# Problem Set 11

Data Science 602: Data Analysis and Machine Learning

Spring 2022

Rock Paper Scissors is a classic hand game where players compete through using hand gestures (see Wikipedia page). The Tensorflow-datasets package provides a library of hand gestures corresponding to allowed gestures in the game[1].

Write a convolutional neural network (CNN) that classifies these images, i.e., identifies the gesture (rock, paper, scissors) from each source image. For convenience, a template is provided for loading the dataset and for data augmentation. Feel free to make any changes to this template code. Try to achieve a validation accuracy rate of 90% or above.

You may make use of pretrained CNN architectures in Keras or develop your own. If you develop your own, you are encouraged to review the network architectures discussed in class (e.g., LeNet and AlexNet). Because the training dataset is relatively small, you may need to employ techniques such as regularization and data augmentation to achieve a high accuracy rate.

Using a graphics card is highly recommended. You can set Colab to use the graphics card in Runtime→Manage Settings.

[1] Via Laurence Maroney, https://laurencemoroney.com/datasets.html#rock-paper-scissors-dataset.