Experiment 1:

Hyper parameters: Set the learning rate η to 0.3, the momentum α to 0.3, and the number of hidden units n to 4.

There is no evidence that my program is overfitting to the training data. There is evidence that the program is not adjusting weights enough to activate the correct letter.

Expr 1 graph

Experiment 2:

Hyper parameters learning rate (η = 0.05) and learning rate (η = 0.6).

Changing the learning rate increased the range of my accuracy.

Expr 2 graph

Experiment 3

Hyper parameters momentum rate (α = 0.05) and momentum rate (α = 0.6). (Set η back to 0.3.)

Changing the momentum did have a noticeable effect on my results.

Expr 3 graph

Experiment 4

Hyper parameters hidden units (n = 2) and hidden units (n = 8). (α and η back to 0.3.)

Changing the number of hidden units seem to have no effect on my results either.

Expr 4 graph

I have no idea why my program won’t get an accuracy outside the range of 3.0 to 4.5. I have checked weights, deltas, and activation with a student that was getting better results and found my program to be an exact match. When I change to my set of training/test data I get the results shown above. I was able to find out that during testing for accuracy my highest activation is always the same, but during back propagation it changes.