FOOTBALL TEAM ANALYZER AND BUILDER USING MACHINE LEARNING

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Abstract: Dilemma is to decide whether a player should be in-team for a certain match or not. Without knowing the abilities of opponent, it is hard to decide the team lineup. Selecting the perfect lineup and tactics is the main concern of the team manager. In order to create a perfect team, considering all the factors like player's form, speed, agility, hit ratio, goal ratio, defense, and history and team's win ratio, player relationships, and many more. Building a team so that the current team has a better chance of winning using the system. This system helps predict a better team formation according to the geographical, performance factors.

IndexTerms: **ML, AI, KDD**

I. INTRODUCTION

Football's scope has been limited to studying certain aspects such as physiological factors of team and players. Recently, studies have suggested that researchers should focus upon the performance measures. Performance indicators are defined as the variables that elucidate some aspects of performance. They indicate a profile of ideal performance that help achieve and compare success as well as behaviour. Despite pre-existing constructions in team sports such as basketball, cricket and rugby, there has been little research for football. Existing analysis literature in football suggests that there is paucity of research on team performance factors. Moreover, no such known system exists that predicts the team line-up and performance of the team's players according to the opponents for every match. There are studies and systems that predict the winning probability of the team analysing previous data but not for individual players. The coach and team do mostly the creation of line-up and formation manually. Considering various factors like player's individual performance measures and team's compatibility with considering geographical factors including venue and attendance.

Each player has fixed position such as forward, mid-field, defender or goalkeeper. Certain players perform better against some specific opponents. The factors that are to consider for this system, classified according to their positions shown in Fig. 2 using UML diagram and some are universal which are common for all positions.

