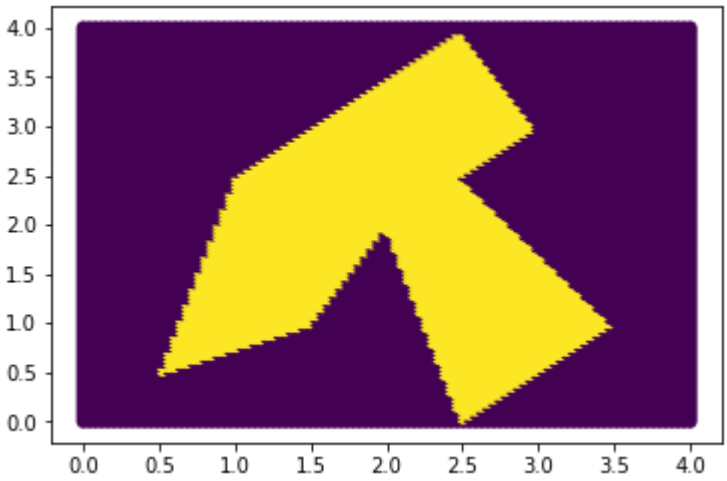
Neuroinformatics laboratory 1

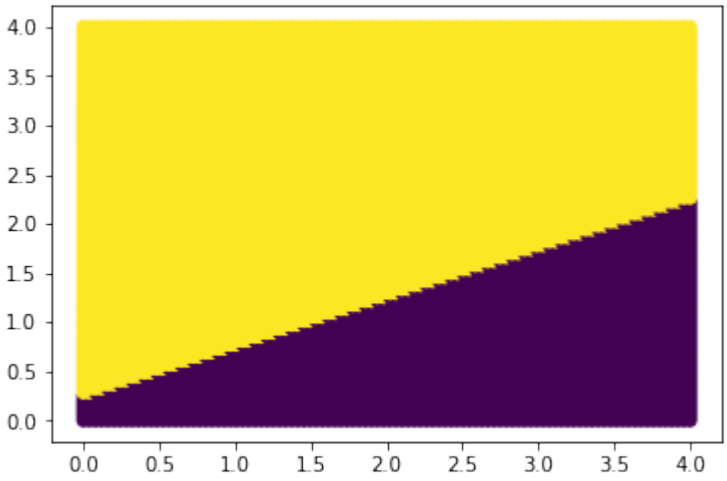
Name: Radek Bartyzal
Email: rbartyzal1@gmail.com
Code of MLP: https://github.com/BartyzalRadek/neuroinformatics-course/blob/master/MLP.ipynb
Code of training a single perceptron with delta rule:
https://github.com/BartyzalRadek/neuroinformatics-course/blob/master/Perceptron.ipynb

Target image:

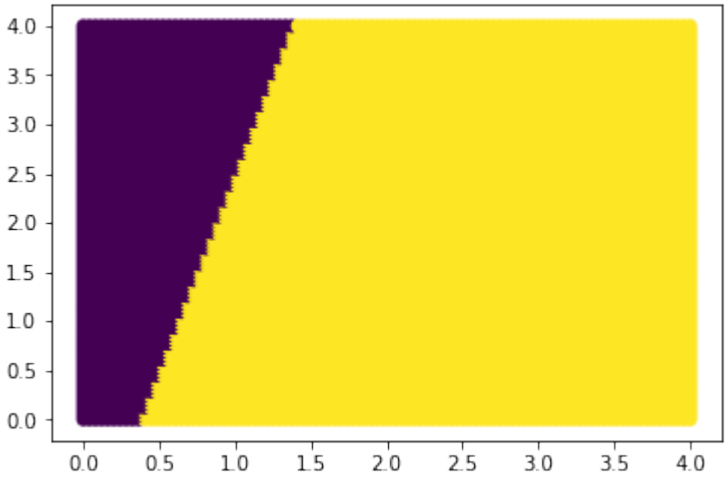


First network:

