

## Machine Learning – ex 3 report:

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On this exercise, we requested to create a neural network with at least 1 hidden layer. the goal was to identify 10 different types of cloths. Yossi provided us with a large training set and the test set which was later used to test our network.

Initially, we created a network with 1 hidden layer which we wondered about the initial size of it, so we arbitrary chose it to be 100. (which was a great guess!).

The eta value was chosen to be small (  $\sim 0.01$ ) and only one epoch.

after fixing some bugs in the back propagation, we got about 79% correctness (with a big epochs value), which was close but unsatisfying.

At the end , we got about 85% correctness running the cross validation. Those values achieved when we randomized W and b values using normal distribution.

Finally, we left our computers at night to test different hyper parameters and out best appeared to be: **eta 0.01 epochs 50**. We saw that larger epochs got better results until some point when overfitting occurred.

We made some graphs to illustrate the connection between out hyper parameters and other parameters.

