CSCI 495/595 Research Assignment

*Check due date in D2L.*

*Total points: 10.*

**Objective**: To research the implementation of convolutional neural networks to do object detection/segmentation/classification

For this assignment, you will need to do the following:

1. **Identify a domain for this research assignment.**
   1. Classification of handwritten letters
2. **Identify the research focus, i.e., object detection, segmentation, or classification.**
   1. Classification – I am going with this selection because of how applicable it is to optical image recognition and work with OpenCV, as I want to eventually integrate this with a physical microcontroller robot project.
3. **Either construct a training data set from scratch or use the existing data set from sources like GitHub, Kaggle, or online repository.**
   1. I will be using the EMNIST dataset for training, and my own handwritten letters for testing
4. Research a technique to train a convolutional neural network on the data set you identified in step 3.
5. **Test your trained model with a new unseen data and report the output of your model.**
   1. This was done with handwritten letters that I created

**Report**:

You will need to turn this assignment before the due date. Your assignment should include the following:

1. Your response to step 1 above (i.e., the domain you identified for this assignment)
2. Discuss your research focus and reasoning for its selection.
3. Describe your data set, i.e., provide details about the number of data points, size, dimensions, etc., applicable to your data set.
4. For step 4, It is recommended that you include your code that implements the training of a convolutional neural network. You can include the output/snapshot of the run of your model in this file.
5. Discuss the results that your model produced for any unseen data used to test it.