Fantasy Football

Raj Patel — u0902022 — raj.patel@utah.edu
Jake Maschoff — u0581770 — u0581770@utah.edu
Blaze Kotsenburg — u0676062 — u0676062@utah.edu
https://github.com/maschoffjake/dataviscourse-pr-fantasyfootball

Background and Motivation

The basis of fantasy football is for you to draft players for certain positions, exclusive to quarterback, running-back, wide-receiver, tide-end, a team's defense, and kicker. You then compose your own team with the players that you draft to play against other people's teams in your fantasy league. If your team scores more fantasy points than your opponent for that week, you beat your opponent. We will be focusing on only offensive players for this project because the dataset we are using only contains offensive players.

There are two different scoring techniques used for fantasy football, points per reception (PPR) and Fantasy Points. The data that we are using includes both Fantasy Points and PPR scoring techniques. Fantasy Points scoring is as follows:

- Passing Yards: **1 point** per 25 yards
- Passing Touchdowns: **4 points**
- Passing Yards (for non-QBs): **1 point** per 10 yards
- Passing Touchdowns (for non-QBs): **6 points**
- Interceptions: **-2 points**
- Fumble Lost: **-2 points**
- Rushing Yards: **1 point** per 10 yards
- Rushing Touchdowns: **6 points**
- Receiving Yards: **1 point** per 10 yards
- Receiving Touchdowns: **6 points**

PPR scoring follows the same scoring as Fantasy Points except that there is one additional scoring rule:

- Receptions: **1 point**

Picking which players to draft and which players to play for a certain week can widely change. That's what we would like our visualization to help with. You can analyze a player's historic stats and given these stats, you can help make a draft and game-time decisions. The given statistics will allow a user to analyze a player's progression over the past years, check player comparisons, and view a team's total fantasy points.

Project Objectives

The objective of this project is to provide data visualizations of player's historical statistics so that fantasy football users can try to make more accurate predictions for their roster. Fantasy Football League has about 60 million users alone. The project will be useful to millions of users and will be able to give more insight into what players they should play based on historic stats. It will also help users find patterns in a player's performance over previous years.

Data

Initially, we were planning on getting the data via the Pro Football Reference website. However, that required scraping and filtering the important data we wanted to use[2]. Doing this would require quite a bit of time which we could use for the visualization. Thus, we did some more research and found data that was already aggregated [3]. The dataset we chose already contained attributes that were the most important to us.

Data Processing

The data that we are using is already in CSV format. We will be using D3 to parse the data for visualization. The data has already been cleaned and processed. The data will be parsed into JSON array of Player object as follows.

- Player name
- Year
- Team
- Position
- Games played for the given year
- Games started for the given year
- Total Fantasy Points
- Total PPR Points
- Total Points per Game (PPG)
- Total PPR per Game (PPRPG)
- Position Rank for the given year
- Receiving Object
    - Target
    - Receptions
    - Yards
    - Avg. Yards per Receptions

- Passing Object
    - Completions
    - Attempts
    - Yeards
    - Touchdowns
    - Interceptions
- Rushing Object
    - Attempts
    - Yards
    - Avg. Yards per Attempts
    - Touchdowns

Visualization Design

Our main goal is to provide a visualization of player stats. To do this, we are going to display a player view to the user (Figure 1). In Figure 1, a user can select a year(s) for a specific player's stats. This can be seen in the first point (1) of the figure. Year selection will use brushing to select which years a user would like to see player stats for (2). Below this, data such as passing yards, receiving yards, receiving receptions, etc., will be displayed for that specific player.

Overall data can be viewed in the overall view (5). This is a slider menu that will be used to display the overall stats for each player during a given season(s). Only players sharing the same position as the player selected in the player view will be displayed in the charts. Though the player view will be able to display data over multiple years, Figure 1 is a design for when only one year is displayed.

