

MATLAB DASTURIDA MAMDANI ALGORITMI BILAN ISHLASH

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<https://doi.org/10.5281/zenodo.7836924>

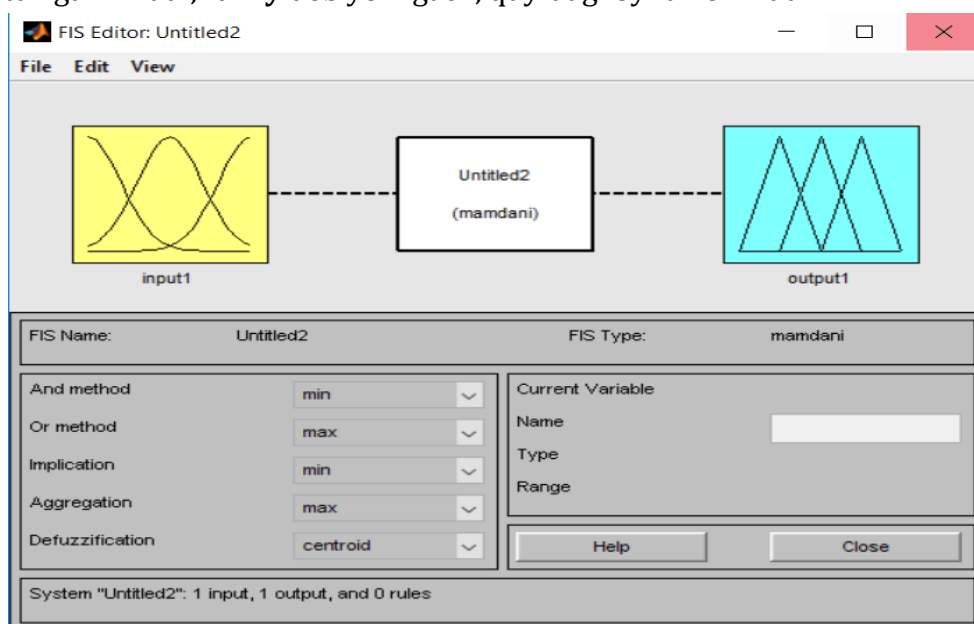
Annotatsiya: Ushbu maqolada Matlab dasturida Mamdani algoritmi yordamida talabalar bilimini va o'zlashtirishini avtomatik baholaydigan tizim yaratish ketma – ketligi ko'rsatib o'tilgan, umumiy natija olingan va to'liq asoslab ko'rsatilgan.

Kalit so'zlar: Matlab, Mamdani algoritmi, fuzzy, trimf, gaussmf, trapmf, gbellmf, edit, rules, view, input.

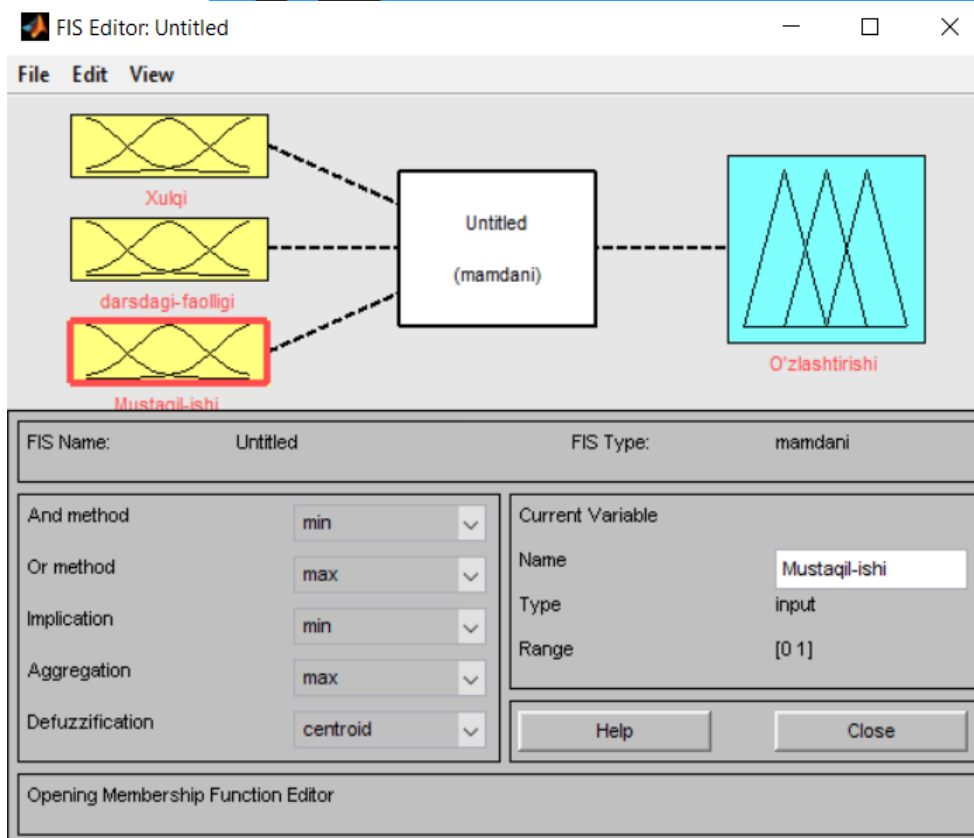
Mamdani algoritmidan foydalangan holda talabalar bilimini va o'zlashtirishini avtomatik baholaydigan tizim yaratish uchun quyidagi ketma – ketliklarni bajaramiz:

