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.
   1. In the .docx report, insert the summary and model image.

**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.
   1. Run the video capture.
   2. Capture an image:
      1. Resize the image to 256x256.
      2. Tun A pyramid on the image and pick the ***32x32*** image.
      3. Make sure it is in the same color format as the model (rgb vs grb).
      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
   1. Show the probabilities of all the outputs.
   2. Do this for at least 4 images?
   3. In the .docx report, screen shot of the captured image, the pyramid image, the classification result, preferably in a nice table.

**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.