# Soft Des SP 18 Final Project

## NBA Shooting Data Visualization

## Team #BallisLife

## The Big Idea

For this project we have decided to create a comprehensive, interactive data visualization tool that will allow users to intuitively parse through shot position data in NBA games. In the past few decades sports leagues like the NBA have meticulously collected in game data and have made this information readily available to the public. The issue, however, is that though tables might be an efficient way to collect this data they do little to illustrate what the data actually means to the casual observer. As our MVP for this project we hope to provide a user control application that will illustrate the concentration of shots taken in games since the beginning of the sports stats era. Having achieved our MVP we will then proceed to explore visualization techniques beyond a court heatmap, potentially with wider variety of statistics. Lastly, we hope to be able to convert our project into a web application to make the tool more accessible to outside sources.

## Learning Goals

Maya: After doing a simple data viz for mini-project 4, I want to learn how to make more sophisticated and user friendly displays. Another learning goal is to get familiar with scraping and using APIs for our data collection.

JC: Having had a taste of data visualization in my last project I felt that though it was informative my partner an I were not able to deliver a final product that did the data justice. My hope with this project is to become more familiar with web applications and APIs as well as experiment with creating crisp graphics in python.

Bryce: I haven't done a data visualization project yet, so I am interested in learning how to make a nice-looking and intuitive UI, hopefully for a few different types of statistics. Also, I want to explore how to potentially integrate our program with the project website.

# Implementation Plan

We will use an API to scrape the data we need from stats.nba.com. We then plan to use the following tools and libraries in order to manipulate the data and create the features of our display/interaction: Beautifulsoup, svg image files and the corresponding SVG python library, matplotlib, pygame/other data viz library, Django/Flask, gleam

# Project schedule

Week 1: Obtain API access to data, research and experiment with selected Libraries. STRETCH Preliminary data plotting on court.
Week 2: Workout shot density mapping positioning and colour scale. Add first UI feature by allowing the user to change one variable.
Week 3: Add UI features specifically for the shot mapping e.g. team/player/game specific data.
Week 4: Begin experimentation with other datasets and visualization techniques.
Week 5: Implement same additionally features for the new viz plots. Examine possibilities of creating the webapp.
Week 6: Run over time or web app implementation

# Collaboration plan

We are planning on working separately for about a week at a time and then integrating work all together in a longer more intensive meeting. We will use a group trello to keep track of tasks, and will keep communication open in order to accomodate issues as they come up. For example, if someone gets stuck on their task they can reach out to other members to help pair program outside of regular meeting times. This approach will help overcome the challenges of having incompatible schedules.

# Risks

- Integration (after working separately) could be problematic, our team doesn't have much software development background
- Working with new libraries, not sure what capabilities and limitations each one has

# Additional Course Content

It would be helpful for us to learn a little about working with svg files (for a basketball court display) For a SUPER stretch goal it would be cool to make our program update dynamically, tools for that would be appreciated, but not necessary.