Bajarish ketma – ketligini ko'rib o'tamiz:

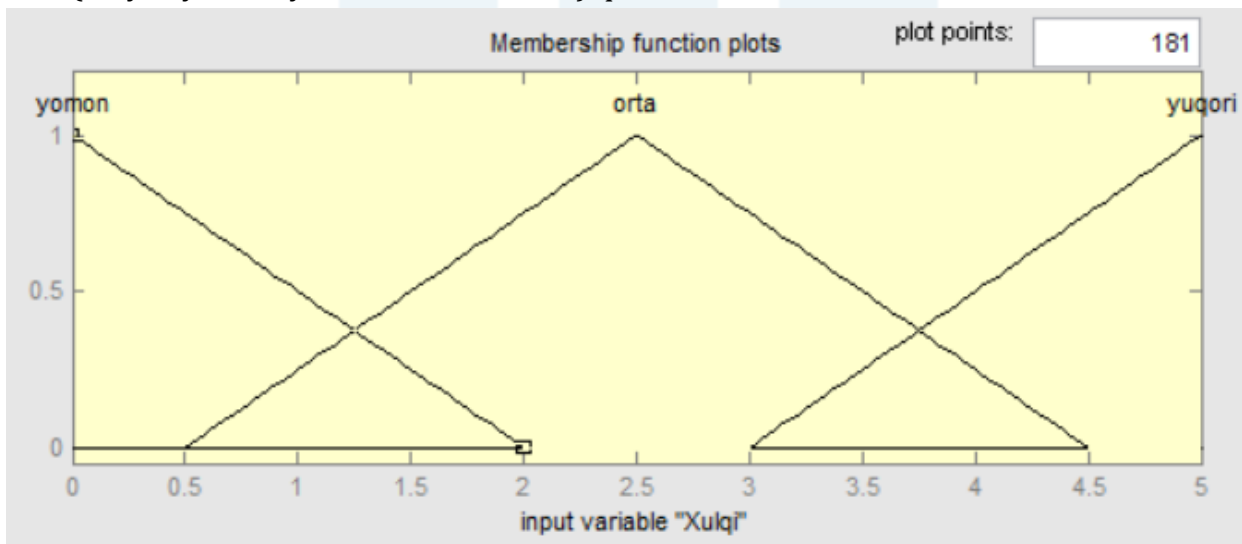
Matlab dasturiga kiriladi, **fuzzy** deb yozilgach, quyidagi oyna ko'rinadi.



