**Course:** Data Science Practicum – MSDS 692

**Name:** Francesca Beller

**Week:** 6

**Project Title:** Python Classification of NFL Plays Using *Keras*

**Project Summary:** The purpose of this project will be to create a supervised machine learning model that will be able to take in video input of NFL plays and classify them as either a pass or a run.  The model will be trained using input videos of pass and run plays scraped from the web. A mapping file will be manually created to assign binary classification to the individual frames of each video play, mapping the frame to either a 0 for run or a 1 for pass.

**Milestones:**

Researching the problem - DONE

Obtaining the data – DONE

Splitting videos into frames - DONE

Creating mapping CSV – DONE

Image mapping in Python - DONE

Image pre-processing - DONE

Model Training - DONE

Model Building - DONE

Model Evaluation - DONE

Model Re-tuning

Model Evaluation (continued)

Presentation Preparation

**Proposed to Do from Last Week:** Last week’s focus was on building, compiling, and training the initial model, as well as fitting it to a validation set created from the original training video set.

**This Week’s Progress:** This week, predictions and evaluations were performed for the initial model, achieving a 50% accuracy rate for the six test videos. After this first iteration was performed, I pulled an additional ten pass and ten run play videos for re-training this model, as well as ten new run and pass plays for a second test set. The model with these additional training videos achieved a 60% accuracy rate.

**Issues and Discussion:** The main issue currently being faced is how to further improve the accuracy of this model. Research will need to be further performed to see about tuning parameters and more training.

**To Do:** I plan to further tune the model with additional parameters and possibly additional training videos in the hopes to achieve an accuracy rate of 70% or higher.

**GitHub Repository:** https://github.com/francescabeller/MSDS-692-Practicum