Fantasy Premier League Team Optimization Using Guided Learning Models and Social Media Sentiment Analysis

Rajarshi Saha and Ankan Ray | Dr. Ebenezer Juliet| SCOPE

Introduction

In the realm of Fantasy Premier League (FPL), effective team management hinges on strategic decision-making informed by data analytics and artificial intelligence. Our project aims to redefine the FPL experience by introducing a comprehensive platform that leverages cutting-edge technologies to empower managers in optimizing player selection, fixture planning, and budget management.
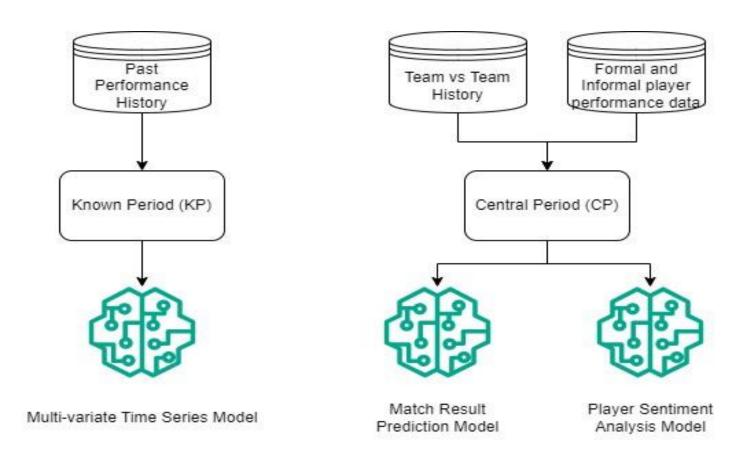
Motivation

We aim to address FPL managers' challenges in player selection, fixture prioritization, and budget constraints by creating a platform merging data engineering, machine learning, and AI. Our goal is to provide invaluable insights and predictive analytics, enhancing FPL managers' performance and satisfaction
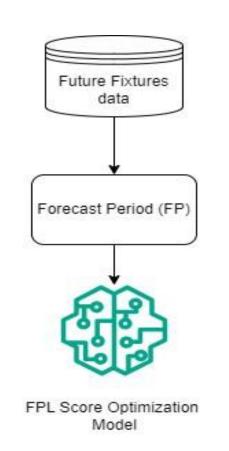
SCOPE of the Project

The scope of our project encompasses the development of a robust platform tailored specifically for Fantasy Premier League managers. This platform will incorporate data engineering, machine learning, and AI techniques to analyze player performance, prioritize fixtures, and recommend optimal team selections within budget constraints. Additionally, real-time data streams, intuitive interfaces, and continuous refinement based on user feedback will be integral components of our platform, ensuring its relevance and effectiveness in empowering FPL managers to make informed decisions and maximize success.
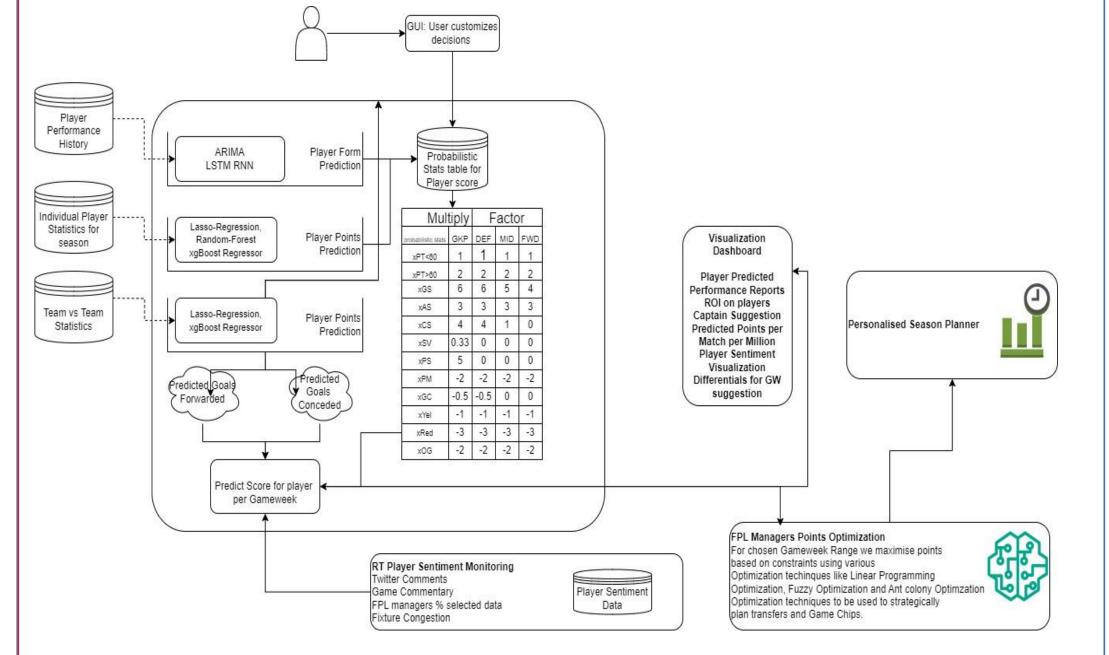
Methodology

- Data Collection from worldfootballR, Official Premier League API and Various GitHub repositories for current premier league data and of past seasons.

