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

**Name:** Francesca Beller

**Week:** 3

**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 - DONE

Image pre-processing - DONE

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 splitting the run/pass training videos into individual frames and creating a *mapping.csv* file for model mapping.

**This Week’s Progress:** I was able to read in the previously created *mapping.csv* file to provide binary classification of the individual frames of each training video. I was also able to create image arrays in order to re-size and re-shape all the frames/images to create a more normalized image structure that is a better size and shape for processing. From there, I used Keras’ *preprocess\_input* to perform initial image pre-processing.

**Issues and Discussion:** So far, there have been no major issues that have occurred.

**To Do:** I plan to perform the initial model build using Keras’ *VGG16* base model, compile the model, and begin initial training.