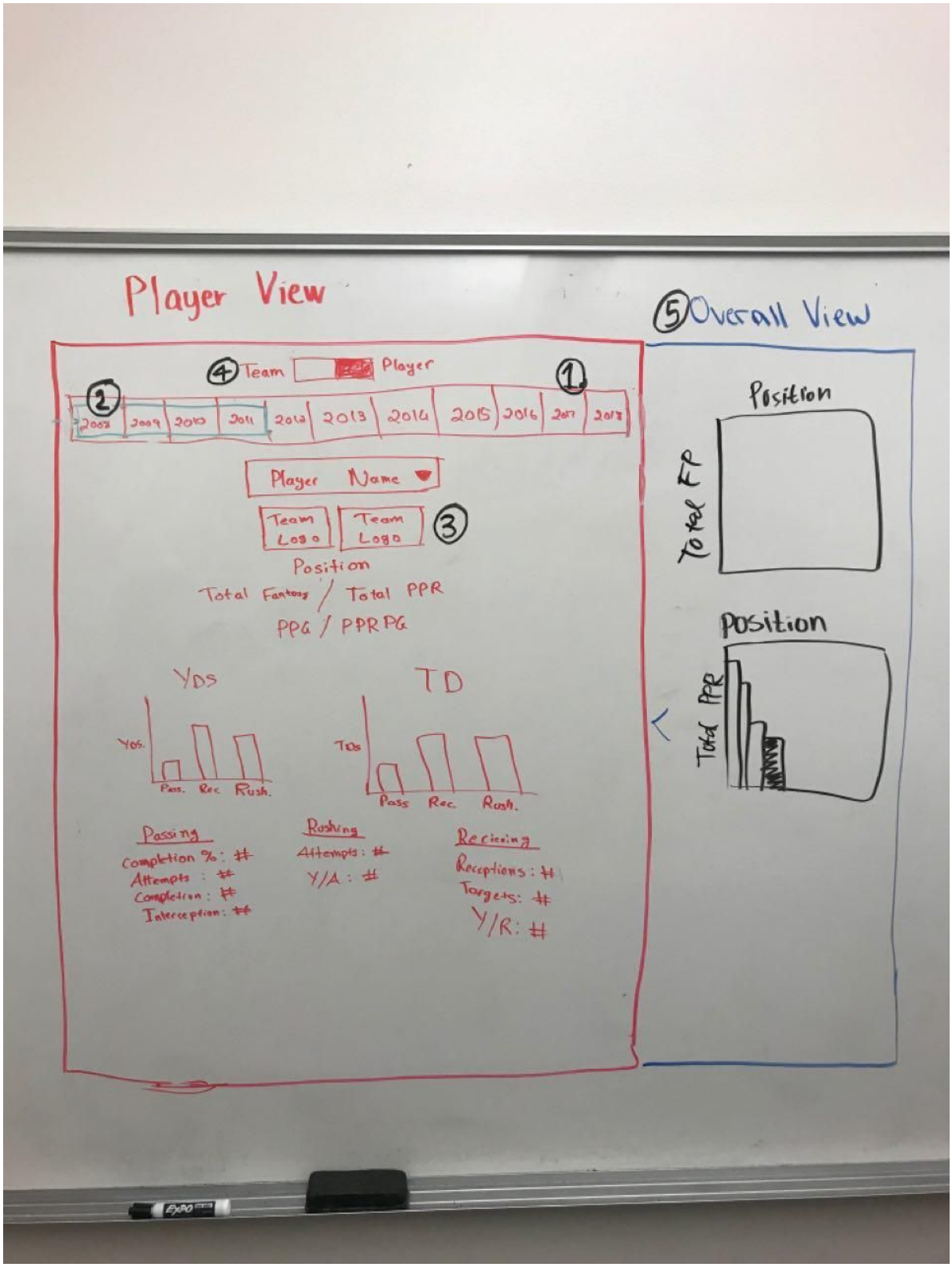

Figure 1. Player view for a single year.

Figure 2 displays the player view when more than one year is selected for a given player. Player statistics will be displayed inline/bar charts for each given year. To make all of the data more readable, each chart will be hidden in a collapsible dropdown. A user would now be given the ability to view only the data that they are interested in for a player during the given years. A more detailed design for a given chart in the dropdown can be seen in Figure 3.