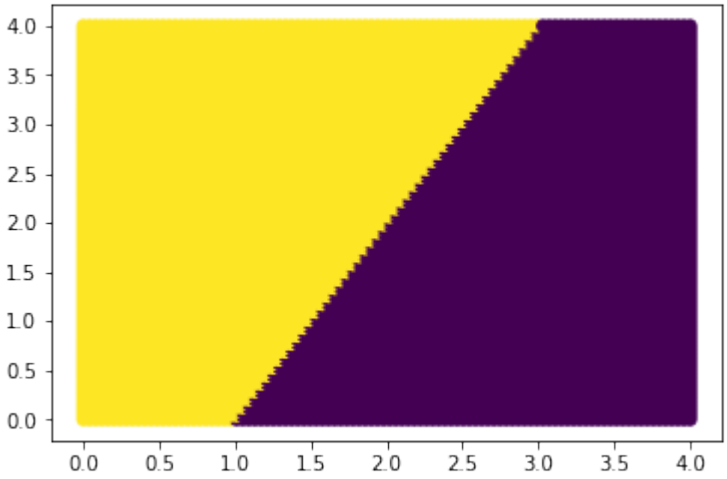
Layer 0 neuron 0 :



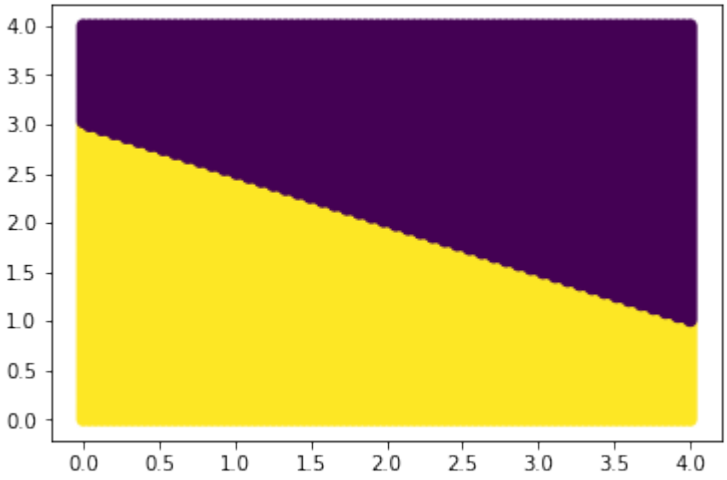
Layer 0 neuron 1 :



Layer 0 neuron 2 :

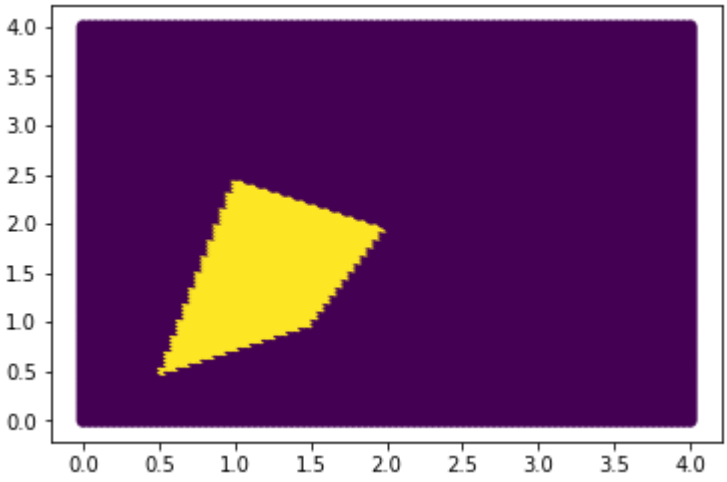


Layer 0 neuron 3 :



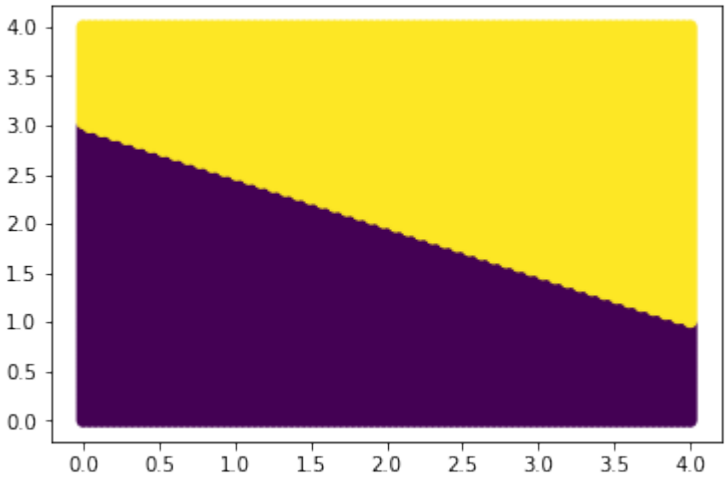
Layer 1 neuron 0 :
= AND neuron with 4 input dimensions. Cannot plot.

