Deliverable #2

1: We are trying to classify 200x200 images of fingerspell letters into proper letters. Ideally, we would be able to do this in real time, (with a video feed), but currently we are working on static images.

2: We are using the Kaggle ASL Alphabet dataset, with 87000 images of 29 different "letters" (all the usual ones, plus "nothing", "del", and "space.") For preprocessing, we're just converting RGB to greyscale, since RGB is completely useless when dealing with hand positions. We will eventually add some more datasets and try some data augmentation (such as rotating some of the images and scaling) since the dataset is homogenous, but for now we're just trying to get a basic model working.

3: We're using a CNN from Keras. So far, we're working on presenting our data in a shape that the CNN can parse (hyperparameter tuning will come later.) We're training on 2000 images rather than the entire 87000 so far.

4: So far, our main triumph has been sucking the data from Kaggle, changing it from a .zip file of *directories* to a proper 4D numpy array, and feeding it to the Keras CNN in a way that said CNN doesn't choke and die. We've achieved an accuracy of 3.95%, which is consistent with random guessing.

5: For the next steps, we'd like to increase the accuracy of the model. We will look at different architectures (different numbers of normal versus convolutional layers, size and number of convolutional matrices, etc) and different hyper parameters, and run the neural net on the entire dataset. From there, we'll work on a video feed.