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**GitHub:**

<https://github.com/holleman-classes/simple-convolutional-neural-networks-hwburnt>

### **Model 1**

*Did you observe any overfitting? Should the model train for longer, shorter, or about that number of epochs.*

-I did see overfitting in the model as the training and test accuracy was high but the validation test accuracies were lower by about 20%. The model should be trained for a shorter amount of time because the actual model converged after around 8 epochs and did not improve much after that

Model 1 did correctly label the picture and this can be seen in the GitHub repository

### **Model 2**

*Did you observe any overfitting? Should the model train for longer, shorter, or about that number of epochs.*

-Again the model was overfitting and thus it should be trained over less time.

### **Comparing all three models**

Out of all three of the models the third model worked the best. Although the third model took longer to train and test it produced the best generalization for the given validation images. Again the number of epochs was way too much for what we were trying to do so reducing the number of epochs from 50 to round 8 to 10 epochs would be better

### **Model with under 50000 parameters**

Reducing the model's parameter size significantly shortened the training time which was very beneficial. Reducing the amount of convolutional layers and the size of the layers helped a lot as well. Also including dropout allowed the model to more efficiently train a generalized model.