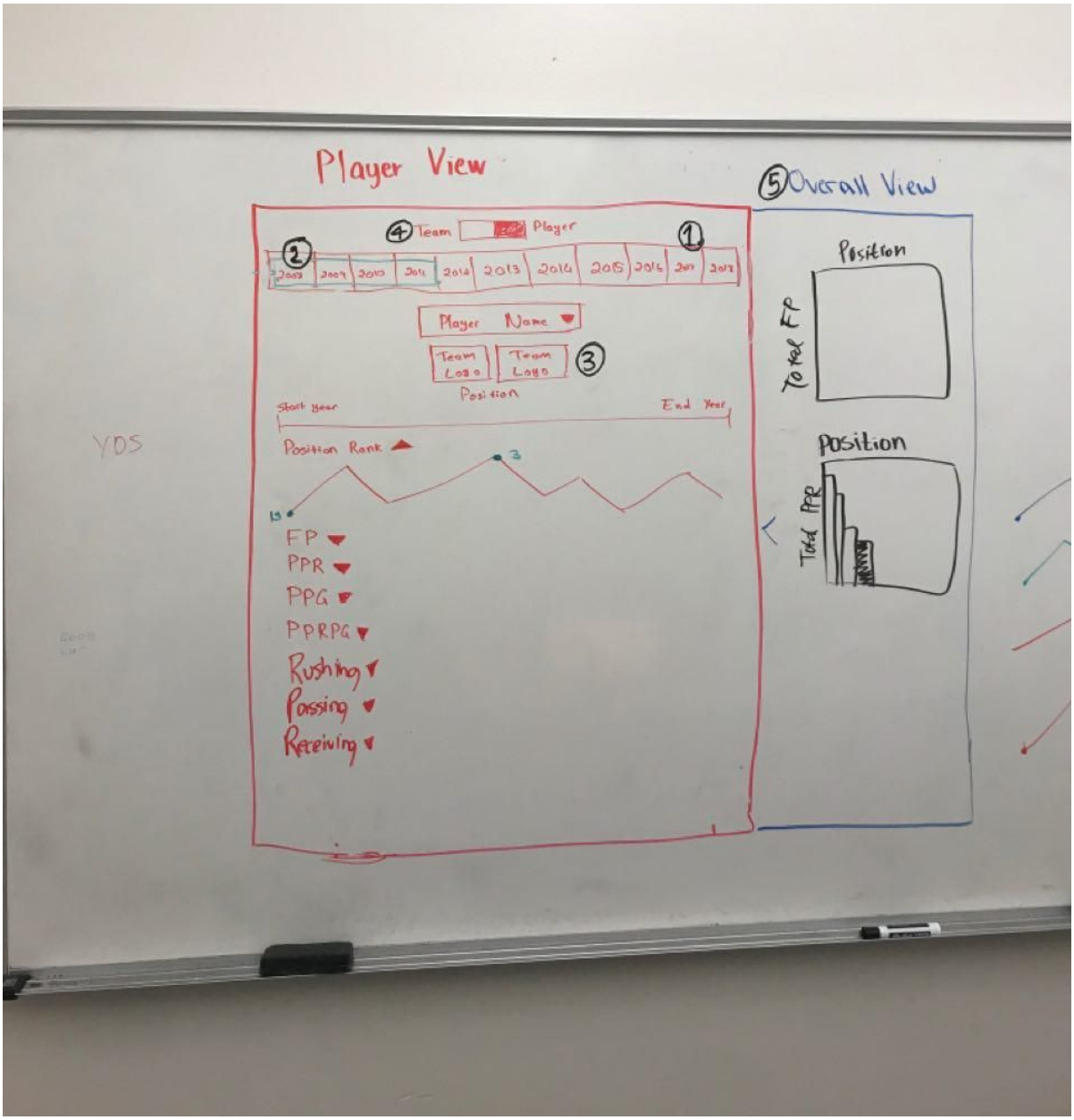

Figure 2. Player view for multiple year selection.