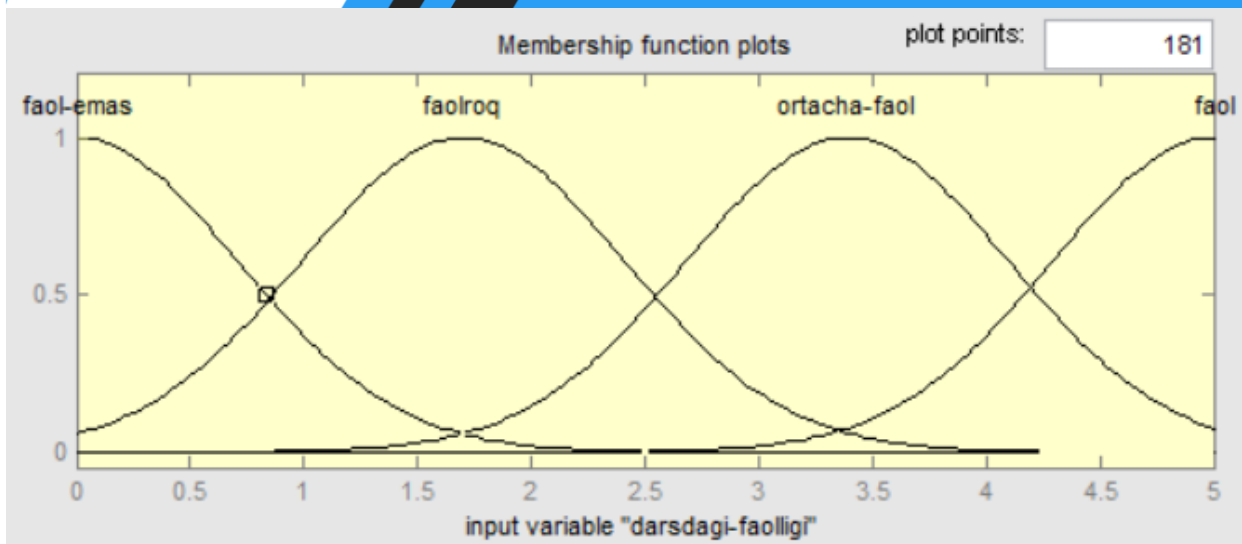
Ushbu qo'yilgan masalamizda kiruvchilar 3 ta, 1 – si xulqi, 2 – si darsdagi faolligi, 3 – si mustaqil ishi, chiquvchi natijani esa o'zlashtirish deb kiritamiz.



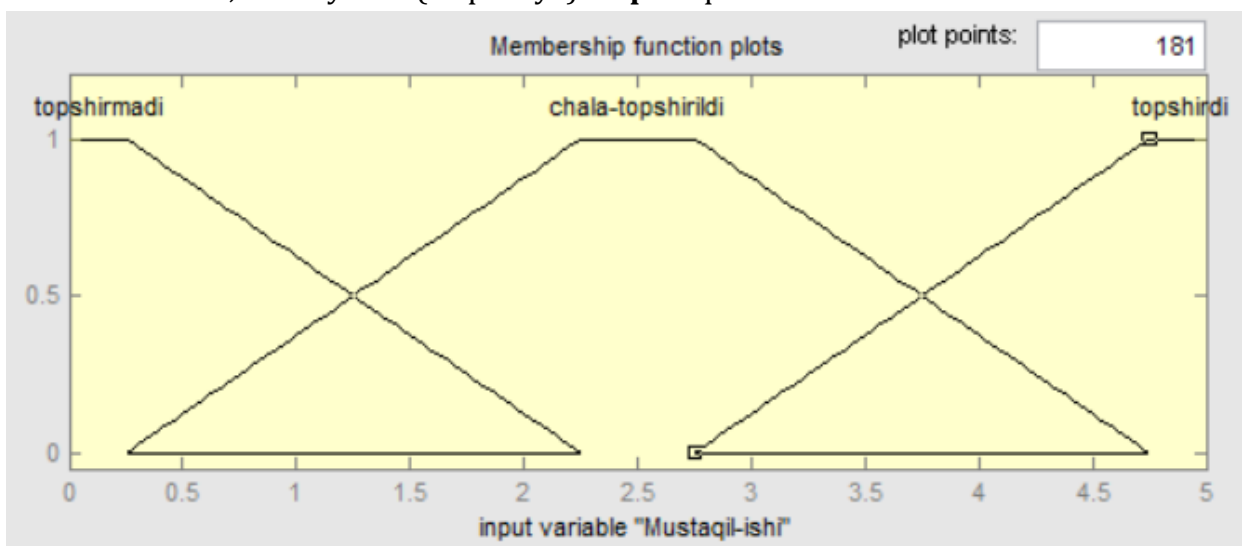
Endi 3 ta kiruvchilarning barcha parametrlarini, o'zgarish sohalarini kiritib chiqamiz. Ya'ni xulqini (0; 5) oraliqda o'zgaruvchi yomon, o'rta, yuqori qilib va funksiyasini esa (uchburchak) **trimf** (ixtiyoriy funksiyani tanlash mumkin) qilib kiritamiz:



