MASHINALI O‘QITISHDA CHIZIQLI REGRESSIYA

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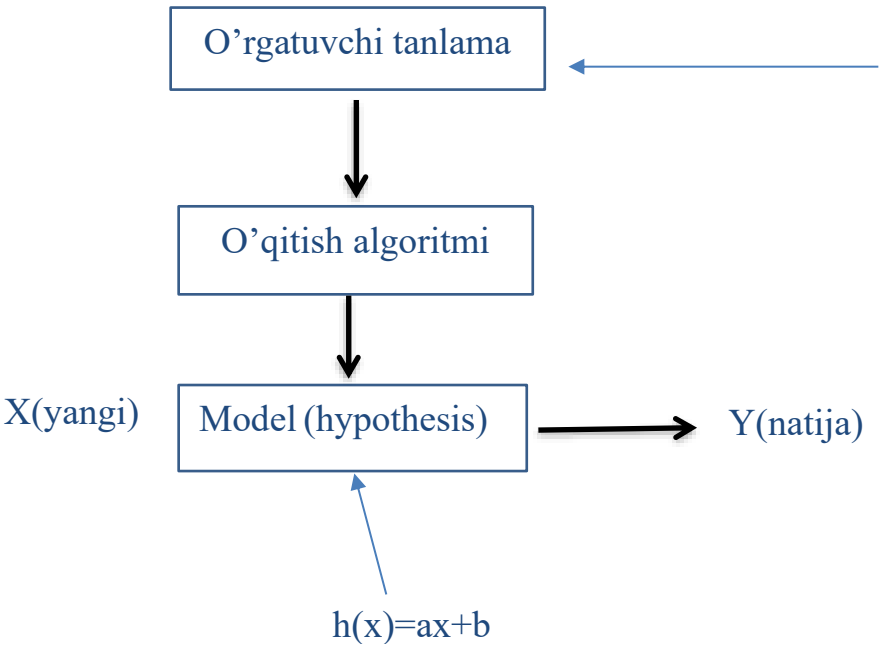
Annotatsiya. Ushbu maqolada berilgan ma’lumotlar grafigini qurish, u asosida masofa va sarflangan vaqt orasidagi bog‘liklik xarakterini aniqlash, eng kichik kvadratlar usulini qo‘llash imkoniyatini taxlil qilish, regressiya tenglamasini qurish, regression bog‘lanish kuchini tekshirish uzoq masofaga yukni yetkazib berish vaqti masalasi qaraladi.

Kalit so‘zlar. Chiziqli bog‘lanish, teskari bog‘lanish, kvadratik munosabat, regressiya tenglamasi, funksional bog‘liqlik, korrelyasion-regression tahlil, korrelyatsiya tushunchasi chiziqli korrelyatsiya koeffitsiyenti, regressiya tahlili, regression model, chiziqli funksiya, o‘rta qiymat, parabola, giperbola, chetlanish, xato, ko‘rsatkichli funksiya, darajali funksiya, Cost funksiyasi.

Chiziqli regressiya tushunchasi. **Regressiya bu** – ma’lumotlarni intellektual tahlil qilish usullaridan biri bo‘lib, obyekt yoki jarayonga tegishli o‘zgaruvchilar o‘rtasidagi o‘zaro bog‘liqlikni baholash uchun statistik jarayonlar to‘plami hisoblanadi.

Regression tahlil chiziqli yoki nochiziqli, o‘z navbatida logistik regressiya usullari asosida amalga oshiriladi. Regression tahlil asosan bashorat qilish va prognoz qilish uchun keng qo‘llaniladi va hozirda ushbu usulning ishlatilishi mashinali o‘qitish sohasi bilan mos keladi[1].

Regressiya va uning turlari. Regressiya asosida yaratiladigan model ma'lumotlarni berilgan nuqtalardan o‘tgan eng yaxshi giper tekislikka (nuqtalar o‘rtasidan o‘tishiga) moslashtirishga harakat qiladi. Regression tahlilda turli xil modellardan foydalanish mumkin, eng sodda model chiziqli regressiya asosida quriladi[2].



