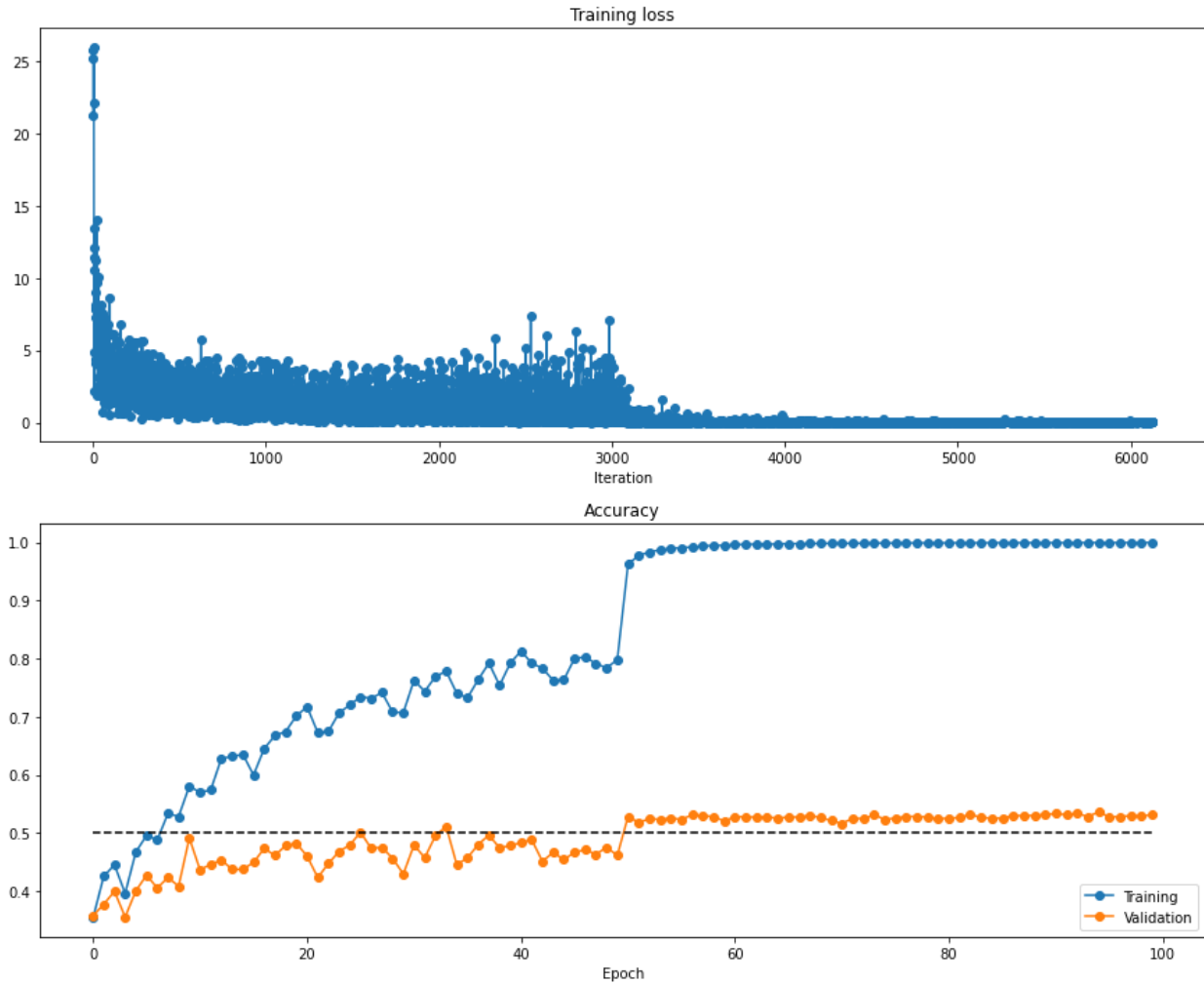


CSCI566-Deep Learning and Its Applications

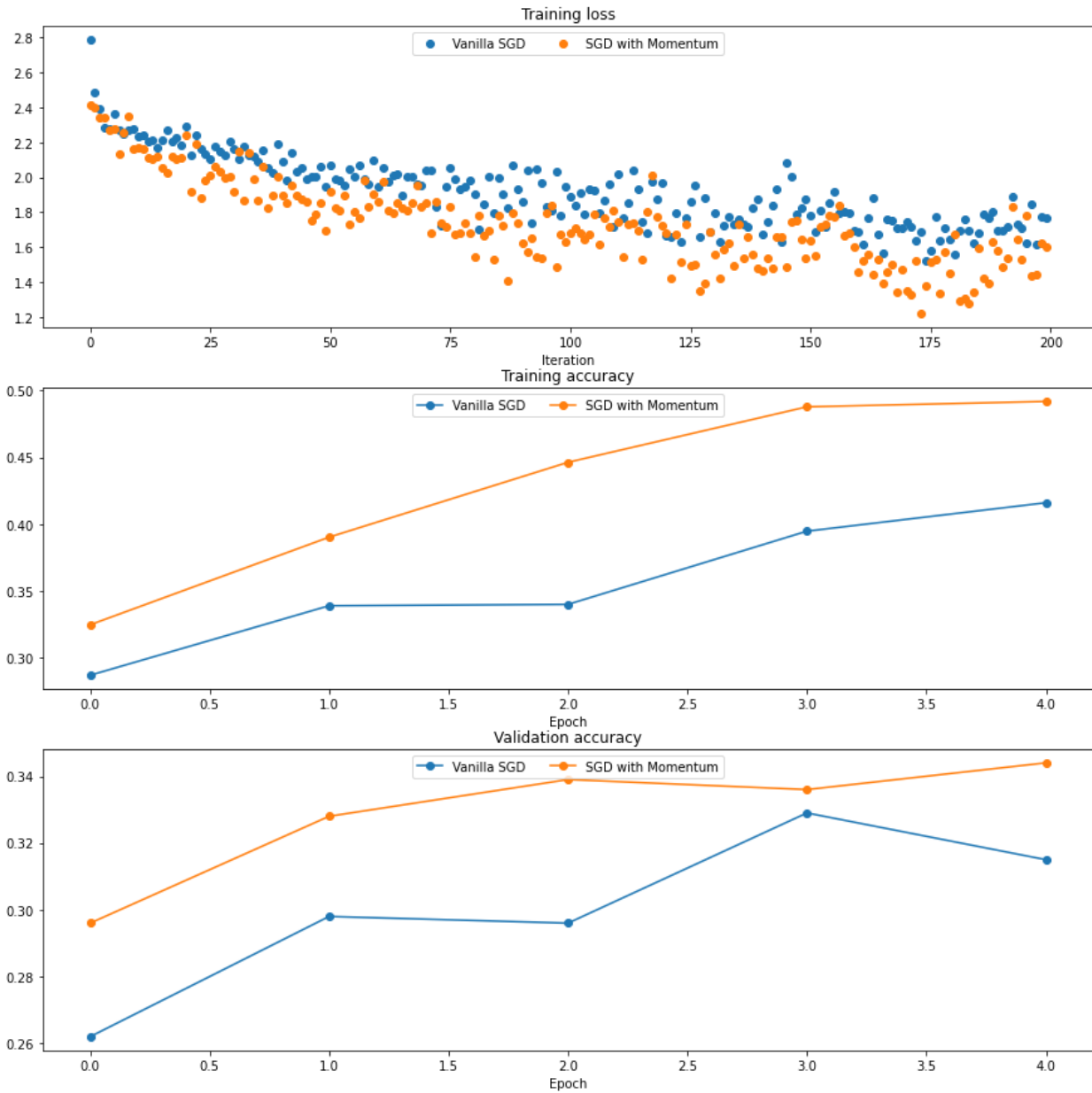
Problem 1 Solutions

1. Training Loss/Accuracy Curves for the simple neural network training

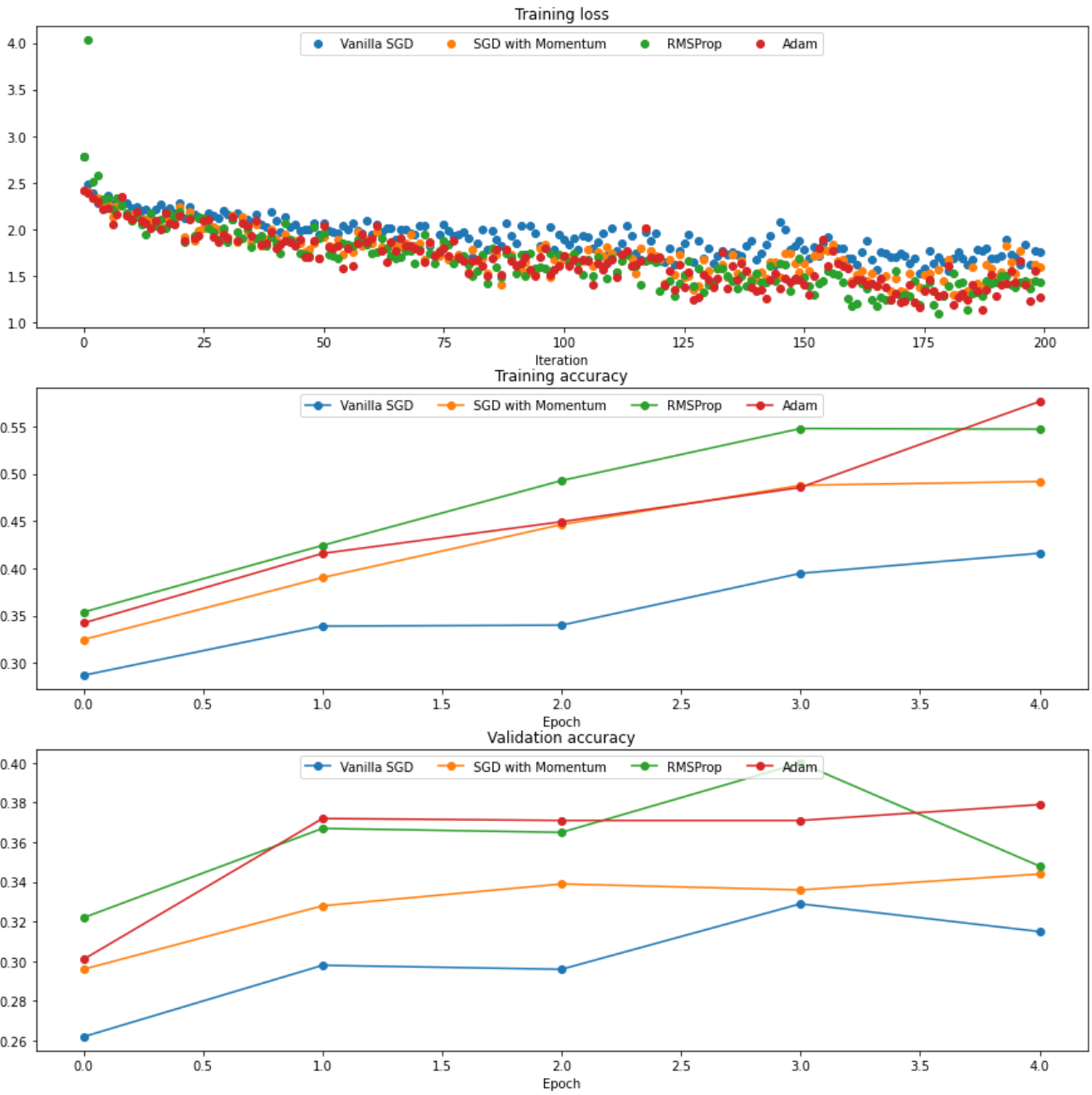


Validation Accuracy: 53.1%
Testing Accuracy: 51.0%

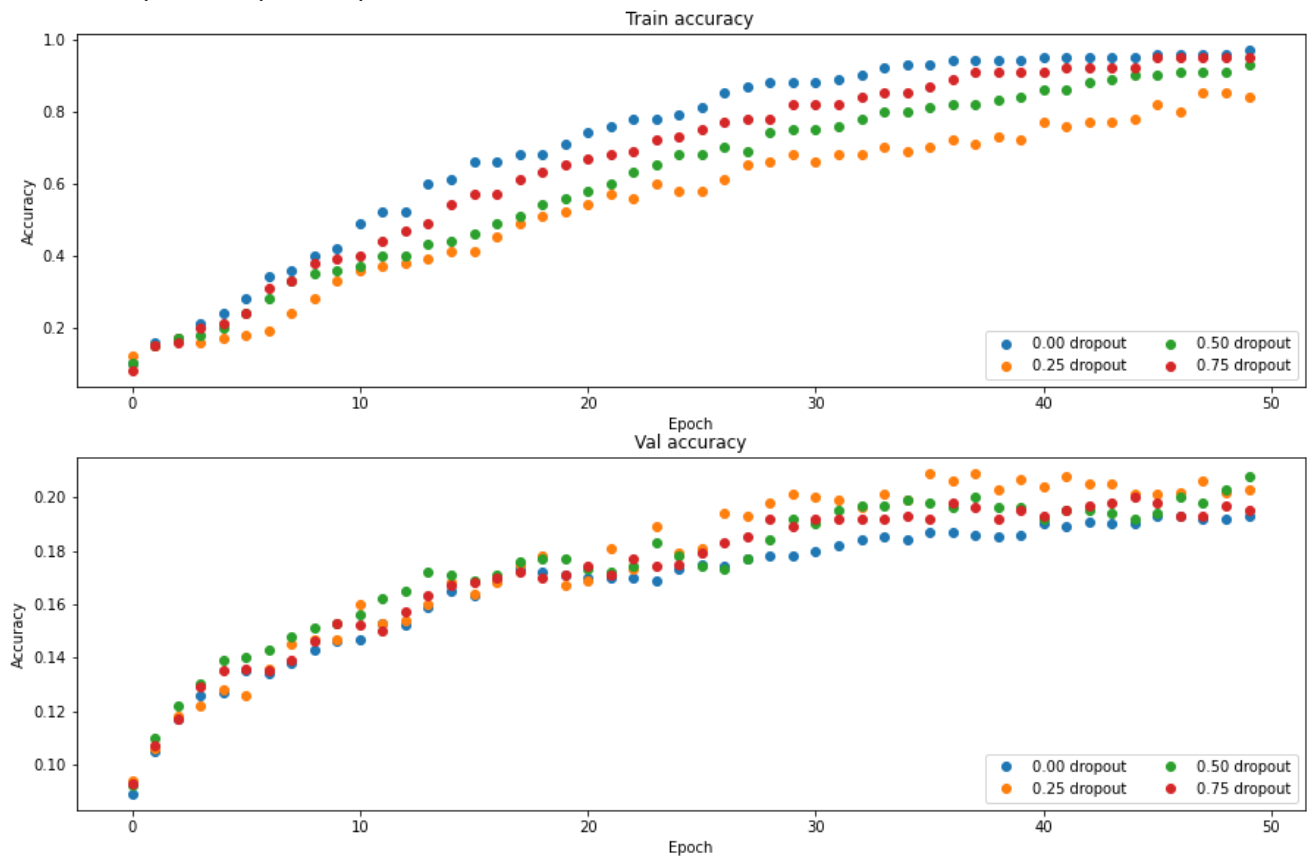
2. Plots for comparing vanilla SGD to SGD + Momentum



3. "Comparing different Optimizers" plots



4. Dropout comparison plots



5. Dropout inline question answer

Ans: Dropout drops few neurons in random based on the dropout probability thus forming a wide variety of different network structure. This makes the network more robust and helps in regularization or generalization. We can observe that for a keep prob ratio 0.5, the validation accuracy is the highest but for keep prob 0.75 the validation accuracy is lesser compared to keep prob 0.5. We can also see that for keep prob= 0 when there is no dropout the training accuracy is the highest, but the validation accuracy is the lowest for the same. Thus, we can conclude that dropout improves regularization. As the dropout increases till a threshold, the validation accuracy will improve, but beyond the threshold the network will not be able to learn properly with a very high dropout rate, thus lower validation accuracy.

6. Activation function plot

