CV (Spring 2021)

Name:

Project 07 (Final Project). Classification with CNN

**This project is worth 200 points.**

**Goal:** Your goal in this project is to run the CNN posted under the **Source Code tab**: **Model\_3\_improved\_cifar\_90\_percent.ipynb** and study its performance in depth.

**Understanding the Model:**

1. (20) Train the model and display the Model Summary as well as plot the model. You can use keras.utils.plot\_model() to generate an image of your model. Feel free to make any modifications to the hyperparameters. The current model gives ~90% accuracy. **V**
   1. In the .docx report, insert the summary and model image. **V**

**Deploying the Model:**

1. (50) Save the model above, then load the model in python .py project. This is to simulate running the system in production mode. **V**
   1. Run the video capture. **V**
   2. Capture an image: **V**
      1. Resize the image to 256x256. **V**
      2. Tun A pyramid on the image and pick the ***32x32*** image. **V**
      3. Make sure it is in the same color format as the model (rgb vs grb). **V**
      4. In the .docx report, show the captured image, the processed image.

**Classifying in Real Time**

1. (30) Classify the 32x32 image using the model.predict(...) function **V**
   1. Show the probabilities of all the outputs. **V**
   2. Do this for at least 4 images? **V**
   3. In the .docx report, screen shot of the captured image, the pyramid image, the classification result, preferably in a nice table. **V**

**Grading and Submission Guide:**

* Must submit the whole project (python folder with code, image dataset, and results) zipped using 7zip tools with the name: LastName\_FirstName\_Project-07.
  + Submit the .py and the .ipynb files.
* This is an **individual** project: The work should represent your own: that you acknowledge that have not incorporated into this project any unacknowledged material from the work of another person, including papers, words, ideas, information, computer code, data, evidence-organizing principles, or style of presentation taken from the Internet, books, periodicals, or other sources.