Output of the first network:

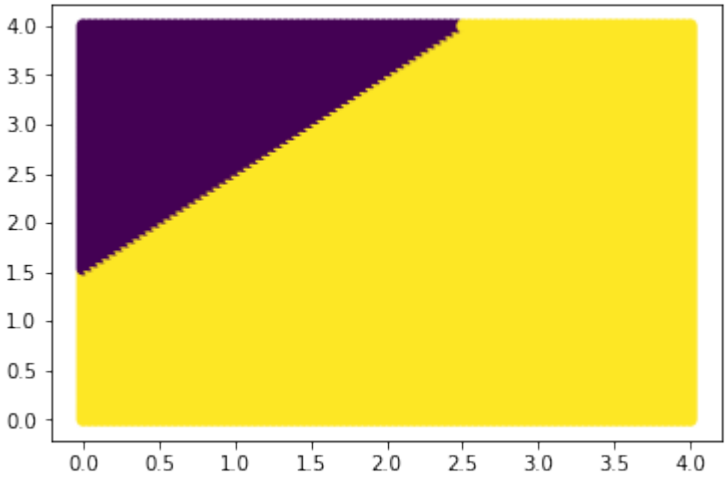


Second network:

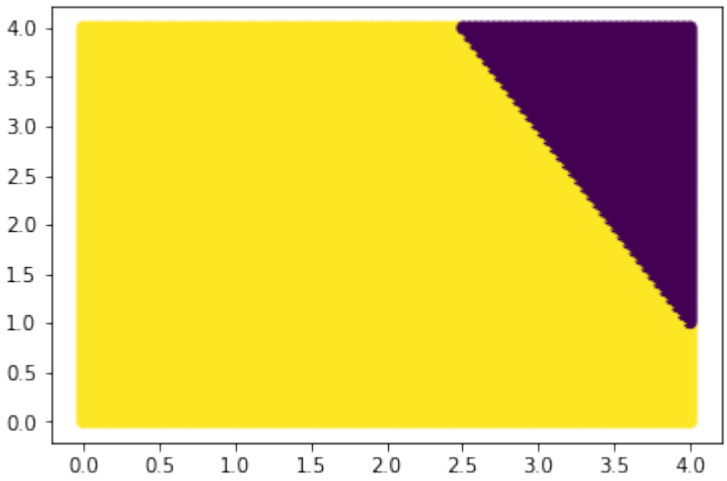
Layer 0 neuron 0 :



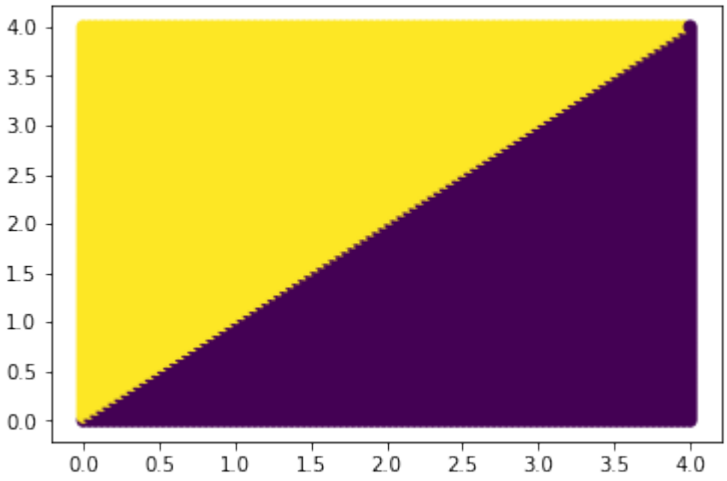
Layer 0 neuron 1 :



Layer 0 neuron 2 :

