlik elementlari va tayanch kompetensiyalar shakllanadi. Talabalarda ta’lim texnologiyalari va zamonaviy informatikadan foydalanib kompetentlik darajalarini rivojlantirishda o‘rgatilayotgan masalalarni xar-bir fan bo‘yicha ilmiy asoslangan holatda tushuntirish talab etiladi.

$$\mathbf{I=\{T;O;S;C;t\}} \qquad (1)$$

Bu yerda: I – ilmiy asoslash, T – tarixiylik, O – obyektiv qonuniyatlar, S – sistema, C – obyektni strukturasi, t – tizimni faoliyat ko‘rsatish vaqti. Talaba har qanday masalani yechishda unga ilmiy asoslanganlik prinsipi asosida yondoshsa, optimal natijaga erishadi.Eng asosiysi-bu jarayonni ta’siri talabada kasbiy kompetentlik darajasini rivojlantiradi.

Talabalarning kompetentlik darajalarini oshirish uchun normativ huquqiy hujjatlarni yanada takomillashtirish, o‘quv tarbiyaviy jarayonlarga innovatsion ta’lim texnologiyalarini uzluksiz joriy qilib borish va ta’lim muassasalarimizni moddiy texnika bazalarini yanada takomillashtirish asosida zamonaviy kadrlarni kompetentlik darajalarini rivojlantirishga ta’sir etuvchi fazilatlarini shaklantirish amalga oshiriladi. Biz Andijon mashinasozlik insitutida 2016–2020 yillar davomida ilmiy, pedagogik va ta’lim tarbiyaviy faoliyatlarimiz natijasida quyidagi xulosa va takliflarni ishlab chiqdik.

1. O‘zbekistonni ijtimoiy-iqtisodiy va texnik - texnologik rivojlantirishda zamonaviy kadrlarni yani kasbiy kompetentlik darajalari rivojlangan kadrlarni o‘rni beqiyos ekanligini aniqladik. Lekin, bitiruvchi talabalar Davlat ta’lim standartlari bo‘yicha yetarli bilim, malaka va ko‘nikmalarga ega bo‘lsalarda ishlab chiqarishda va xizmat ko‘rsatish sohalaridagi mehnat faoliyatlaridagi murakkab

vaziyatlarda tizimli tahlil asosida optimal qaror qabul qilishda ma'lum qiyinchiliklarga uchramoqdalar.

2. An'anaviy dars shaklini saqlab qolgan holda, unga turli-tuman ta'lim oluvchilar faoliyatini faollashtiradigan usullarbilan boyitish ta'lim oluvchilarning o'zlashtirish darajasining ko'tarilishiga olib keladi. Buning uchun dars jarayoni oqilona tashkil qilinishi, ta'lim beruvchi tomonidan ta'lim oluvchilarning qiziqishini orttirib, ularning ta'lim jarayonida faolligi muttasil rag'batlantirilib turilishi, o'quv materialini kichik-kichik bo'laklarga bo'lib, ularning mazmunini ochishda aqliy hujum, kichik guruhlarda ishlash, bahs-munozara, muammoli vaziyat, yo'naltiruvchi matn, loyiha, rolli o'yinlar kabi usullarni qo'llash va ta'lim oluvchilarni amaliy mashqlarni mustaqil bajarishga undash talab etiladi. Buning natijasida talabalarda kasbiy kompetentlik elementlari va tayanch kompetensiyalar shakillanadi. Bu jarayonni ta'limda kompetensiyaviy yondashuv deymiz.

3. Ma'ruza, amaliy va laboratoriya darslarini o'tishda talabalarning kasbiy kompetentligini ma'lum darajada rivojlantirish mumkinligini aniqladik. Shu sabablik har qanday mavzuni o'qitishda va o'rgatishda talabalarning kasbiy kompetentlik darajalarini rivojlantiradigan innovatsion ta'lim texnologiyalaridan foydalanish zarur.

4. Talabalarga fanlar bo'yicha o'tilayotgan mavzuning xar bir masalasini ilmiy asoslash zarur. Ilmiy asoslash – bu o'rganilayotgan obyektni tarixini, obyektiv qonunlar asosida, tizimli yondoshib tadqiq qilish va uning strukturasini takomillashtirish bo'yicha asoslangan xulosadan iboratdir.