X	Y
1	3
2	5
3	6
4	9
4	10
5	13
6	13
...	...
100	203

1-rasm. Regression model

Masalaning qo‘yilishi: Matlab muhitida regression modelni quring.

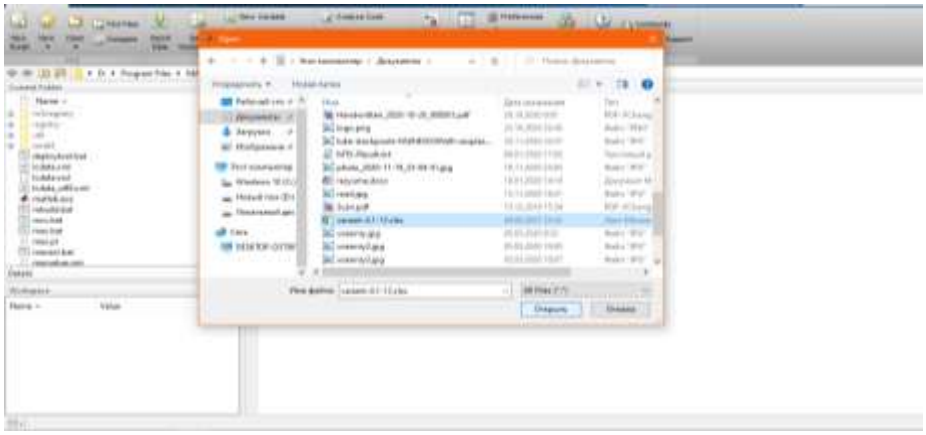
Matlab ishga tushiriladi, Obyekt parametrlari bo‘yicha o‘qitiluvchi to‘plam ma’lumotlari tayyorlanadi. Misol uchun:

X	1	2	3	4	5	6	7	8	9	10
Y	3.2	3.8	5.8	2.43	4.65	6.25	6.8	9.4	9.43	9.5

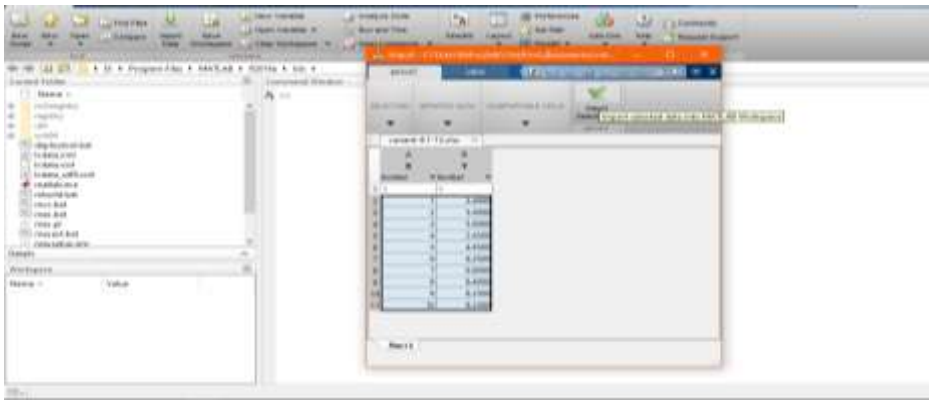
1-jadval.

Berilgan to‘plam grafigini chizish scatter(x,y).