The aim of this paper is to develop a system using ML algorithms such as linear regression and gradient boosting to provide perfect lineup for the next match-comparing opponent's lineup and team performance. An idea to assign a rank to each player and team as a whole as well makes the analysis easier to understand. Also the features such as analysis of teams, players, and league, which helps the management and coach.
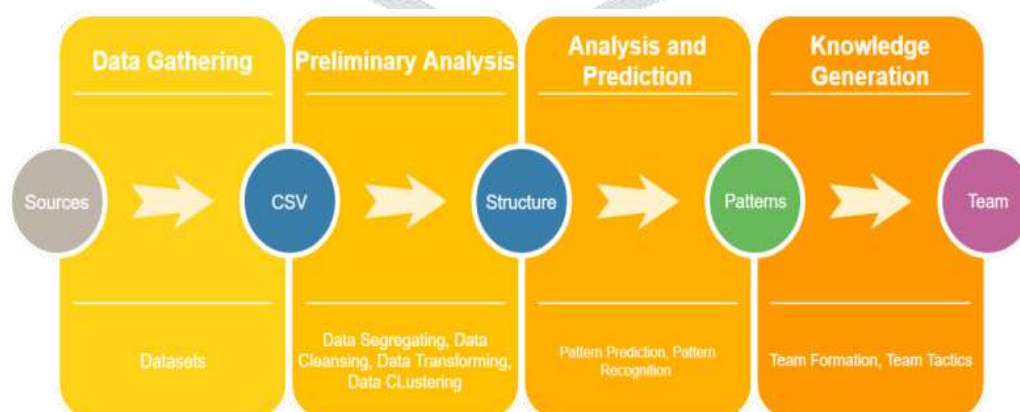
II. FIGURES AND TABLES
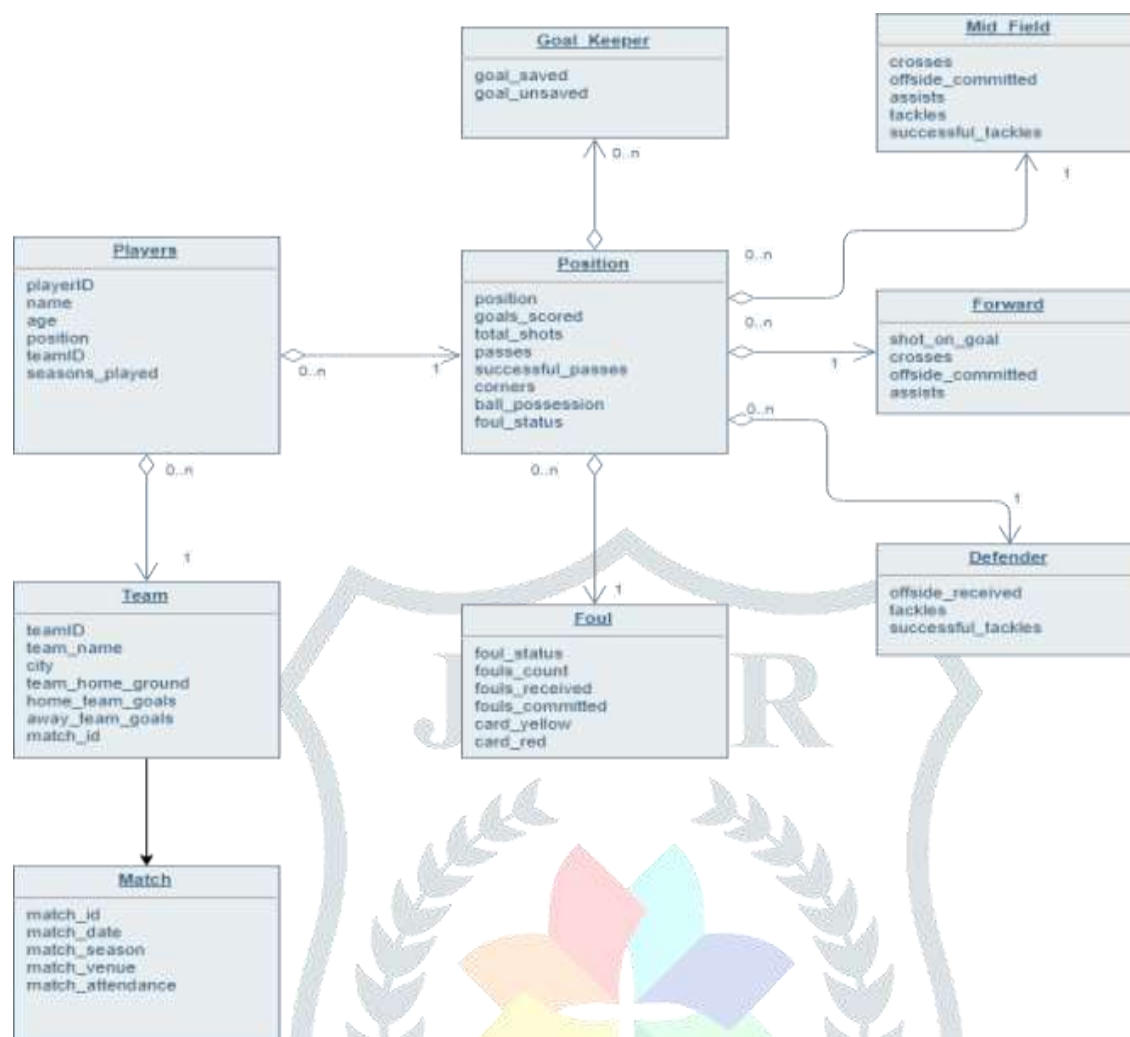

Fig. 1 System Architecture (Visual Flow)

FIG. 2 UML DIAGRAM

III. LITERATURE SURVEY

This paper [1] depicts the general discussion of grading the team and implementing ML algorithm to predict the team. Implementation of establishment of collaboration, team management and grading methods.

The paper [2] gives the idea about performance indicators affecting the team's analysis and formulating along with co-relating the performance indicators which discus reference values of the game indicating winning, losing and drawing teams in football.

The paper [3] taken a compound framework in predicting sports results – rule-based reasoning and Bayesian inference – and combined it with an in-game time-series approach for more accurate and realistic predictions. Discussion and Implementation of football results predictor called FRES (Football Result Expert System).

In [4] the improvement in accuracy of systems using data mining techniques, AI methods and knowledge base discovery (KDD).

IV. CONCLUSION AND FUTURE WORK

The system should predict the best-suited team from against the specific opponents in a team, and the strategies to dominate the opponent that will in-turn increase the win ratio of the team. Along with prediction providing performance insights of player, team and league.

Future work include providing depth and in-field analysis of the player and reach and coverage according to their skills and performance indicators.

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