5. Zamonaviy kadr harbir masalani tayorlashda unga ilmiy prinsip asosida yondoshishi zarur. Har bir nazariy va amaliy dars mavzularini yoritishda talabalarning kasbiy kompetentlik darajalarini rivojlantiruvchi "ilmiy asoslanganlik", "uzluksizlik", "tizimlilik" prinsiplaridan va obyektiv qonunlardan foydalanish kerak.

6. Bakalavriyat yo'nalishlarida uchinchi kursdan boshlab "kasbiy kompetentlik darajalarini rivojlantirish" nomli tanlov fanini talabalarga o'qitish lozim.

Yuqoridagi taklif va tavsiyalar amaliyotga joriy etilsa bitiruvchi talabalarimizni kasbiy kompetentligini rivojlanganlik darajalari yuqori bo'ladi. Bu esa O'zbekistonimizni yanada isjtimoiy-iqtisodiy rivojlanishiga ijobiy ta'sir qiladi.

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ТЎҚИМАЧИЛИК САНОАТИНИНГ ИҚТИСОДИЙ ПОТЕНЦИАЛИНИ ОШИРИШ КОНЦЕПСИЯСИ

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Аннотация. *Маҳаллий тўқимачилик саноатининг иқтисодий салоҳиятига инновацион ёндашувлар асосида миллий тўқимачилик кластерларининг жаҳон тўқимачилик саноатига интеграция даражасини ошириш масалалари ва тўқимачилик корхоналарини ривожлантириш стратегияларини ишлаб чиқиш масалалари кўриб чиқилди.*

Калит сўзлар: *Бошқариш, модернизация, корхона, стратегия, SWOT тахлил, интеграция, инновация.*

Аннотация. *На основе инновационных подходов к экономическому потенциалу местной текстильной промышленности были рассмотрены вопросы повышения уровня интеграции национальных текстильных кластеров в мировую текстильную промышленность и разработки стратегий развития текстильных предприятий.*

Ключевые слова: *Управление, модернизация, предприятие, стратегия, SWOT-анализ, интеграция, инновации.*

Abstract. *On the basis of innovative approaches to the economic potential of the local textile industry, the issues of increasing the level of integration of national textile clusters into the world textile industry and the development of strategies for the development of textile enterprises were considered.*

Keywords: *Management, modernization, enterprise, strategy, SWOT analysis, integration, innovation.*

Ўзбекистон тўқимачилик саноати нафақат иқтисодиётнинг энг тез ривожланаётган сегментларидан бири, балки хорижий инвестицияларни жалб этиш ва маҳсулот экспорт қилишда ҳам етакчи ўринларни эгалламоқда.

Сўнгги йиллардаги дунё аҳолисининг жадал ўсиши, аҳолининг турмуш даражасини ва тўлов қобилиятини ошиши - тайёр ва ярим тайёр тўқимачилик маҳсулотларига бўлган талабнинг ортишига олиб келмоқда. Бу эса, ўз навбатида, мамлакатимиз енгил саноати билан бирга, хусусан, тўқимачилик саноатида ҳам замонавий илмий тадқиқотларни жорий этиш асосида маҳсулот рақобатбардошлигини оширишни тақозо этмоқда. Бу омиллар эса: маҳсулот сифати; унинг нархи; маълум бир бозорда товарларга хизмат кўрсатиш сифати; ундан фойдаланиш учун товарларни истеъмол қилиш соҳасидаги харажатлар; сифат менежментидир[1]. Ва бу муаммолар "2017 - 2021 йилларда Ўзбекистон Республикасини ривожлантиришнинг бешта устувор йўналиши бўйича ҳаракатлар стратегияси” да белгиланган асосий вазифалардан бири сифатида таъкидлаб ўтилди “Юқори технологияли қайта ишлаш тармоқларини, энг аввало, маҳаллий хомашё ресурсларини чуқур қайта ишлаш асосида юқори қўшимча қийматли тайёр маҳсулот ишлаб

чиқаришни жадал ривожлантиришга қаратилган сифат жиҳатидан янги босқичга ўтказиш орқали саноатни янада модернизация ва диверсификация қилиш”[2].

