IPL Dashboard Web-Application

Ashwini Yerlekar, Bhushan Ghate, Dhananjay Dedhe, Nehal Chavhan, Pushpak Ninave
Computer Science and Engineering, Rajiv Gandhi College of Engineering and Research, Nagpur, India

Abstract— **Due to time restrictions, consumers are now relying more and more on data-driven ratings to keep up with the latest results and evaluate the performance of their favorite teams. This essay examines IPL-Dashboard, an online application designed to make it simple to analyze the performance changes of distinct teams that behave similarly. For searching and comparing data-driven performance scores of teams, use this web-based tool.**

The study's primary focus is on the eight IPL teams that are currently competing, with team runs, wickets, decisions determining who gets to decide who gets to toss, and an analysis of the Duckworth Lewis rule supporting that analysis. The player analysis uses IPL data from 2008 through 2020. The research paper makes an effort to evaluate IPL games using variables like batting team, bowling team, over, ball, bowler in super over, batsman, non-striker, bye runs, leg by runs, bowling runs, wide runs, batsman runs, penalty runs, total runs, extra runs, dismissal kind fielder, player dismissed, and runs across, bye, leg bye, bowling runs, match id, and inning.

Keywords— IPL, analysis, Duckworth Lewis rule, data driven, batting, bowling.

I.INTRODUCTION

This web-based application contains data set of all the IPL-matches that were conducted between [2008-2020]. The main objective of this application is to be a dedicated medium to get information about a particular match or a team. The retrieved information shown in the GUI (graphical user interface) depends upon the user requested query or the endpoints requested by the client. This application is built to ease the flow of information about the matches that a user expects.

- It is a web-based application which is used for describing, searching, and comparing data driven performance of IPL teams.
- We have developed this application to visualize the performance of specific IPL teams.
- This data driven application can be used for analytical purpose and eventually increase fan engagement.
- Use of Team Rank Algorithm: A sports rating system evaluates the outcomes of sporting events and assigns scores to each team and athlete. Expert voter surveys, non-expert crowdsourcing surveys, betting markets, and computer systems are examples of common systems. Ratings, also referred to as power ratings, are numerical representations of competitive strength that are frequently directly comparable to enable the outcome of any particular game between any two teams to be predicted. It is possible to establish rankings or power rankings by sorting each team's ratings and assigning each one an ordinal rank, with the highest-ranked club earning the #1 rank. Traditional sports rankings, which are based on win-loss-tie ratios, can be replaced by rating systems. One of the common and naïve approach to rank teams can be done by sorting teams according to the ratio of wins against loss within a span of time. The app is designed for both casual fans and serious cricket enthusiasts, providing a range of features and tools to cater to different user preferences. Whether you are looking to follow your favorite team, analyze player performance, or keep up-to-date with the latest IPL news and trends, the IPL Dashboard web app has something for everyone. Due to their strong performances, many aspiring cricketers have been given the opportunity to represent their country. The purpose of the effort is to gather information about previous matches and analyze it to discover relevant data that may be used to forecast the outcome of future matches. One of the largest T20 Cricket Leagues in the world is the Indian Premier League (IPL). For two years (2016 & 2017), each team plays two matches against the other, with the highest points earned by winning the most matches with a good net run rate progressing to the play-offs, where the top four teams will be considered the table topper will get two chances. The Indian Premier League is one of the largest T20 Cricket Leagues in the globe (IPL). Each team competes in two games against the other over the course of two years (2016 and 2017), with the teams with the greatest points collected by winning the most

games with a decent net run rate moving on to the play-offs, where the top four teams will be taken into consideration. There will be two opportunities for the tabletop.

II.LITREATURE SURVEY

1) C. Petersen, D.B. Pyne, M.J. Portus, B. Dawson [18] focused on the analysis of Twenty/20 Cricket performance during the Indian Premier League of 2008, concentrating on the Cricket Team Strategy and Tactics, affected by comprehension of the relative importance of Team Performance Indicators. Using comparisons between major batting and bowling indicators, they evaluated the team, batting, and bowling performances of winning and losing teams during the 2008 Indian Premier League Twenty/20 Competition (IPL). The winning teams were more successful in reducing the opponent teams' run production in the middle eight overs and took more wickets, particularly in the first and last six overs. Successful teams generally faced fewer dot balls when batting and scored more runs from partnerships with at least 25 runs. Team strategies should be focused on wicket-taking bowling and field positioning in the first and last six overs, and run-restriction field positioning and bowling in the middle eight overs. Winning the coin toss had no bearing on how the game will turn out ultimately, according to an analysis of general game signs. Captains who won the coin toss preferred to field first, which appeared to have a minor edge as seen by the fact that 61% of those teams went on to win. Due to the increasing amount of dew after dusk and the difficulty of bowling with a slick ball as a result, the captain may have decided to field first.
Conversely, captains might have thought that the side fielding second is more fatigued on the pitch after their hitting innings. Although other assessments might place more emphasis on certain team strategies, this essay compares winning and losing teams. Using a matrix of comparisons, a way is to evaluate what is typical vs a certain type of opponent, while a more thorough approach is to contrast the performances of the semifinalists to those of the other teams. Comparing the top four teams to the other top four teams, the bottom four teams to the other bottom four teams, and the lowest four teams to the other bottom four teams could be one way to do this. The team's support personnel should look at these similarities because they might help a certain team improve their strategies for a specific opposition.

