Wendy Yang

January 24, 2018

Using Machine Learning to Predict the Rank of Offensive Players in the NFL for Fantasy Football Drafting

Introduction:

Fantasy Sports is an industry estimated at over $7B per year (https://qz.com/1068534/how-the-7-billion-us-fantasy-football-industry-makes-its-money-in-2017/). It spans a host of sports and has spawned leagues and even a TV show (The League <https://en.wikipedia.org/wiki/The_League>) revolving around the players. My project specifically focused on fantasy football and selecting (aka drafting) the players that would be most likely to create a winning team. My question of interest is: Is it possible to predict the rank of offensive players in the NFL for fantasy sports based on their statistics from a previous season?

(Notes, will need to add in what kind of estimator to use)

Fantasy Draft:

To start this project, I made assumptions that I would only be ranking offensive players that could be drafted onto my fantasy team. In this case, I would be evaluating the following positions: Quarterback (QB), Running back (RB), Wide Receiver (WR), Tight End (TE), and Kicker (K). Typically we draft an entire team’s defense rather than individual players so I opted to ignore that data for now.

Players earn points based on their stats. The goal of your draft is to amass the highest scoring players on to your team. A breakdown point totals is below (https://fantasydata.com/resources/fantasy-scoring-system.aspx):

Offensive Players

* Passing Yards: 1 point per 25 yards
* Passing Touchdowns: 4 points
* Passing Interceptions: -2 points
* Rushing Yards: 1 point per 10 yards
* Rushing Touchdowns: 6 points
* Receptions: 1 points (only if using PPR scoring)
* Receiving Yards: 1 point per 10 yards
* Receiving Touchdowns: 6 points
* 2-Point Conversions: 2 points
* Fumbles Lost: -2 points
* Fumble Recovered for a Touchdown: 6 points

Kicking

* PAT Made: 1 point
* FG Made (0-49 yards): 3 points
* FG Made (50+ yards): 5 points

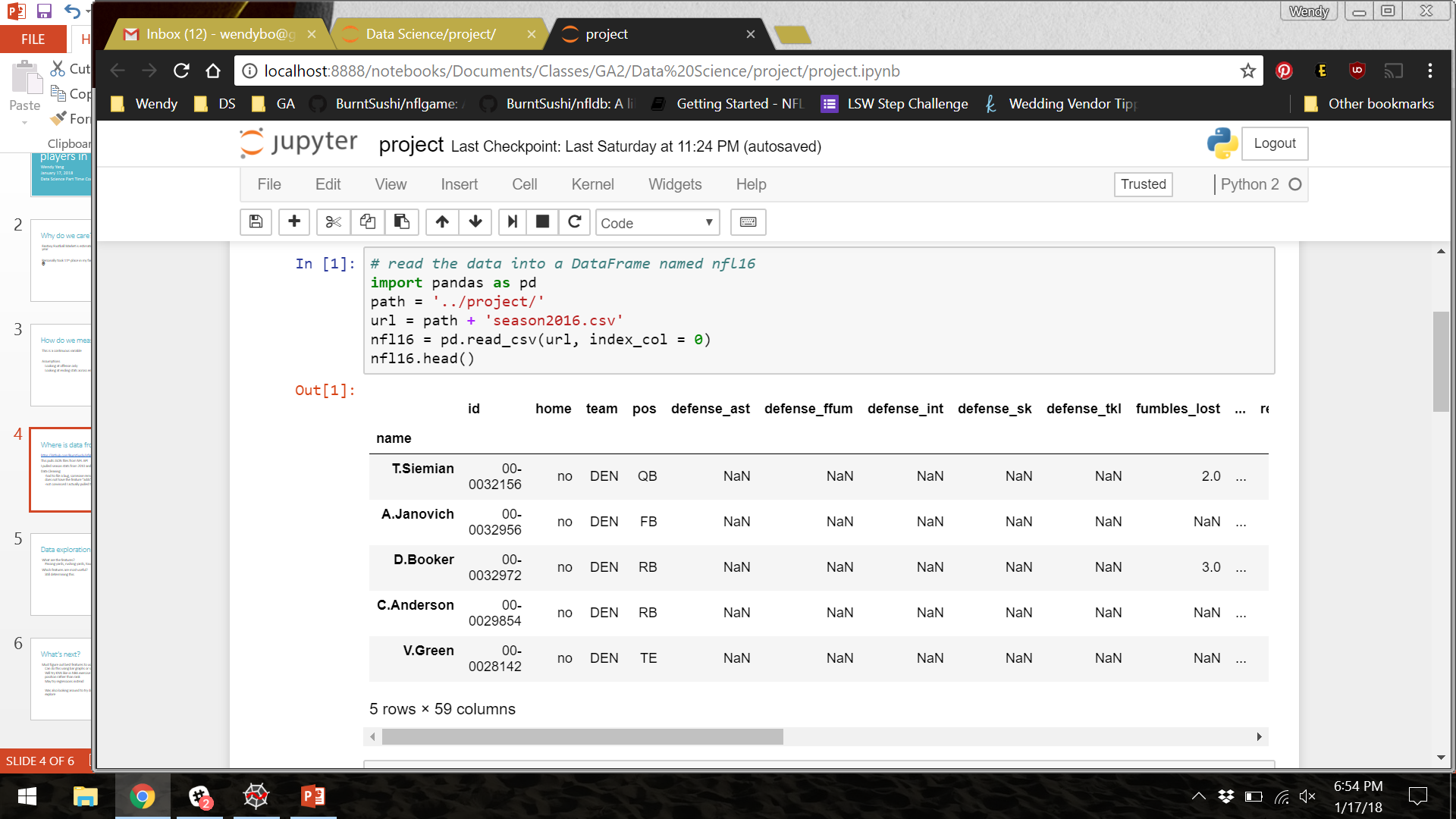
The object of my project is to come up with a way to rank players so I can increase my probability of picking great starters and finally win my league.