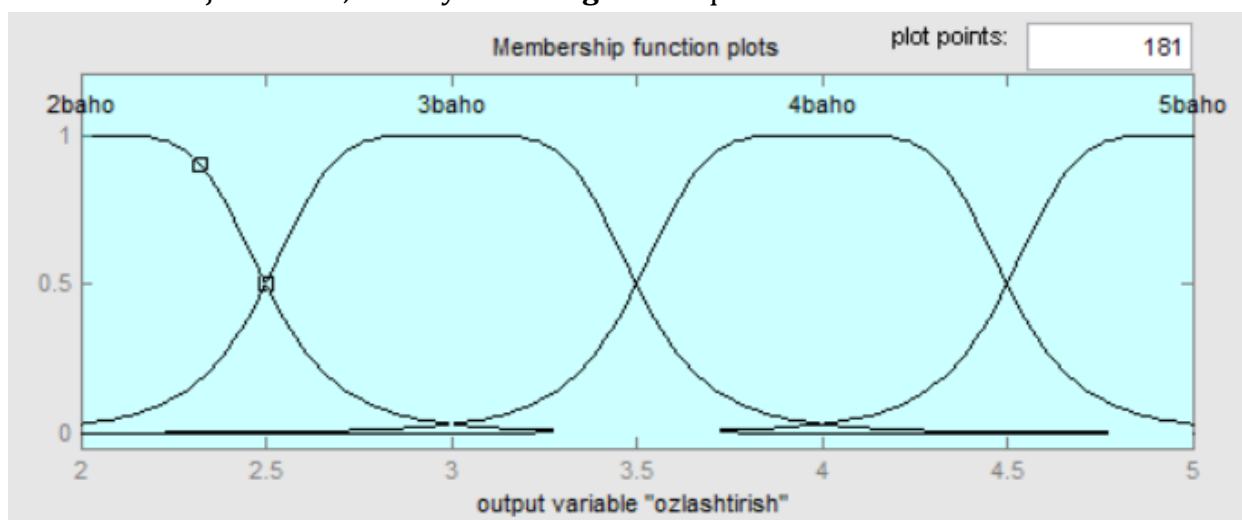
Darsdagi faolligini (0; 5) oraliqda o'zgaruvchi faol emas, faolroq, o'rtacha faol, faol kabi parametrlarni va (gaus) **gaussmf** funksiyasini tanlaymiz:



Mustaqil ishini (0; 5) oraliqda o'zgaruvchi topshirmadi, chala topshirdi, topshirdi kabi parametrlar bilan, funksiyasini (trapetsiya) **trapmf** qilib kiritamiz:



Chiquvchi natijamizni ya'ni o'zlashtirishni (2; 5) oraliqda o'zgaruvchi, 2 baho, 3 baho, 4 baho, 5 baho kabi natijalar bilan, funksiyasini esa **gbellmf** qilib kiritildi:



Endi **editni** bosib undagi **rules** tugmasini bosamiz, hosil bo'lgan oynada qoidalarni yozib chiqamiz: qoidalar soni 36 ta bo'ladi, chunki $3 \cdot 4 \cdot 3 = 36$.

Rule Editor: Untitled

File Edit View Options

23. If (Xulqi is orta) and (darsdagi-faolligi is faol) and (Mustaqil-ishi is chala-topshirildi) then (ozlashtirish is 4baho) (1)
 24. If (Xulqi is orta) and (darsdagi-faolligi is faol) and (Mustaqil-ishi is topshirdi) then (ozlashtirish is 5baho) (1)
 25. If (Xulqi is yuqori) and (darsdagi-faolligi is faol-emas) and (Mustaqil-ishi is topshirmadi) then (ozlashtirish is 2baho) (1)
 26. If (Xulqi is yuqori) and (darsdagi-faolligi is faolroq) and (Mustaqil-ishi is topshirmadi) then (ozlashtirish is 2baho) (1)
 27. If (Xulqi is yuqori) and (darsdagi-faolligi is ortacha-faol) and (Mustaqil-ishi is topshirmadi) then (ozlashtirish is 3baho) (1)
 28. If (Xulqi is yuqori) and (darsdagi-faolligi is faol) and (Mustaqil-ishi is topshirmadi) then (ozlashtirish is 3baho) (1)
 29. If (Xulqi is yuqori) and (darsdagi-faolligi is faol-emas) and (Mustaqil-ishi is chala-topshirildi) then (ozlashtirish is 3baho) (1)
 30. If (Xulqi is yuqori) and (darsdagi-faolligi is faol-emas) and (Mustaqil-ishi is topshirdi) then (ozlashtirish is 4baho) (1)
 31. If (Xulqi is yuqori) and (darsdagi-faolligi is faolroq) and (Mustaqil-ishi is chala-topshirildi) then (ozlashtirish is 3baho) (1)
 32. If (Xulqi is yuqori) and (darsdagi-faolligi is faolroq) and (Mustaqil-ishi is topshirdi) then (ozlashtirish is 5baho) (1)
 33. If (Xulqi is yuqori) and (darsdagi-faolligi is ortacha-faol) and (Mustaqil-ishi is chala-topshirildi) then (ozlashtirish is 4baho) (1)
 34. If (Xulqi is yuqori) and (darsdagi-faolligi is ortacha-faol) and (Mustaqil-ishi is topshirdi) then (ozlashtirish is 5baho) (1)
 35. If (Xulqi is yuqori) and (darsdagi-faolligi is faol) and (Mustaqil-ishi is chala-topshirildi) then (ozlashtirish is 4baho) (1)
 36. If (Xulqi is yuqori) and (darsdagi-faolligi is faol) and (Mustaqil-ishi is topshirdi) then (ozlashtirish is 5baho) (1)

