**Project Proposal: Predicting the 2025 NBA Champion and Playoff Teams Using Machine Learning**

**Datasource:** https://www.basketball-reference.com/leagues/NBA\_2025.html

**1. Title** Predicting the 2025 NBA Champion and Playoff Teams Using Regular Season Statistics and Machine Learning

**2. Objective** This project aims to develop a machine learning model that predicts the NBA playoff teams and eventual champion for the 2025 season using regular season statistics. The model will analyze historical team performance data, including traditional metrics such as points, rebounds, assists, and shooting percentages, to predict which teams will qualify for the playoffs and which is most likely to win the NBA Finals.

**3. Goal**By analyzing historical NBA data, we aim to build a two-part machine learning system that first predicts playoff qualification by conference, then predicts the NBA champion from that playoff pool.

**4. Scope**

* Use NBA team-level statistics from the 21st century (2004–2024)
* Label each team per season with:  
   • Playoff\_Qualified = 1 (top 10 in their conference), 0 otherwise  
   • Champion = 1 (won NBA Finals), 0 otherwise
* Train classification models using Scikit-learn
* Apply the models to 2024–25 regular season data to:  
   • Predict top 10 teams per conference (playoff/play-in pool)  
   • Predict the 2025 NBA champion from within those teams

**5. Data**Data includes per-game statistics:  
 PTS, REB, AST, TOV, STL, BLK, FG%, 3P%, FT%, Conference

**6. Method**

**A. Processing**

* Standardize team names across seasons (Supersonics = Thunder)
* Label data with Playoff\_Qualified and Champion

**B. Modeling** Use binary classification models:

* LogisticRegression
* RandomForestClassifier

**Two-Stages:**

**Stage 1 – Playoff Prediction**

* Predict Playoff\_Qualified (1 or 0)
* Train separate models for Eastern and Western Conferences

**Stage 2 – Champion Prediction**

* Use playoff-qualified teams only
* Predict Champion (1 or 0) from playoff pool

**7. Plan**

**For Playoff Prediction:**

* Accuracy, Precision, F1-Score
* Compare predicted teams to actual playoff results

**For Champion Prediction:**

* Confusion Matrix, F1-Score
* Does the model rank the true champion in the top 1–3 predicted?
* Analyze most influential metrics

**8. Tools**

* Pandas, NumPy
* Scikit-learn
* Matplotlib

**9. Expected Outcomes**

* A machine learning model that:  
   • Predicts the playoff teams for each conference  
   • Predicts the most likely NBA champion
* A ranked list of 2025 playoff teams by championship probability
* Insights into which stats most influence playoff and championship success
* Visualizations of model predictions and logic

Graph the 3 point attempts over the last 20 years (X axis year Y axis 3 point attempts)