2) Sujeet Kumar Sharma, R. Ghoman Amin [19], and Said Gattoufi used the ordered weighted averaging (OWA) operator to identify and choose the top Twenty20 (T20) cricket batsmen. The study suggests a method for evaluating a cricket batsman's OWA based on a variety of performance-related characteristics. A dataset consisting of ten important attributes for 24 T20 Indian Premier League 4 (IPL 4) cricket batsmen is used to choose the best players. A comparison result also demonstrates the benefit of employing the suggested OWA approach. When selecting a T20 cricket team, the method presented in this paper can be utilized to assess each T20 bowler separately. The topic of selecting the best top batsmen for T20 cricket has been examined in this essay. It suggested choosing the top 24 T20 batsmen using an OWA-based method for the forthcoming IPL 4. The proposed OWA approach can be adaptable to take into account various performance factors, according to a comparison result. The best top bowlers can be identified using the OWA approach, and the best T20 cricket teams can then be selected.

3) Praveen Banasode, Minal Patil, Supriya Verma [21] developed a tool to analyze the data by locating the attribute in the data set and predicting both the game's and the players' futures. This will make it easier to select the IPL team that should perform well and prevail. Every outcome is anticipated, including who will perform well in the tournament tomorrow and which team will prevail in the coin toss and game, among other things. The examination of the data set that was gathered and the presentation of appropriate data that is helpful for future prediction can be used to make the prediction. Almost 95% accuracy has been provided by the algorithms. Data analysis can be used to identify a player's strengths and weaknesses, improve both individual and team performance, and help make decisions. The application can be used by the selection committee to identify the team's best player, including the bowler, batter, and even the fielder, and to support that player's performance throughout a game. Many forms of games benefit from analyzing player and team performance as well as making predictions about future performance. The PKL, LPL, CBL, BBL, SuperSmash, T20 Blast, MSL,

BPL, APL, and World League CLT20, among other T20 leagues throughout the world, profit from the following methods.

4) Ananda B.W. Manage, Stephen M. Scariano [20] created An Introductory Application of Principal Components to Cricket Data. The purpose of this study is to provide a basic illustration of the use of principal component analysis to sports data. We talk about how main components can be used to rate cricket players. Using data from the cricket sports, this article demonstrates how to pique students' interest in this subject. Here, the Indian Premier League (IPL) competition's 2012 cricket batsmen and bowlers are successfully ranked using principal component analysis. It is especially important in competitive sports where player transactions or auctions take place since they frequently involve organizations investing large sums of money in the hopes of getting competitive advantages in the future. Despite the fact that expert judgement can be quite important, it is also very arbitrary. We have demonstrated how to evaluate batsmen and bowlers based on their contributions to their clubs over this intense season using data from the 2012 Indian Premier League (IPL 2012). As an introduction to the subject of various components, this technique is highly appealing due to its clarity and simplicity.

5) Rakshit Patel, Mihir Brahmbhatt told the insights of IPL 2008 to 2020 and why it is interesting. One of the most crucial things in the present period, where every sport has access to such advanced tools, is statistical data. While considering a number of factors, such as the toss analysis, the number of games played during the season, team performances, and the locations where the games were played, this study article largely focuses on the game results. Also, we were able to show through the statistics that the IPL as a competition is highly intriguing from the perspective of the consumer because the majority of matches with results are quite tense. The objective of this essay was to analyze and depict the outcomes of the Indian Premier League games that were played between the years of 2008 and 2020.

III.PROBLEM STATEMENT

Nowadays, due to time constraints people are increasingly getting relied on data driven scores to get updates of the matches and analyze the performance of teams. For this, they depend on the tools and sources that are present world-wide. Unfortunately, these tools provide no intuitive way to compare the evolution of performance of individual teams behaving in a similar manner. In this research, we present a web-based dashboard for team performance scores based on data that can be searched and compared. The dashboard provides the user with a graphical interface (GUI) to interact with the Team Rank algorithm that offers a principled evaluation of the performance of Teams based on data describing all the spatio-temporal events (e.g., no. of matches, no. of wickets etc.) that occur during a match.

IV.PROPOSED WORK

This project is built with the help of Java-framework called Spring boot which is an extension of Spring. In this, we have focused on how API of an application communicates with the data sets to get the required result. We have majorly applied and will apply the below technologies to build this application.

