NBA Game Prediction using Machine Learning techniques

Neeraj Gopalakrishnan, Pracheth Thamankar, Tushar N Kumar

September 18, 2022

1 Introduction

The sports market has exploded in the 21st Century with the introduction of new media formats such as streaming broadcasting and social media. With the growth of sports and the monetary value associated with it sports analytics and sports team management has become a popular topic.

Game outcome prediction plays a major role in sports performance analysis. Game prediction significantly influences many parts of the sports market such as viwerbase,team management and strategy and also sports betting.

One of the most popular sports that lures betting and attracts millions of fans worldwide is basketball, particularly the National Basketball Association (NBA) of the United States.Total revenue across the organization is estimated to have reached $8.76 billion in the 2018-2019 season with each team being worth atleast $1 billion [1].

Game analytics has become an integral part of the NBA.Teams have been using high-tech analytics mainly in three ways: designing winning strategies, predicting and avoiding player injury, and scouting. Machine Learning and related techniques have taken sports analytics in the NBA to the next level.Teams can now generate statistical breakdowns to help coaches optimize performance on court. Fans can visit various websites for sports data coverage and odds of their favourite team winning the championship. NBA's data revolution has resulted in the creation of rosters with skilled,well-rounded players and an increase in its profitability.

2 Aims and Objectives

The primary goal of this project is to build a machine learning model to predict outcome of NBA games. Efficient predictor model can be built and improved on from existing models such as clustering, classification and regression. The Model's goal is to accurately predict the outcome of the game given the characteristics of the game. These characteristics can include a wide variety of factors ranging from individual player statistics such as PER (Player Efficiency Rating)

[3], Player season performance, Recent Player performance,Offensice productive efficiency to complicated engineered features such Elo rating [2], [4]. The Machine learning model can be trained on existing datasets consisting of these variables to predict game outcome for unseen values of home and away team statistics.

References

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[3] https://en.wikipedia.org/wiki/Player_efficiency_rating

[4] https://projects.fivethirtyeight.com/complete-history-of-the-nba/#warriors