- Cleaning of the acquired data to remove unnecessary and irrelevant data

- Data assimilation to merge together data obtained from varied sources

- Data Engineering to make data fit for application of the required Data Models

- Application of SARIMAX and Light GBM on engineered data

- Sentiment Analysis using TextBlob and BERT model

- Squad optimization using Dynamic Programming

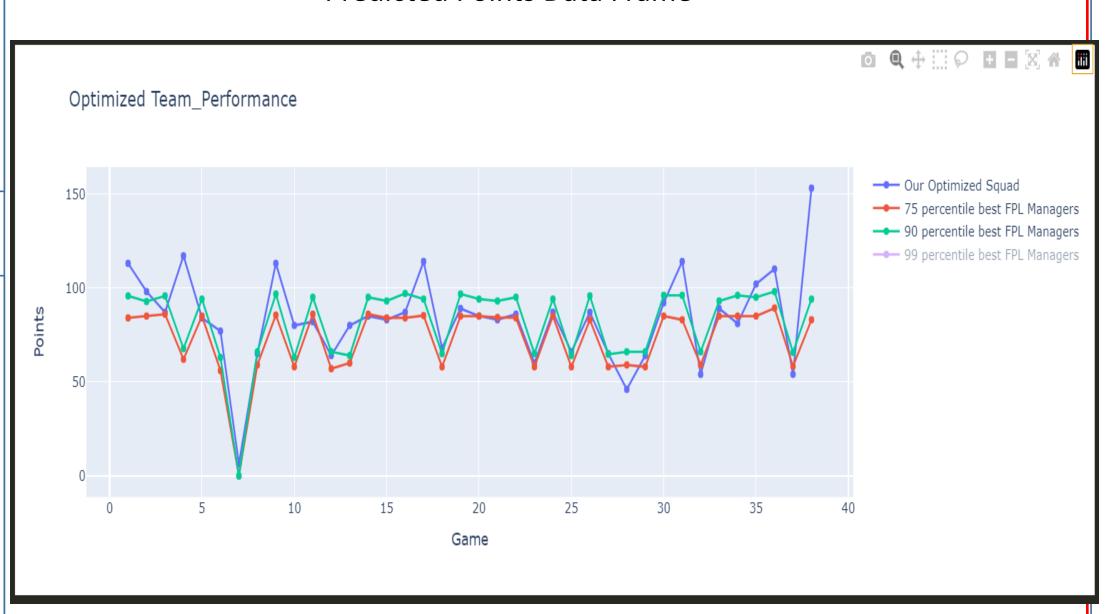- Frontend using React to display predicted team

System Overview

Architecture of Models usage

Results

index	name	opponent	last_season_position	was_home	points	team	value
Aaron Ramsdale2023-08-12T12:00:00Z	Aaron Ramsdale		16	0	3.653835	Arsenal	50
Alisson Ramses Becker2023-08-13T15:30:00Z	Alisson Ramses Becker		12	1	3.400355	Liverpool	55
David Raya Martin2023-08-13T13:00:00Z	David Raya Martín		9	0	3.256289	Arsenal	50
José Malheiro de Sá2023-08-14T19:00:00Z	José Malheiro de Sá		3	1	3.143887	Wolves	50
Emiliano Martínez Romero2023-08-12T16:30:00Z	Emiliano Martínez Romero		4	1	2.944158	Aston Villa	50
Nick Pope2023-08-12T16:30:00Z	Nick Pope		7	0	2.715660	Newcastle	55
Lukasz Fabianski2023-08-12T14:00:00Z	Lukasz Fabianski		15	1	2.629725	West Ham	45
Ederson Santana de Moraes2023-08-11T19:00:00Z	Ederson Santana de Moraes		20	1	2.539753	Man City	55
Bernd Leno2023-08-12T14:00:00Z	Bernd Leno		17	0	2.145955	Fulham	45
Jordan Pickford2023-08-12T14:00:00Z	Jordan Pickford		10	0	2.092276	Everton	45

Predicted Points Data Frame

Our Optimized Team performance against data of 205 top managers from VIT official FPL league.

Game Week : 2

Captain(2x points) : Erling Haaland

Vice Captain : Rodrigo Moreno

Predicted_Total_Points : 85.73267326732673

Actual_Total_Points : 98

Total XI cost : 803

Predicted_Bench_Points : 12.673267326732674

Bench_value : 185

Remaining_budget : 16

Played GameChip: Bench Boost

GameChip Advantage Predicted: 13

Output Screen for one of the Game weeks

Conclusion

Results acquired prove to be better than 90 percentage of FPL teams as per data from Premier League website.

The project revolutionizes Fantasy Premier League (FPL) management by seamlessly integrating advanced analytics, machine learning, and intuitive frontend design. With predictive models, dynamic programming, and a user-friendly interface, we empower FPL managers with strategic insights and immersive experiences, enhancing their performance and enjoyment across all 38 game weeks.

Further enhancement can be done by increasing the number of parameters to judge the performance of players and also considering more formations

References

- Rajesh, V., Arjun, P., Jagtap, K. R., Suneera, C. M., & Prakash, J. (2022, June). Player Recommendation System for Fantasy Premier League using Machine Learning. In *2022 19th International Joint Conference on Computer Science and Software Engineering (JCSSE)* (pp. 1-6). IEEE.
- Apostolou, K., & Tjortjis, C. (2019, July). Sports Analytics algorithms for performance prediction. In *2019 10th International Conference on Information, Intelligence, Systems and Applications (IISA)* (pp. 1-4). IEEE.