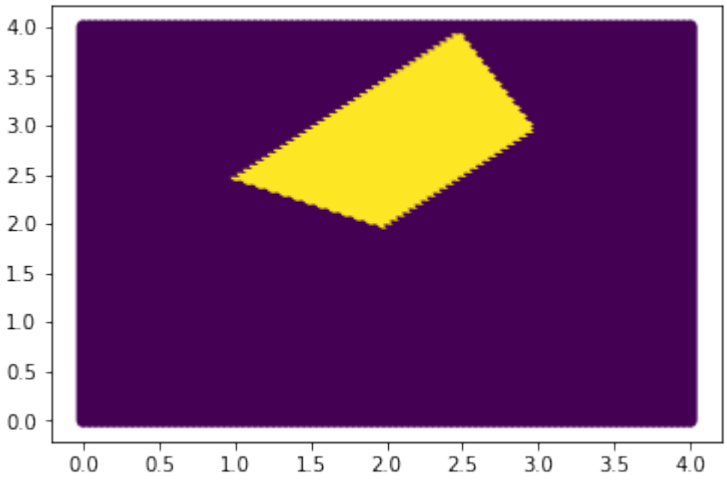


Layer 0 neuron 3 :



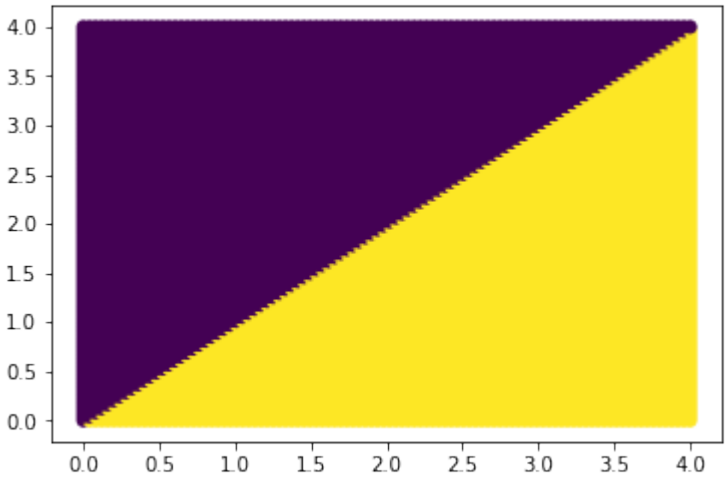
Layer 1 neuron 0 :
= AND neuron with 4 input dimensions. Cannot plot.

Output of the second network:

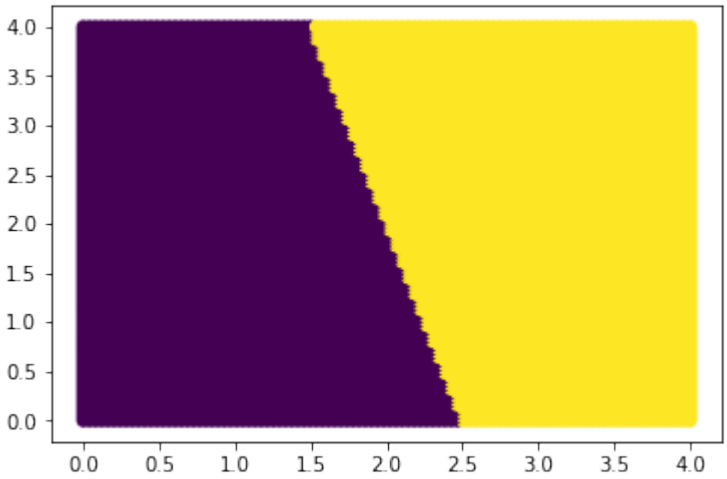


Third network:

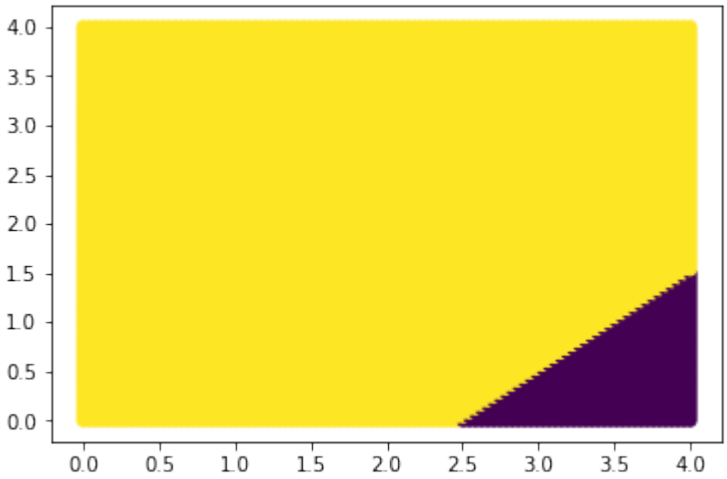
Layer 0 neuron 0 :