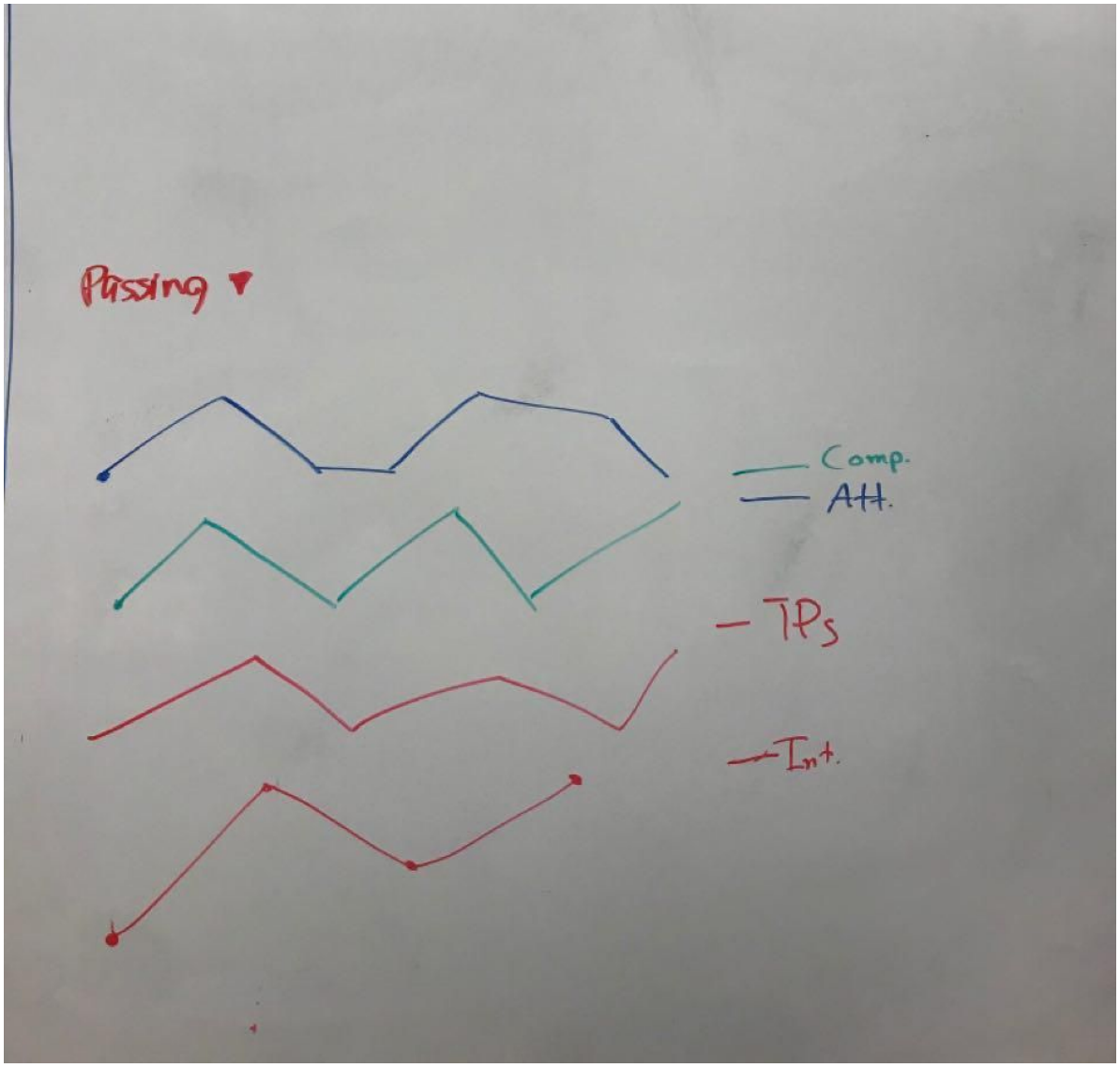

Figure 3. Line graphs expanded for the passing category. Rushing and receiving will be similar.

A major component of the player view will allow a user to compare two players together over given years. Figure 4 shows a rough design of how player comparisons will appear for the user. There are far more data points that will be included in the view. We opted to do horizontally stacked bar charts to make use of length and color channels. Figure 5 shows a visualization of how we plan to show player comparison stats over multiple years.