Шу билан бирга, ишлаб чиқариш ва ривожланиш дастурларни ишлаб чиқишда ва амалга оширишда - хом ашёдан тайёр маҳсулотгача тўла циклини йўлга қўйиш керак. Бу эса хозирги ривожланиш даврида инновацион усуллар, жумладан кластер усули орқали пахта толасини замонавий технологиялар асосида чуқур қайта ишлаб ташқи ва ички бозорларда талаб юқори бўлган тўқимачилик ва енгил саноатнинг экологик тоза тайёр маҳсулотларини ишлаб чиқаришгача ташкил этишни талаб қилади.

Ҳозирги инновацион иқтисодиётда тўқимачилик саноатини қўллаб-қувватлаш учун ҳам тармоқ сиёсатини ишлаб чиқишга алоҳида эътибор қаратиш лозим. Бу вазифаларни юқори рақобат шароитида самарали амалга ошириш учун тўқимачилик корхоналарини ривожлантириш стратегияларини, шунингдек уларни қўллаш бўйича илмий-амалий тавсияларни ишлаб чиқиш кераклигини талаб этилади. Шу сабабли, тўқимачилик саноати самарадорлигига таъсир этувчи асосий омилларни тизимли равишда ўрганишни таъқазо этади. Улар қуйидагилар:

-Бошқарувни такомиллаштириш; Корхонани модеринизация қилиш; Кадрлар малакасини ошириш ва тайёрлаш, қайта тайёрлаш тизимини такомиллаштириш; Рақобатбардошлик даражасини ошириш; Тўқимачилик маҳсулотлари модели ва дизайнини такомиллаштириш; Экспорт салоҳиятини ошириш ва бошқалардан иборат.

Саноат ичида рақобат муҳитини ва ўрнини яратишга қаратилган вертикал интеграция ёндашув асосида тўқимачилик корхоналари учун рақобат ошиб бораётган шароитида тўқимачилик корхоналарини ривожлантириш стратегияларини ишлаб чиқиш асосий вазифалардандир.

Бу мақсад учун қуйидаги омилларни аниқлаш керак:

-WFMS асосида ишлаб чиқариш харажатларини камайтириш ва корхонани бошқариш тизимини такомиллаштириш мақсадида қиммат толаларни арзонларига алмаштиришда тўқимачилик маҳсулотлари сифатини камайтиришнинг муҳим нуқталари; Тўқимачилик корхоналарида инновацион жараёнларни самарали бошқаришни технологик занжирни оптимал танлашга боғлиқлиги; Тўқимачилик корхоналарини ривожлантиришда кенг дифференциация қилиш, оптимал харажатлар ва марказлаш стратегияларини қўллаш ва компаниянинг соҳадаги рақобат позициясини стратегик бошқариш учун концептуал моделни ишлаб чиқиш; SWOT таҳлили асосида компаниянинг кучли ва заиф томонларини аниқлаш ва улар фаолиятини ривожлантириш стратегиясининг асосий йўналишларини ишлаб чиқиш.

Тўқимачилик маҳсулотлари моделини ва дизайнини такомиллаштириш, инсон маданиятининг деярли энг қадимий анъаналарига бориб тақалади. “Кўп минг йиллар даъвомида дунёнинг турли халқлари тўқимачилик маҳсулотларини яратиш ва безаш санъатини шакллантирдилар, улар бугунги

кунда юқори ривожланган саноат, дизайн, илм-фан, таълим ва чексиз бозор билан замонавий цивилизациянинг катта "қитъаси" ни ифодалайди”[4].

Бугунги кунимизнинг асосий талаби ва долзарб масалаларидан бири бу-“Оммавий ишлаб чиқаришдан кичик ҳажмли ва кўп қиррали маҳсулот ассортиментига эга бўлган буюртмаларни яратишгача хал қилиш учун, ушбу тадқиқотлар анъанавий тармоқларни қўллаб-қувватлашда ақлли ишлаб чиқаришни жорий этиш ва рақамли трансформация имкониятларини кенгайтириш учун ечим ишлаб чиқишга қаратилишидир”[3].

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SECTION III. MODERN INFORMATICS AND MANAGEMENT