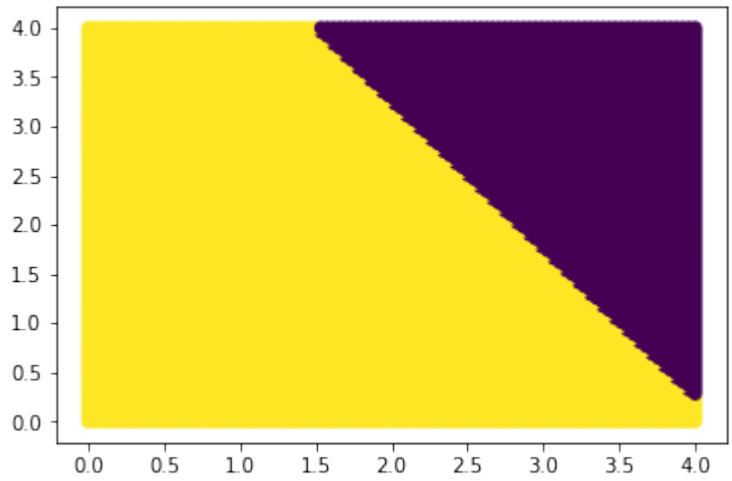
Layer 0 neuron 1 :



Layer 0 neuron 2 :

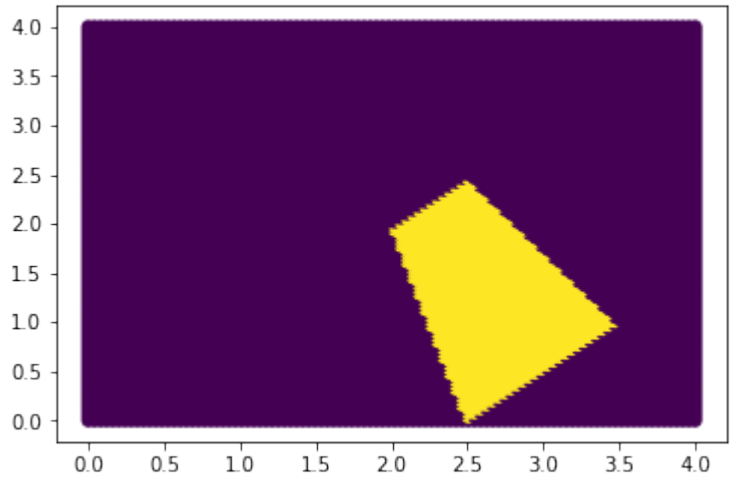


Layer 0 neuron 3 :

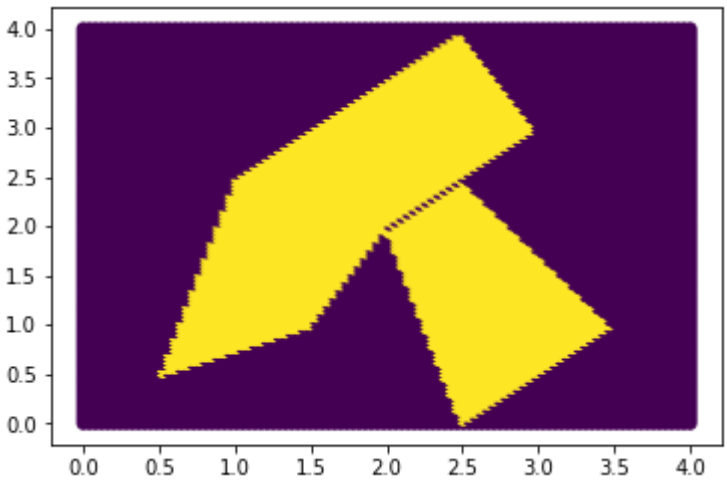


Layer 1 neuron 0 :
 = AND neuron with 4 input dimensions. Cannot plot.