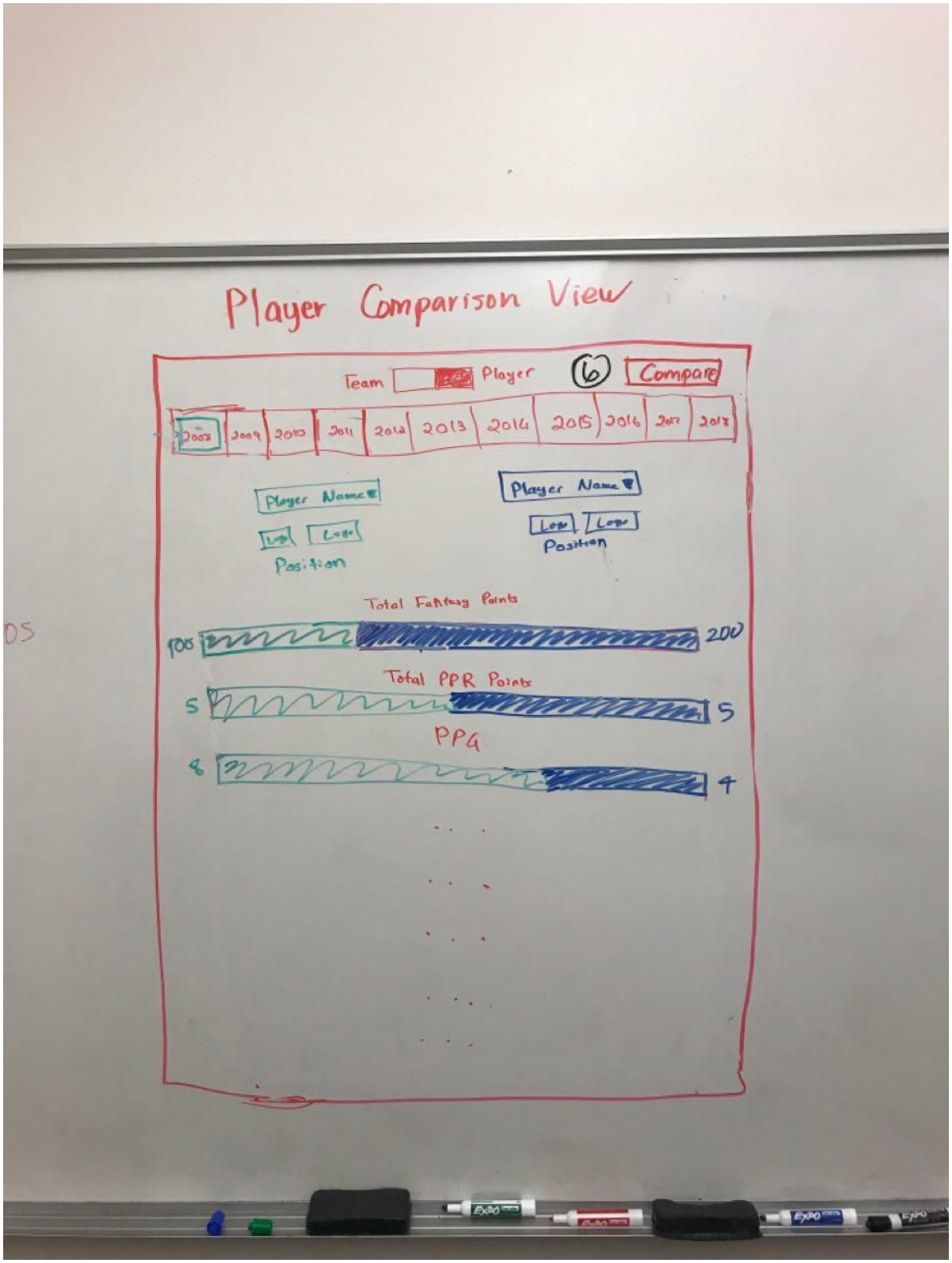

Figure 4. Player comparison view for single year.