If	and	and	Then
Xulqi is	darsdagi-faolligi is	Mustaqil-ishi is	ozlashtirish is
yomon	faol-emas	topshirmadi	2baho
orta	faolroq	chala-topshirildi	3baho
yuqori	ortacha-faol	topshirdi	4baho
none	faol	none	5baho
<input type="checkbox"/> not	<input type="checkbox"/> not	<input type="checkbox"/> not	<input type="checkbox"/> not

Connection: or and

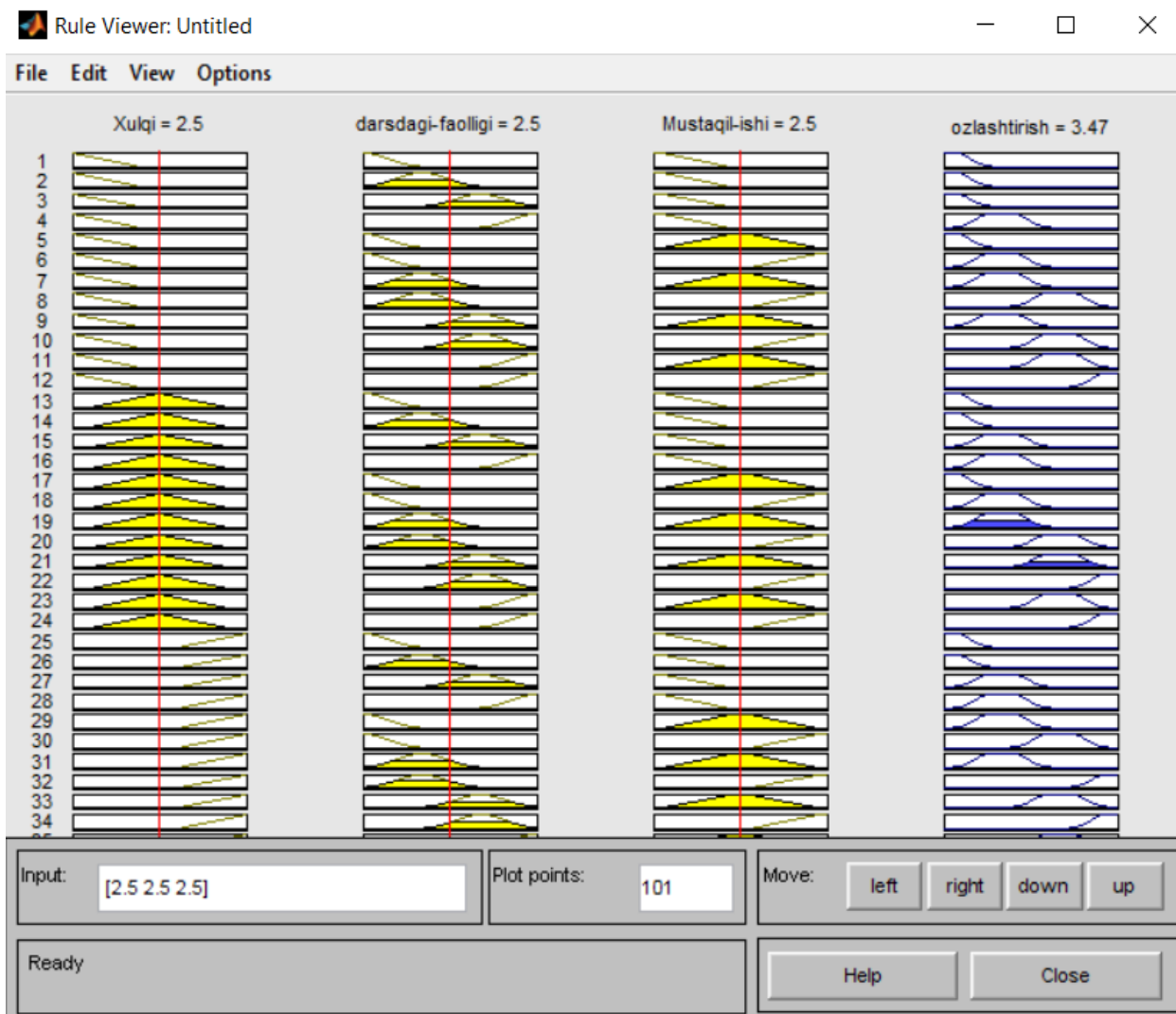
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Delete rule Add rule Change rule << >>

