Team Name: Group 180

Team Members: Justin Lin, Ethan Zhu

Elementary NBA Player Prediction Model

Problem:

Data samples for NBA games are readily available but oftentimes difficult to analyze and manipulate to become useful. Existing structures are usually held by private companies and organizations who do not open-source their data and analysis. Therefore, we seek to find an efficient way to traverse through data and make meaningful predictions about players and statistics.

Motivation:

The idea of recreational sports betting has become more and more popular, pushing for users across the nation to seek methods to gain advantages over their peers. As gambling addicts ourselves, we feel it absolutely necessary to take advantage of this opportunity and rig the system in our favor.

Features:

We know we have completed our objective task when two conditions are met :

1. Operations on data values are automated upon user input and require little to no human interference.
2. 2. Requests from users result in relatively accurate prediction results, and are procured in a reasonable, and timely manner.

Data:

We will be pulling data from Kaggle.com including the entire NBA database (https://www.kaggle.com/datasets/wyattowalsh/basketball/data) and will be implementing it as a CSV file. From there, we will perform data munging and data wrangling operations via Excel and Python in order to merge the necessary datasets and resolve faulty data nodes.

Tools:

Programming Languages : Python, Excel, R, C++,
App/Website Visualization Possibilities : Pygame, Pyramid, Django, Flask, Tkinter, PyQt/PySide, Kivy
Data visualization : Matplotlib, seaborn, Pandas, scikit learn(potential for ML), Turtle

Visuals:

See end of document for examples and prototype visualizations

Strategy:

- Hashset (O(1) average-case time complexity for retrieval.)
    - When a player is searched, a hashset is implemented to tally up all the times a specific score value was reached.
- Max/Min Heap (O(n) average-case time complexity for retrieval.)
    - Allows retrieval of data to be sorted into categories of over/under the indicated point value.

Distribution of Responsibility and Roles :

Responsibility will be split between front-end and backend development. Back-end data analysis and operations will be done by Ethan and front-end visualization will be performed by Justin. Both team members will also work as “full-stack” developers and help each other in their respective areas. Since it is a group project, and the focus of the assignment is on the end product, both members will work together to visualize solutions, write code, and resolve issues.

Player Prediction

Enter Player Name...

Enter Pts Over/Under...

Player:

Deandre Ayton

OVER/UNDER: 60pts

ODDS: 0.00%

OPEN DATA VISUALIZER