In the past two weeks, we trained Convolutional Neural Networks to classify components into four classes (“clear neuron”, “noise”, “process” and “doubtful neuron”). Then, we did careful error analysis with our mentors. It turns out that our classifier is performing well while there are some obvious mistakes. Thus, we relabeled some incorrectly classified components, retrained classifier and repeat this process for several times. Right now, our classifier is performing very well. Components that are classified incorrectly are all borderline cases where there is really no standard answer. Thus, we decide to stop relabelling data and switch to building more sophisticated architectures to see whether the result improves. Up to this point, a 13 layers vgg-like classifier is performing best and reaches 89.5% accuracy on test set. This number is pretty good considering that many components are very dubious.