

Neural Networks task 2 Report

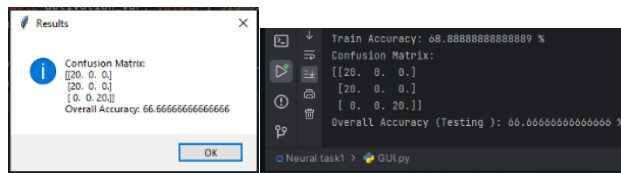
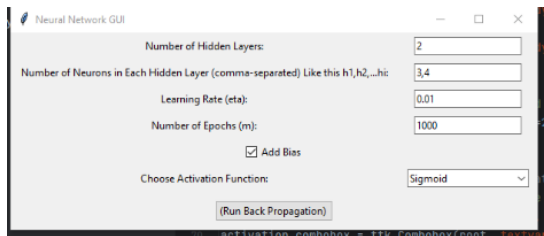
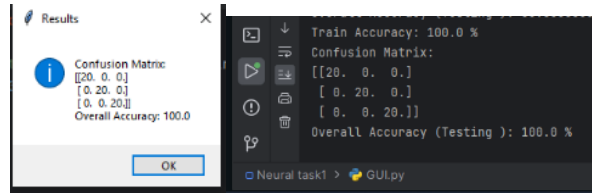
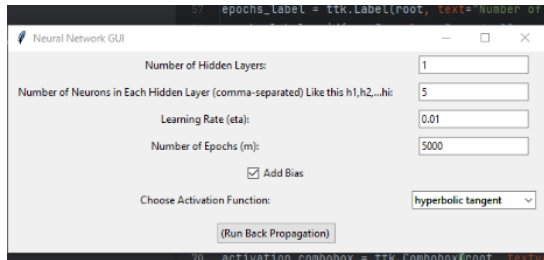
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Test Cases

Activation Function	Train Accuracy	Test Accuracy	LR	Epochs	#Layers	#Hidden Node
Tanh	100%	100%	0.01	5000	1	5
Sigmoid	69%	66.6%	0.01	1000	2	3,4
Tanh	100%	100%	0.01	4000	2	2,3
Tanh	66.6%	66.6%	0.05	2500	3	1,2,1
Sigmoid	65%	66.6%	0.01	2700	2	2,5

Screen Shots of Results:



Neural Network GUI

Number of Hidden Layers: 2

Number of Neurons in Each Hidden Layer (comma-separated) Like this h1,h2,...hi: 2,3

Learning Rate (eta): 0.01

Number of Epochs (m): 4000

☒ Add Bias

Choose Activation Function: hyperbolic tangent

(Run Back Propagation)

Results

Confusion Matrix:
 [[20. 0. 0.]
 [0. 20. 0.]
 [0. 0. 20.]]
 Overall Accuracy: 100.0

OK

Train Accuracy: 100.0 %
 Confusion Matrix:
 [[20. 0. 0.]
 [0. 20. 0.]
 [0. 0. 20.]]
 Overall Accuracy (Testing): 100.0 %

Neural task1 > GUI.py

Neural Network GUI

Number of Hidden Layers: 3

Number of Neurons in Each Hidden Layer (comma-separated) Like this h1,h2,...hi: 1,2,1

Learning Rate (eta): 0.05

Number of Epochs (m): 2500

☒ Add Bias

Choose Activation Function: hyperbolic tangent

(Run Back Propagation)

Results

Confusion Matrix:
 [[0. 20. 0.]
 [0. 20. 0.]
 [0. 0. 20.]]
 Overall Accuracy: 66.66666666666666

OK

Train Accuracy: 66.66666666666666 %
 Confusion Matrix:
 [[0. 20. 0.]
 [0. 20. 0.]
 [0. 0. 20.]]
 Overall Accuracy (Testing): 66.66666666666666 %

Neural task1 > GUI.py

Neural Network GUI

Number of Hidden Layers: 2

Number of Neurons in Each Hidden Layer (comma-separated) Like this h1,h2,...hi: 2,5

Learning Rate (eta): 0.01

Number of Epochs (m): 2700

☐ Add Bias

Choose Activation Function: Sigmoid

(Run Back Propagation)

Results

Confusion Matrix:
 [[20. 0. 0.]
 [20. 0. 0.]
 [0. 0. 20.]]
 Overall Accuracy: 66.66666666666666

OK

Train Accuracy: 63.33333333333333 %
 Confusion Matrix:
 [[20. 0. 0.]
 [20. 0. 0.]
 [0. 0. 20.]]
 Overall Accuracy (Testing): 66.66666666666666 %

Neural task1 > GUI.py