

## **Emmanuel Velazquez**

### **Exercise #3**

#### **4.1**

For minimum, my value was 8. For maximum, my value was 10. For mean, my value was 9.

#### **4.2**

Decreasing the default value to 1 from 2.5 definitely did have an impact on my statistics. I noticed that my maximum stayed at 10, my mean went down by 1.5 bringing it to 8.5 and my minimum decreased by 1 which brought it down to 7. It seems to have had an effect on the input window as some of the patterns had been merged together. Adding noise to the simulation has a harsh effect rather than having no noise. We see that when noise is implemented into the simulation, patterns start to go away or merge. I believe that the lack of patterns that come from adding noise suggests a possible reduction in overfitting.

#### **Final Question**

I believe that if we presented only the letters “T” and “L” to the simulation then the weights would look different than those we saw. A lot of the ambiguity that we observed was resultant of the whether or not noise was present in the simulation. I think that in this case the learned weights would be larger and darker as they begin to familiarize themselves with these two letters. I think that this would suggest a strong correlation between the simulation and the actuality of the human brain. For example, it may suggest that if someone who only speaks English was handed a paper that was written in a completely different language where different symbols are used for different letters, then this person would likely have no chance at pointing out which letters are which solely due to the fact that they are not anywhere as near as exposed to those symbols rather than the English alphabet.