USING MACHINE LEARNING + DEEP LEARNING TO PREDICT THE PERFORMANCE OF NBA PLAYERS

Gaurav Bhamare*1

*1UG Student, Department of Information Technology, B.k Birla College Kalyan,

(Empowered Autonomous Status), Kalyan, Maharashtra, India.

ABSTRACT

In this paper, we predict the performance of the NBA team will win or lose depends not only on the performance of the team but also on the basketball arena, and last score on this stadium, so datasets have been made used for the train model , Decision Tree Regression, Support Vector Classifier (SVC), Random Forest Classifier and train all the two datasets. The finding prompted a revolution of the balance between traditional prediction and advanced techniques to find the output of winning team chances. The evaluators the performance of each teams players by calculating accuracy and generating confusion matrices classification

Keywords: Artificial Intelligence, Machine Learning.

I.   INTRODUCTION

NATIONAL BASKETBALL ASSOCIATION (NBA) is a men's professional basketball league in North America, composed of 30 teams (29 in the United States and 1 in Canada). It is widely considered to be the premier men's professional basketball league in the world. The NBA is an active member of USA basketball, which is recognized by FIBA (also known as the International Basketball Federation) as the national governing body for basketball in the United States. The NBA is one of the 4 major professional sports leagues in the United States and Canada. NBA players are the world's best-paid athletes by average annual salary per player.

NBA, often referred to as "the beautiful game," stands as one of the world's most beloved and passionately followed sports. With a global fan base that transcends boundaries and cultures, the NBA has the unique power to unite people from all walks of life. Whether it's the electrifying roar of the crowd, the skillful dribbles of players, or the heart-stopping goals that grace the stadium, or indoor arena, basketball matches are more than just sporting events; they are an integral part of our collective consciousness. From the United Center arena filled with roaring fans to the small neighborhood indoor arena where dreams take shape, NBA matches showcase human spirit, competition, and teamwork. These matches are not merely battles for victory but are imbued with stories of underdog triumphs, individual brilliance, and moments that will be etched in history forever. Each basketball match is a complex interplay of tactical strategies, individual skills, and the unpredictable nature of the game. Teams compete not only for victory but for the hearts and souls of their supporters. Whether it's a local derby or a grand international tournament, the anticipation, excitement, and drama surrounding a basketball match are unparalleled.

II.   METHODOLOGY

The purpose of this function is to provides a convenient way to visualize the distribution of values in multiple columns of a data frame in a grid of subplots. This can helpful for quikly gaining insights into the data, identifying patterns , and understanding the distribution of data within each column. This graph defines a python function "plot per column disribution" that is used for visualizing the distribution of data in columns of a data frame using math plot lib. This function is typically use in context of data exploration and anlaysis, where you want to understand the distribution of values in each column.

Machine learning

Machine learning is to predict which team will win a NBA match based on various features and historical data. The performance of different machine learning models is assessed and compared for this prediction task. Demonstrates this prediction model and provides a basis for selecting the most appropriate model for predicting basketball match outcomes. Players who can dribble and pass the other players.

III.   RESULTS AND DISCUSSION

Accuracy:

After the model training, many models have a different accuracy of each model.

