Predicting Soccer Game Using ML

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Abstract: In this study, Machine Learning techniques are used to predict the winning team in the English Premier League (EPL). The goal is to predict a football match's full-time result (FTR) accurately, which determines the winning team. For training the data, we use algorithms like Support Vector Machines, XGBoost, and Logistic Regression, and the one with the highest and best accuracy is used to forecast the winning team. The data for previous seasons is obtained from [6].

Keywords: Football, Soccer Analytics, Prediction, Machine Learning, Support Vector Machine (SVM), XGBoost.

INTRODUCTION

Football is the most popular sport globally and is played by 250 million players in over 200 countries. Analytics has always been there in the field of sports even if we don't acknowledge it.

To be more precise, analytics in the field of football is the method of creating meaningful information and decisions that can be acted upon using soccer-related data. The data includes anything ranging from how many goals a team has scored to multiple factors like, distance covered by a player during the course of the match, or a number of passes played and how many out of those were accurate along with how many out of those created a chance for their team to score and so on.

In every soccer, league groups are formed and the teams play 2 matches with each alternative team in their league - one at their home structure and the other at the opponent's home stadium. Every such match has 3 doable outcomes the home side wins, the match ends in a draw, or the visiting team wins.

Given such a format, it's natural that there are many online fantasy leagues, betting agencies, and others who attempt to predict the end result of every match. during this project, an endeavor has been created to seek out the factors that have an effect on the outcome of a match and conjointly predict the results of any fixture by utilizing these factors.

The most important reason in the back of this venture is giving a correct dataset for football matches and predicting the winners in upcoming games and hence yielding efficient results. In this paper, we suggest a version of football prediction primarily based totally on FTR that is Full-Time Result(Our Class label) i.e. Home, Away, or Draw.

LITERATURE REVIEW:

S.No	Name / Year	Author	Method	Review
1.	Prediction and Classification of fouls in soccer game using deep learning. / 2020	Thamaraimanalan T. Naveena, D. Ramya, m. and Madhubala m.	Deep Learning	Carried out training process using Convolutional Neural Network (CNN) classifier with the accuracy rate of 87.63% with the reduction in the sensitivity and the specificity range of 72.5 and 86.2%.
2.	Predict Soccer Match Outcome based on Player Performance / 2021	Yang	Linear Support Vector Classifier (LSVC)	predict the outcome of the match based on the performance of the players. Model was validated with the results of the statistics of the AUC, F1 and prediction accuracy of the model were 0.8597, 0.6973 and 0.7965 respectively on the verification data.
3.	Robot Soccer-Strategy description and Game Analysis / 2010	Martinovich, J., Snásel, V., Ochodkova, E., Nolta, L., Wu, J. and Abraham, A.	Standard Applications of Distributed System Control in Real-Time	Studied Robot Soccer game, as a part of standard applications of distributed system control in real time to predict strategy and perform game analysis.

4.	Optimal Sports Betting Strategies In Practice: An Experimental Review	2021	Uhrín Matej, Šourek Gustav, Hubáček Ondřej, Železný Filip	Modern Portfolio Theory and the Kelly criterion	Investigated the two most prominent streams of betting investment strategies based on the views of the Modern Portfolio Theory and the Kelly criterion, together with a number of their popular modifications aimed at additional risk management in practice.
5.	Study On The Winning Rate Of Football Game Betting	2021	Woo-Joo Lee, Hyo-Jin Jhang, Seung Hoe Choi, Fuzzy	Regression analysis	A study that aimed to find variables that affect the winning rate of a football team before a match. Qualitative variables such as venue, match importance, performance, and atmosphere of both teams were used
6.	Forecasting Football matches by predicting match statistics	2021	Edward Wheatcroft	Probability Forecasting	Two approaches to the prediction of match statistics are demonstrated: Generalised Attacking Performance (GAP) ratings and a set of ratings based on the Bivariate Poisson model which are named Bivariate Attacking (BA) ratings.
7.	Predictive Analysis And Modeling Football Results Using Machine Learning Approach For English Premier League	2019	Rahul Baboota, Harleen Kaur	Gradient Boosting	Using gradient boosting they achieved a performance of 0.2156 on the ranked probability score (RPS) metric for game weeks 6 to 38 for the English Premier League aggregated over two seasons (2014–2015 and 2015–2016), whereas the betting organizations that we consider (Bet365 and Pinnacle Sports) obtained an RPS value of 0.2012 for the same period.

PROPOSED METHADOLOGY:

We present a model to predict the outcome of football matches in the English Premier League. We prepare the dataset of past seasons on various machine learning classifiers. Comparisons amongst the algorithms would be made and the one that turns out to be the most precise i.e. having the sounder forecast accuracy will be considered. Then, optimization can be produced on that classifier to further enhance the model's precision in making forecasts. The tag that would be considered would be Home Win (H), Away Win (A), and Draw (D).

We will be using Logistic Regression , Support Vector Classifier and Machine XGboost.

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REFERENCES

[1] Thamaraimanalan, T. Naveena, D. Ramya, m. and Madhubala m., prediction and classification of fouls in soccer game using deep learning. Irish interdisciplinary journal of science & research, 4(3), pp.66-78, 2020.

[2] Yang, predict soccer match outcome based on player performance, Francis academic press, UK, ISSN 2618-1576 vol. 3, issue 3: 74-78, DOI: 10.25236/fsr.2021.

[3] Martinovich,J., Snásel, V., Ochodkova, E., Nolta, L., Wu, J. and Abraham, A., robot soccer-strategy description and game analysis. in ecms (pp. 265-270), June, 2010.

[4] Uhrín Matej, Šourek Gustav, Hubáček Ondřej, Železný Filip, Optimal Sports Betting Strategies In Practice: An Experimental Review, IMA Journal Of Management Mathematics, 10.1093/IMAMAN/DPAA029, (2021).

[5] Woo-Joo Lee, Hyo-Jin Jhang, Seung Hoe Choi, Fuzzy Study On The Winning Rate Of Football Game Betting, Advances In Technology Innovation, 10.46604/AITI.2021.6517, 6, 3, (169-178), (2021).

[6] Edward Wheatcroft, Forecasting Football matches by predicting match statistics, Journal Of Sports Analytics, 10.3233/JSA-200462, (1-21), (2021).

[7] Rahul Baboota, Harleen Kaur, Predictive Analysis And Modeling Football Results Using Machine Learning Approach For English Premier League, International Journal of Forecasting, 10.1016/J.IJFORECAST.2018.01.003, 35, 2, (741-755), (2019).