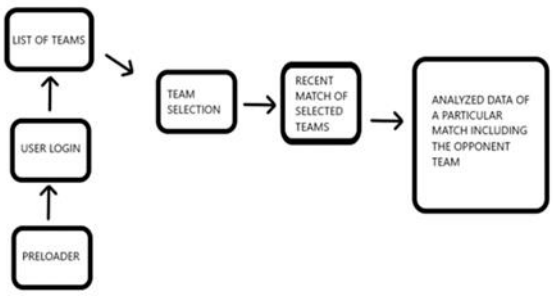
Core technical stack:

1. Java - Spring-Boot
2. JavaScript - React.js

MODULE 1:

(Gathering resources)

- Getting data from a data source and saving it to a database and then building API's and front-end to consume the data and make a dashboard available.
- Usually when we build applications, we start with the design of the application. Considering about the UI/UX design like what is a product to be built, what is the user going to see and in a project like this designing the right the user experience design.



MODULE 2:

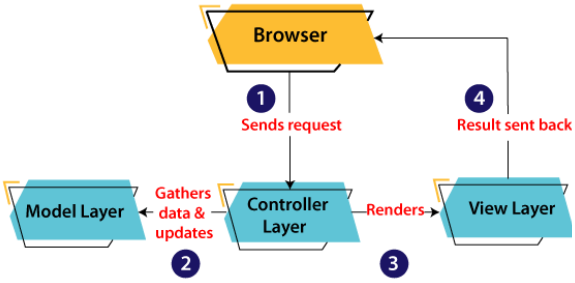
(Deciding the technical stack that is going to be used)

- We built for the IPL-dashboard. We used spring boot for the API we have used react for the front-end and the latest data but it should be easy to port over the newer data because the application is takes care of ingesting the data and exposing it as an API so this has all the matches that the team has played in that year.
- We used spring boot for basically the whole main server application the subject container application that gets deployed is spring boot.
- We used spring batch to ingest the data that we get from a data source right the IPL data that we use we get from Kaggle and populate our databases.
- some JPA technologies like repositories we are using JPL-query language queries as well to interact with the database and to also do some additional intelligence from the data that we ingest from that external source and then once we have done that, we are going to use **spring mvc** to expose certain key API's that are going to be consumed by a react front-end to build a new react app.

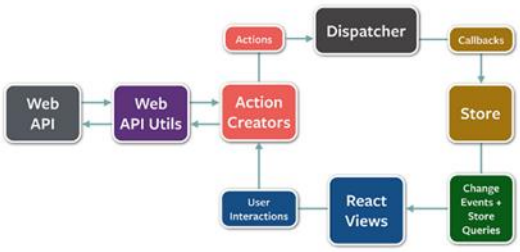
MODULE 3:

(Implementation)

- Designing **MVC** *(model view Controller):*



1. Downloading Data in the form of csv (comma separated value) file.
2. Defining the data that is to be loaded inside model: using spring-batch
3. Defining Controller
   A handy annotation that contains the annotations "@link Controller @Controller" and "@link ResponseBody @ResponseBody" on its own.
   <p>
   When this annotation is present, types are regarded as controllers, and by default, @link RequestMapping @RequestMapping methods assume @link ResponseBody @ResponseBody semantics.
4. Defining the View *(presentation)*:
   Displays visualization of the data to the user. Only connected to the controller.
   React is often referred to as the view in MVC-architecture.



III. SYSTEM SOFTWARES

- Windows OS
- Chrome, Firefox, Microsoft Edge, Brave etc.

IV. AIM AND OBJECTIVE

This solution's goal is to develop a dashboard that displays the capabilities and performance of teams in the corresponding games. To identify the IPL squad with the most victories overall. - the IPL team that suffered the most losses overall. Does winning the coin toss increase the likelihood of success. - The participant who has won the most player of the game honors. — the location of the majority of IPL games. - the squad with the most victories over each season. Is the on-field official who has overseen the most IPL matches. - the biggest IPL victories both when chasing and protecting totals. Which team won the most matches while batting first Which team won the most matches while batting second List of teams which have won matches by most runs cumulatively.

CONCLUSION

The capacity of individual clubs to break out and develop into significant media properties on their own will determine whether the IPL can maintain and increase its appeal over the long run. Franchisees might also need to increase their marketing and promotional costs in order to effectively monetize their fan bases and build brands around their various

teams. Franchisees might work to find new team sponsors in addition to increasing the variety of premium seating in their home stadiums. In the current system, there is an advantage to scheduling games between these two league champions, meaning more games can be played. Further innovation is anticipated in the upcoming year, and we might witness a 10-10 or a 5-5 over cricket model. Due to time constraints people are increasingly getting relied on data driven scores to get updates of the matches and analyze the performance of teams. For this, they depend on the tools and sources that are present world-wide. Unfortunately, these tools provide no intuitive way to compare the evolution of performance of individual teams behaving in a similar manner. In this research, we present a web-based dashboard for team performance scores based on data that can be searched and compared. The Team Rank algorithm, which offers a principled evaluation of the performance of Teams based on data describing all the spatio-temporal events (e.g., number of matches, number of wickets, etc.) that occur during a match, is accessible to users via the dashboard via a graphical user interface (GUI).

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