Table 1. Prediction table

MODEL_NAME	ACCURACY
RANDOM_FOREST + GRIDSEARCHCV	5 Folds for each of 6 candidates
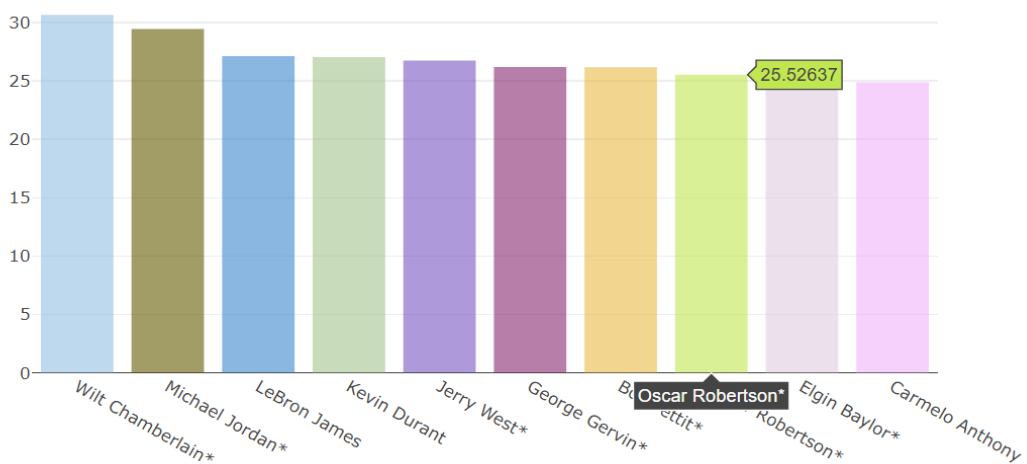
Fig 1: Confusion Matrices
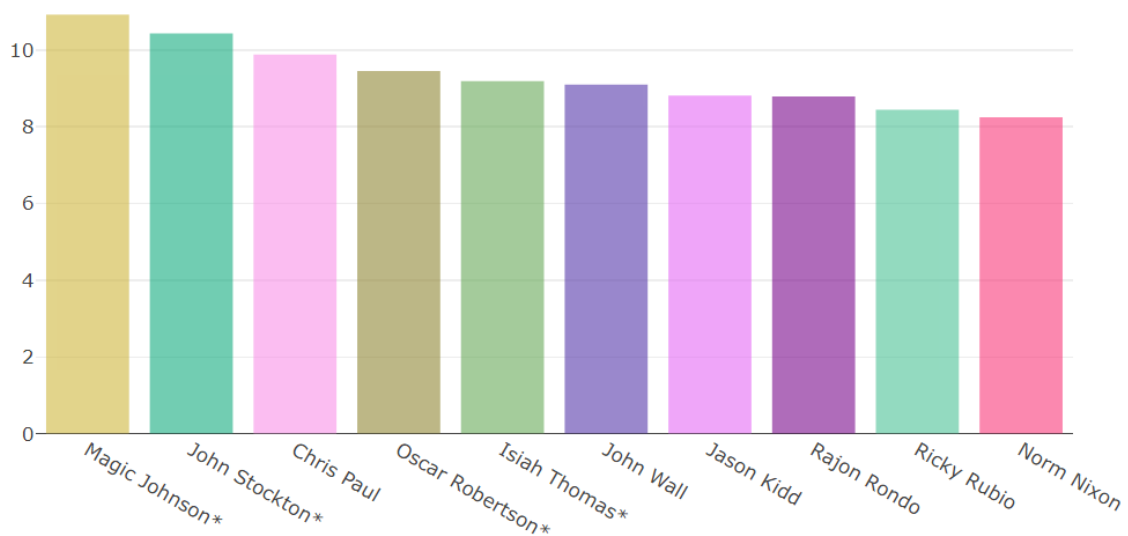
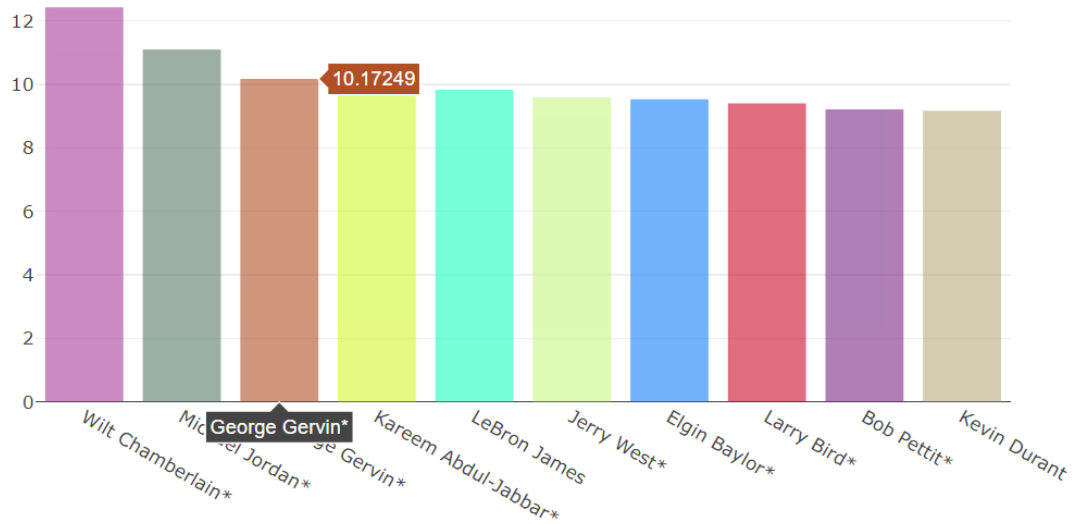**Fig 2:** Visualization Of Data Sets

Fig 3: Visualization Of Players

IV.   CONCLUSION

In conclusion, it can be inferred that machine learning models have the potential to enhance the accuracy of predicting NBA match outcomes by considering various influencing factors. The selection of the appropriate model is crucial, as different models may exhibit varying levels of accuracy. This research contributes to the ongoing efforts to combine sports analytics and machine learning to provide valuable insights for NBA enthusiasts, analysts, and teams. The paper could benefit from a more detailed discussion of the specific results and implications of the findings. Additionally, references should be provided to support the claims made in the paper. The findings of this research shed light on the potential of machine learning in improving the accuracy of predicting NBA match outcomes. The models are evaluated in terms of accuracy and confusion matrices, which help visualize the classification results. Notably, each model exhibits different levels of accuracy, emphasizing the significance of selecting the appropriate model for this prediction task.

V.   REFERENCES

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