Project Proposal

1. Basic Info
2. Project title: NBA Player Shot Charts
3. Team member: Ruian Li
4. Link to project repository: <https://github.com/Ruian-Li/NBA-Player-Shot-Charts>
5. Background and Motivation

The motivation comes from the NBA project assignment. The assignment visualizes each player’s salary, field goal percentage, and basic data like points, assists, blocks, steals, etc using primarily bars. I think since field goal percentage is one of the most important data for each NBA player, a visual encoding that can complement that visualization would be shot charts for players. Basically, a shot chart will demonstrate a player’s field goal percentage at each spot on the court by using the color visual channel for each graphical mark. We can also encode the number of shots taken at each spot using the size visual channel of each graphical mark.

1. Objectives

I hope to have a search bar where we could enter the NBA player names and then we will have a shot chart for that player show up, and hopefully that chart is able to show where does the player take most shots and which spot is the player most efficient at in a very straightforward way. On a shot chart, we want to have hexagon graphical marks distributed on a court diagram. Only on spots at which the player takes more than a certain amount of shots will there be a hexagon. And the color of hexagon is determined by the field goal percentage at that spot. A blueish hue represents relatively lower field goal percentage and a reddish hue represents relatively higher field goal percentage.

I intend to familiarize myself with creating an interactive data visualization using JavaScript and D3 and maybe other frameworks and tools, and also learn how to make aesthetically appealing design decisions.

1. Data

I am going to collect data from the official NBA website through its provided APIs. Link: <https://stats.nba.com/>.

1. Data Processing

The data from <https://stats.nba.com/> would include a lot of unnecessary data for this visualization so data cleansing and data aggregation are definitely needed, and I would allocate one day for each of these two tasks. Eventually, the data would be like a hash map, where the key is the player’s name, and the value is a list of tuples, where the key is a location on court, and rest two pieces of information are the number of shots taken at that location and the field goal percentage.

1. Must-Have Features
2. Search bar
3. Static shot chart for each player
4. Optional Features
5. Search bar autocomplete
6. Profile for each player that includes the player’s photo, team, height, weight, average game data etc.
7. When mousing over each graphical mark, show the number of shots taken at that spot (xx/xx format), and the field goal percentage there, and what type of shot it is (jumper, layup, etc)
8. A filter that enables users to select what type of graphical marks is used (circle, hexagon, etc)
9. A filter that enables users to set the minimum number of shots threshold for a graphical mark to be shown on that spot
10. Project Schedule
11. 11.1

* Finish project proposal

1. 11.8

* Collect data
* Clean data
* Initial visualization: just encode where does the player take shots without encoding the number of shots and field goal percentage. Basically, just a basketball court with a bunch of graphical marks of the same color and the same size.
* Project update

1. 11.15

* Prototype
* Have the search bar working

1. 11.22

* Encode the field goal percentage by color visual channel

1. 11.29

* Encode the number of shots at each spot by size visual channel

1. 12.6

* Finishing up
* Presentation

1. 12.9

* Submission

1. Visualization Design
2. General idea

Graphical marks on a basketball court visual. For each graphical mark, encode the player’s field goal percentage at that spot.

1. Alternative 1

Hexagon graphical marks. The size of it represents the number of shots at that spot.

1. Alternative 2

Circle graphical marks. Like scatterplot. For a graphical mark, it could be either red or green. Green represents relatively higher field goal percentage at that spot. Red represents relatively lower field goal percentage.

1. Alternative 3

Hexagon graphical marks. The color of it represents the field goal percentage at that spot (gradually changing color).

1. Final design and justifications

Hexagon graphical marks. The size of it represents the number of shots at that spot. The color of it represents the field goal percentage at that spot. Hexagons are used instead because hexagons can be jointed without overlapping, which makes the visualization easier to read. Use gradually changing color instead of only read and green to include more information and let the user know more clearly which color represents higher field goal percentage.