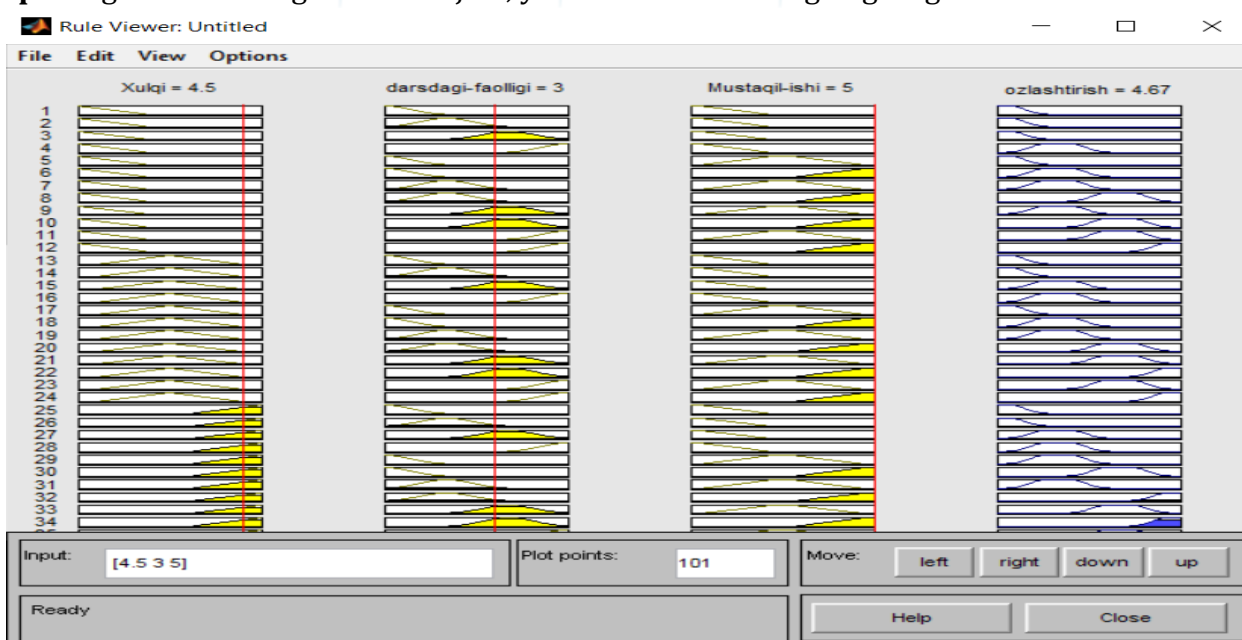
The rule is added

Help Close

Viewdagi rules tugmasini ishga tushirsak, quyidagi oyna chiqadi:



Inputdagi sonlarni o'zgartirib natijani, ya'ni o'zlashtirishning to'g'riligini tekshiramiz:



Xulosa qiladigan bo'lsam, maqolada Matlab dasturida Mamdani algoritmi bilan ishlash bo'yicha talabalar o'zlashtirishini avtomatik baholaydigan tizimni yaratish masalamizda yo'l - yo'riq va ko'nikma hosil qilindi. Biz hozir ta'lim sohasidagi bitta masalani ko'rib chiqdik, lekin

ularning soni yuzlab bo'lishi mumkin. Ushbu Matlab dasturi va Mamdani algoritmidan foydalangan holda barcha sohalaridagi dolzarb bo'lgan masalalarning avzal yechimini topish ham mumkin.

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