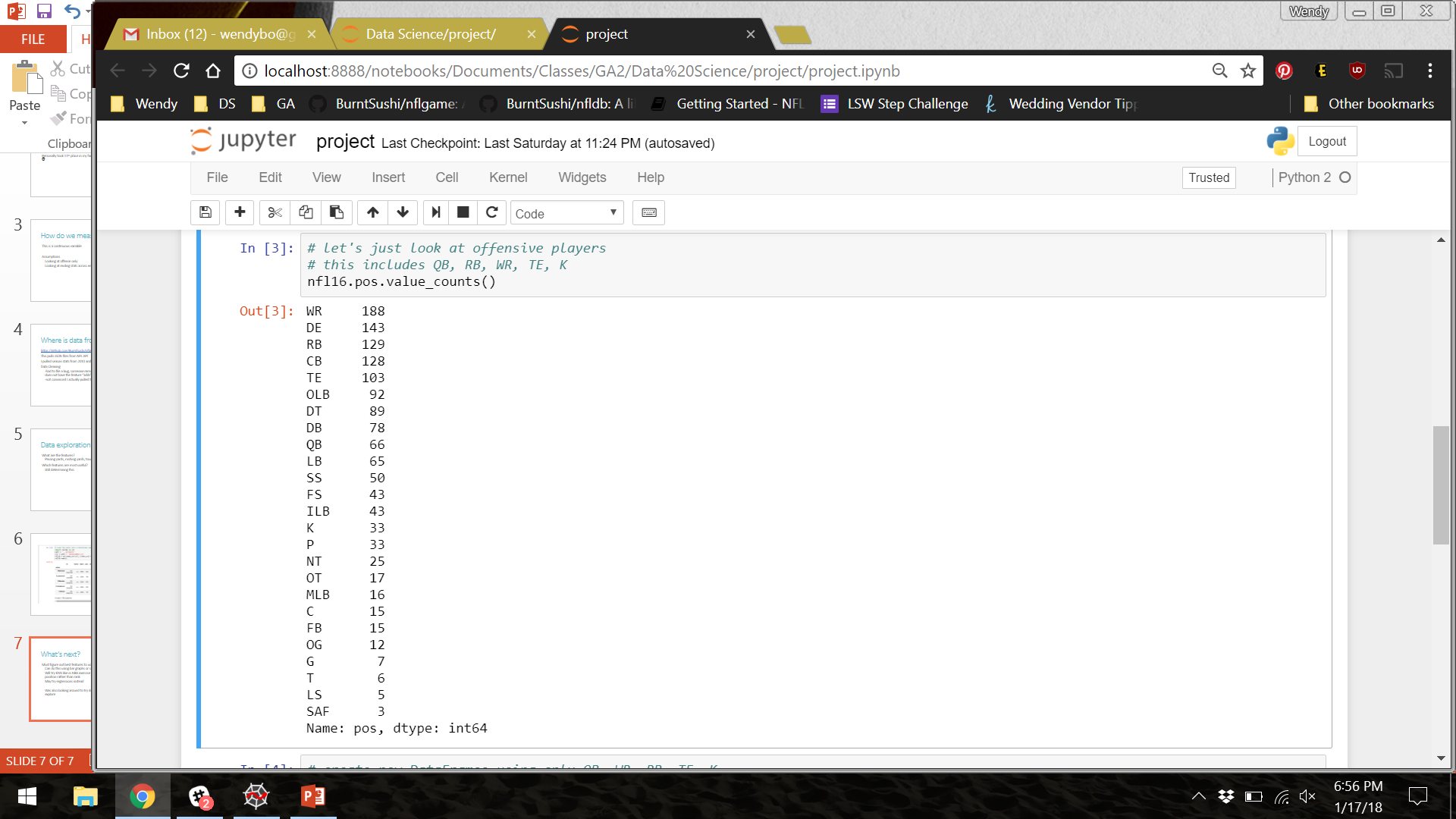
Data Collection:

My data is pulled from <https://github.com/BurntSushi/nflgame>, an API to read and retrieve NFL Game Center JSON Data. So far I have downloaded entire season stats for 2010 and 2016. I read this into a dataframe and selected only offensive players with the following designations: QB, WR, RB, TE, K. I will be exploring features used to map stats to fantasy points from the point breakdown above.

Progress to date:

I am still working on cleaning my data, my next steps will be to map the player stats to the points they would potentially earn over the season and then come up with a model/estimator that can learn and predict where a player would rank. I will also need to evaluate my features to determine which would be most predictive. I also need to find a player rank list from 2016 as the response vector for my data.





Next steps/things that I ignored that should be considered.

1. Team Defenses – not sure this is worth it? Would have to look at defensive rosters considering some people never play. Could rank players the same way and then add up total points as a team? This might be really thrown off tho.
2. Kicking field goals – for now counted all field goals as 3 points. Truthfully should split into over or under 50 yards to get a more accurate count