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

**Name:** Francesca Beller

**Week:** 2

**Project Title:** Python Classificatiof 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

Image pre-processing

Model Training

Model Building

Model Evaluation

Model Re-tuning

Model Evaluation (continued)

Presentation Preparation

**Proposed to Do from Last Week:** Last week’s focus was on obtaining approval for the project and researching the problem.

**This Week’s Progress:** I was able to grab and cut the proposed set of training videos, as well as use the *cv2* module in Python to separate these training videos into individual images. From there, I manually evaluated each video frame to create a *mapping.csv* file which labeled each frame with a binary classifier.

**Issues and Discussion:** So far, there have been no issues. An initial worry was whether the image quality of the extract frames from videos would be enough to accurately apply labels, which does not seem to be an issue after performing this task.

**To Do:** I plan to use the *mapping.csv* file created this week to assign labels to the image/frame data stored in Python, as well as perform pre-processing of the images using *Keras*. This will involve re-sizing, encoding classes for video frames, and re-shaping.