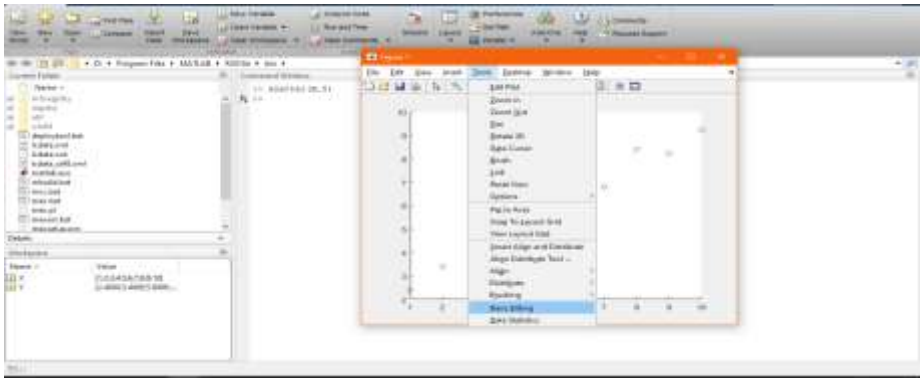
Bu jadvalda berilgan ma’lumotlarni, matlab oynasi ochib olingandan so‘ng chaqirib olinadi, ya’ni bu jadval joylashgan faylni joyini matlab oynasidan ko‘rsatib yuboramiz.



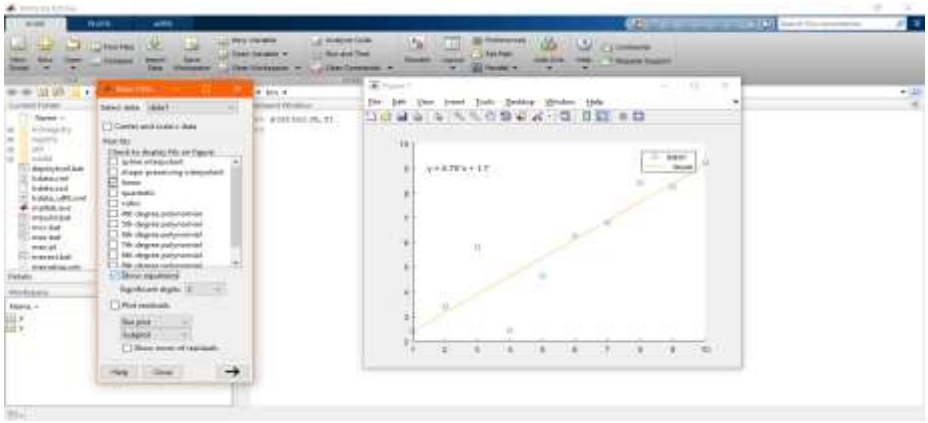
Ushbu oyna ochib olingandan so‘ng, import selection tugmasi bosiladi



Yangi hosil bo‘lgan oynadan tools paneliga kirib Basic Fitting buyrug‘iga murojat qilamiz



Ko‘rsatilganlari bo‘yicha ketma ketlikda ishlar bajarilganidan so‘ng grafik chiqadi. Basic fitting oynasi hosil bo‘lganidan keyin LINEAR bandini tanlaymiz bizga berilgan x va y ning bog‘liqlik qiymatlarini chiziqli funksiya ko‘rinishida grafik chizib beradi.



x va y ning bog‘liqlik qiymatlarini chiziqli funksiya grafigining ko‘rinishi.

Foydalanilgan adabiyotlar ro‘yxati

1. Aurelian Geron, Hands on Machine Learning with Scikit-Learn Keras&Tensorflow // Second edition Concepts, Tools, and Techniques to Build Intelligent Systems, 2019, 510 pages.

2. Tavboyev Sirojiddin Akhbutayevich, Mamaraimov Abror Kamoliddin ugli, and Karshibaev Nizomiddin Abdumalikovich, “Algorithms for Selecting the Contour Lines of Images Based on the Theory of Fuzzy Sets”, TJET, vol. 15, pp. 31–40, Dec. 2022.

3. Dilshod Bekmuratov[1, a)], Mukhammadjon Akhrorov[2, b)]. Construction of Decision Rules for Pattern Recognition in the Event of Erroneous Division of Classes of the Training Sample. 2023. – C. 12.