

Assignment 4

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Neural Network Model Configuration

Number of Hidden Layers	1
Number of Nodes in Hidden Layer	8 (can be taken as user input)
Number of Nodes in Input Layer	9 (because of 9 features)
Number of Nodes in Output Layer	7 (because of 7 different classes)
Input-Hidden Layer Weight Vector Dimension	9x8
Hidden-Output Layer Weight Vector Dimension	8x7
Eta (after trial and errors)	1e-4 (can be taken as user input)
Epochs (after trial and errors)	1000

Performance and Result

Weight Vector Input-Hidden	[[[-0.29425667 -0.00872638 0.15800506 -0.06274726 0.74915465 -0.13168941 -0.44757984 -0.29251545] [-0.63200466 0.17773973 -1.09931103 0.00760297 -0.20540754 0.04672731 -0.43390345 -0.01426313] [-0.21276308 -0.00484203 -0.3904483 0.48115405 -0.25973976 -0.23272955 0.08870022 0.30861645] [0.42822296 0.08984663 0.31318923 0.6431743 0.28756232 0.12419061 -0.02156398 0.25527592] [-0.2162514 0.17010042 0.44950468 0.43334978 0.54116175 -0.2893984 1.23849791 -0.01375244] [0.33830528 0.27095522 0.21574257 0.13332306 0.20729909 0.18239249 0.04797863 0.11954606] [0.40469683 -0.01181495 0.28919434 0.19595762 -0.50557571 1.29986047 0.14227065 0.38073463] [-0.04069966 -0.10179035 0.44444556 -0.13866517 -0.32575495 -0.05718429 -1.01699829 0.46483182] [0.81621794 0.58186908 0.19853586 0.52152375 1.26823565 -0.30138816 -1.64641955 -0.24207524]]
Weight Vector Hidden-Output	[[[1.03456048 0.53748628 0.40774874 0.18383022 0.2271143 0.30419284 0.49781807] [0.31458827 0.42703863 -0.66166158 0.55920779 0.70173332 0.66759163 0.39858248] [0.14442502 -0.59858055 0.95196093 0.53590405 0.41738562 0.14403335 1.02497176] [0.9328958 0.95797576 0.69136987 1.03704439 0.79266253 0.97413287 -0.13183875] [-0.44461367 0.59741004 0.80973555 0.48607614 0.80561707 0.54823345 0.46574085] [1.15205341 0.95524481 1.07620881 0.25166873 0.55132252 0.59622723 0.26383929] [1.8724373 0.37595256 0.14084402 -0.53406105 0.19372276 0.33750371 0.33269745] [0.83005802 0.80903924 0.5133695 0.49073554 -0.06535019 0.19190096 0.53276516]]
Bias Vector Input-Hidden	[[[0.41768564] [0.92561721][0.48755307][0.84058218][0.20906143][0.22592608][0.54368165][0.96030554]]
Bias Vector Hidden-Output	[[[0.63751564] [0.98411168] [0.38896489] [0.23175189] [0.77839876] [1.02429783] [0.48136584]]
Training Accuracy	99.87%
Test Accuracy	99.79%