Output of the third network:

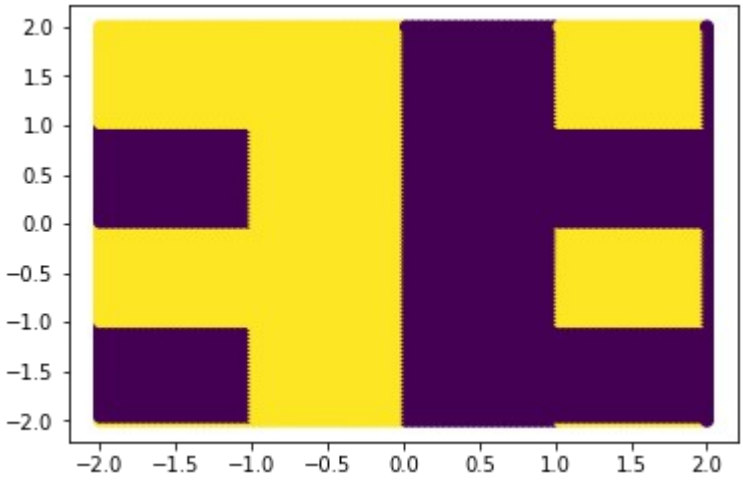


Final network combining the previous networks with OR neuron:

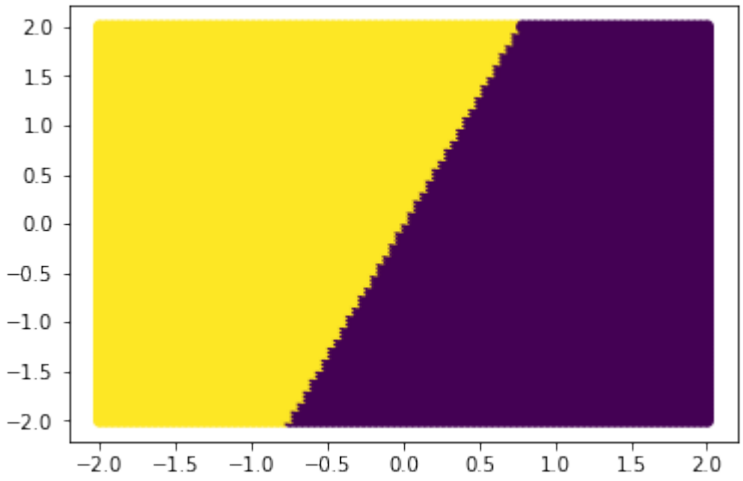


Training perceptron with delta rule:

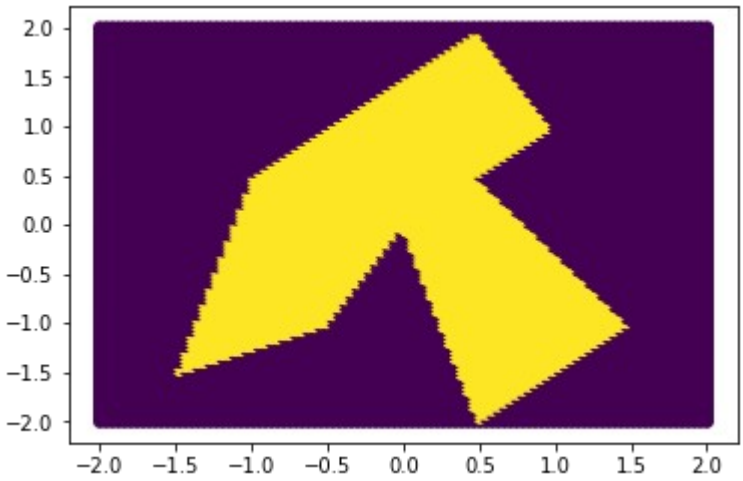
Dataset:




```
Training with 10000 examples and batch size = 100
After training:
W = [-4.81212121  1.82222222]
b = 0
```



Dataset:



Before training:
W = [0. 0.]
b = 0

Training with 10000 examples and batch size = 1
After training:
W = [0.0040404 -0.39191919]
b = 0