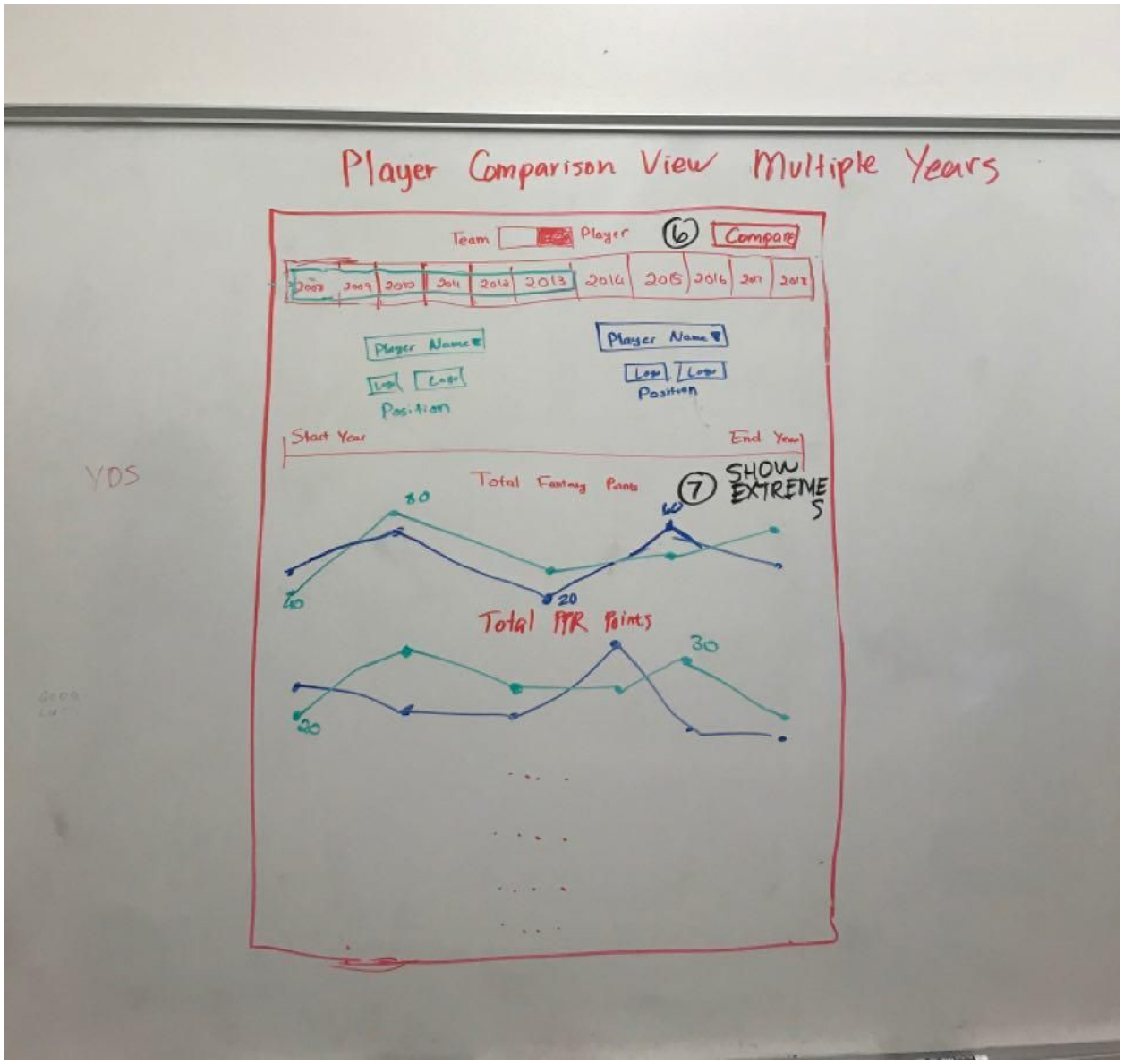

Figure 5. Player comparison view for multiple years.

Must-Have Features

After much thought and discussion, we settled on the following must-have features:

- A view that expresses a player and their stats
    - A year-selector (selecting done by brushing)
    - Player selection/display (selection done by filter/drop-down/search)
    - Team logos of team(s) that player played on during selected year(s)
    - Position(s) that player played
    - Single-year view for players

        - Bar graphs to show total yards by player for given year (passing, rushing, and receiving)
        - Bar graphs to show total TDs by player for given year (passing receiving, rushing, and receiving)
        - List of passing, rushing, and receiving miscellaneous stats
    - Multi-year view for players
        - Show year axis of selected years
        - Drop-down selections for line graphs to be displayed for each stat
        - When drop-down is selected, show line graph of stats with extremes and year progressions
- Compare two players side by side
    - Or same player to compare stats between different years
    - Show both players and compare stats by using stacked horizontal bar charts for single year view
    - Show both players and compare stats by using line charts for multi-year view
- Overall view
    - Shows the Total Fantasy Points and Total PPR Points leaders for the selected year(s) between all other players. Currently selected player is highlighted in the graph. Also can be sorted between positions (All, QB, WR, TE, RB)

Optional Features

The following are things that we thought would be cool, but were not necessary to express our data:

- Tutorial on how to use our visualization
- A way to toggle between Players and Teams
    - Show team stats and compare teams for certain years
- Expand the Overall view so you can take a closer look at the comparison charts between Total Fantasy Points and Total PPR Points

Project Schedule

Now - November 8th (first project milestone):

- Parse data into JSON arrays
- Begin creating basic HTML to hold views
- Start creating js files for views

- Find service to host visualization and host basic landing page

November 8th - November 15th:

- Finish creating single-player view for single year
- Finish creating compare player view for single year
- Finish creating overall view

November 15th - November 22nd

- Finish creating single-player view for multi-year
- Finish creating compare player view for multi-year
- Finish creating overall view for multi-year

November 22nd - November 29th

- Add team logos (if ok for copyright?)
- Clean up code, finish views that need to be finished and submit

References

[1] https://www.sportsbusinessdaily.com/Journal/Issues/2019/09/02/Media/Fantasy.aspx

[2] https://www.pro-football-reference.com/

[3] https://www.reddit.com/r/fantasyfootball/comments/cbwmvy/heres_a_spreadsheet_with_10_years_of_fantasy_data/