INDIAN PREMIER LEAGUE 2022

SEASON OVERVIEW

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Github Repository : https://github.com/tirumalramidi/IPL_SeasonOverview

Overview and Motivation

All three of us grew up in the Indian subcontinent, where cricket is considered a religion. Likewise, cricket is emotionally connected to us in many ways. However, there needs to be a website that shows the stats of the teams and players intuitively. We wanted to bridge that gap by choosing this project and helping the people who watch cricket. Additionally, we also wanted our visualization to be relatable and understandable to any user, even without technical experience. For instance, cricbuzz is used more than espncricinfo for cricket information, be it live scores or archival information, because cricbuzz is easier to use and understand than espncricinfo for naive users.

Instructions and Use:

There are several components to using our visualization. The loaded page will show the entire season. There are multiple methods of interactivity:

1. We show the overall team position at a high level. We have used multiple visualizations to display different data for example we use a bar chart to display the progress of a match. Scatter plots are used to display the player statistics.
2. We also have a fixed nav bar: we display all the teams in the nav bar for the user to select a particular team, which then displays the corresponding data in all the visualizations.
3. Using the drop down for scatter plot: in order to visualize data in 2 dimensions, we have the option to select different categories to be displayed in two axes.
4. Individual teams progression throughout the season: In the line chart we have a dropdown, using which we have the option to view the progression of a particular team throughout the season.
5. Scorecard: we visualize the runs scored and wickets fallen in every over throughout the entire match using a bar chart, where each bar shows the runs scored and wickets fallen in a single over.
6. To view more data we can always hover over all the visualizations.
7. Multiple visualizations are integrated and they display different data everytime we select a different team from the nav bar.

Related Work

The Premier League Season Explorer project by Brian Eisner, Kevin Wood, and Jakob Johnson from Hall of Fame Projects has inspired us in many ways. For instance, the bump chart has encouraged us to select a line chart to display the positions of the teams after every match.

Questions and Goals:

Our main goal is to interactively visualize a single Indian Premier League (IPL) season with a game-by-game breakdown for all IPL teams along with other data related to the players.

We show how each team performed versus other teams and as a function of time over the entire season. We also allow the user to select any individual games and see the significant events during each game, such as when the runs scored exceed a certain limit or when a wicket falls.

Also, we tell stories about a team in a particular season. We have shown data related to transfer of players between different seasons across the seasons. We also show the detailed statistics of a particular player like the number of wickets taken, dot balls bowled etc.

We intend to answer multiple questions, such as,

1. The position of every team after every match in the points table 2. The statistics of

several players compared with other players

3. The scorecard of every game, which shows the runs scored by the team in every over

Questions we could answer

1. Using a scatter plot to display players' statistics where the user can select the X-axis, and the Y-axis enables the user to understand the statistics more clearly. For instance, the user can use the scatter plot to understand players who score low runs but play with a high strike rate.

2. Checking the match summary to check where the teams usually lost their matches and further improving their weaknesses can improve their performances in the future.

Data

We fetched Data from this kaggle link. We have five datasets to support our project.

1. BattingStatistics.csv : This file contains batting statistics of all players who batted in IPL 2022.
2. BowlingStatistics.csv : This file contains bowling statistics of all players who bowled in IPL 2022.
3. AuctionData.csv : This file contains auction data and the transfer history of players for each franchise that played in IPL 2022.
4. BallbyBall.csv : This file records every ball data for every match in IPL 2022.
5. TeamPosition.csv : This file has records of the positions of every team. This dataset is com piled by taking scorecards after every match.

The dataset we considered until this point for the project is https://www.kaggle.com/datasets/rajsengo/indian-premier-league-ipl all-seasons. Additionally, we need to scrape data from cricbuzz.com and espncricinfo.com for the league positions of the teams after every game week. The dataset has data from 2009 up to 2022. The dataset contains the league position of the teams for every year, the batting and bowling statistics of players of all years, and the summary of all matches of every year. Again, by scraping the data from the mentioned websites, we intend to get the league positions of every team after the game week. Alternatively, we could use an API for the same, and one such example is CricAPI.

We have collected more accurate data using these methods which also include the net runrate of a particular team after every match, Using which we were able to calculate the team positions after a match for all the teams. We have used this metric to make the positioning criteria very clear to the viewer, such that even when a naive user views our visualizations he/she would be able to understand it quickly and clearly.

Exploratory Data Analysis

The visualizations on IPLT20.com helped us understand the data in a better way. For instance, the idea to use a scatter plot stems from the basic understanding that a specific player can have excellent or poor stats when using different metrics to view the player's statistics. Additionally, the visualizations on the Hall of Fame helped us understand the different ways the users can perceive the data. This enabled us to create better visualizations for native users.

Design Evolution

We deviated a lot from our project proposal for good reasons, and this is due to the following:

1. Suggestions from the project mentor, i.e. Kiran Gadhave
2. Different ideas we got and recommendations we got from others viewing the project

For instance, the decision to use HexGrid instead of India Map to indicate the IPL teams has been a great suggestion from the project mentor since IPL teams are private entities. Additionally, utilizing a scatterplot instead of several charts has enabled us to compare players' stats within themselves. Furthermore, the visualization that enables the user to understand the runs in every single over lets the user know where the match turned or whether the winning team dominated the entire game.

We deviated from the actual prototype by replacing the map with the hex grid to display all the teams based on suggestions from our mentor. Another related design change we have implemented is we have provided a fixed nav bar at the top of the page which has the logos for all the teams which also enables us to select a team from the menu, such that all the visualizations display the data for the corresponding team.

We initially thought of using multiple charts to compare player statistics, but after thorough research of various visualizations to display multiple data classes and based on suggestions from the peer evaluations/feedback we choose to use scatter plot with minor modifications such as integrating a dropdown menu to select different classes of data to compare players with.

We have also used bi-directional bar charts to display the progress of each team in terms of runs scored and wickets lost in an over during the course of the entire match. It helps the viewer understand underlying trends such as how dominating a particular team is during the entire match, and the crucial role played by the bowlers by picking important wickets in critical phases of the match, and the impact of the powerplay overs for the team wither in terms of stemming the flow of runs or the momentum it provides for the entire course of the match.

Implementation

Navigation Bar

This Navigation bar is dynamic which enables the user to select any team and this further updates the visualizations based on the team selected.

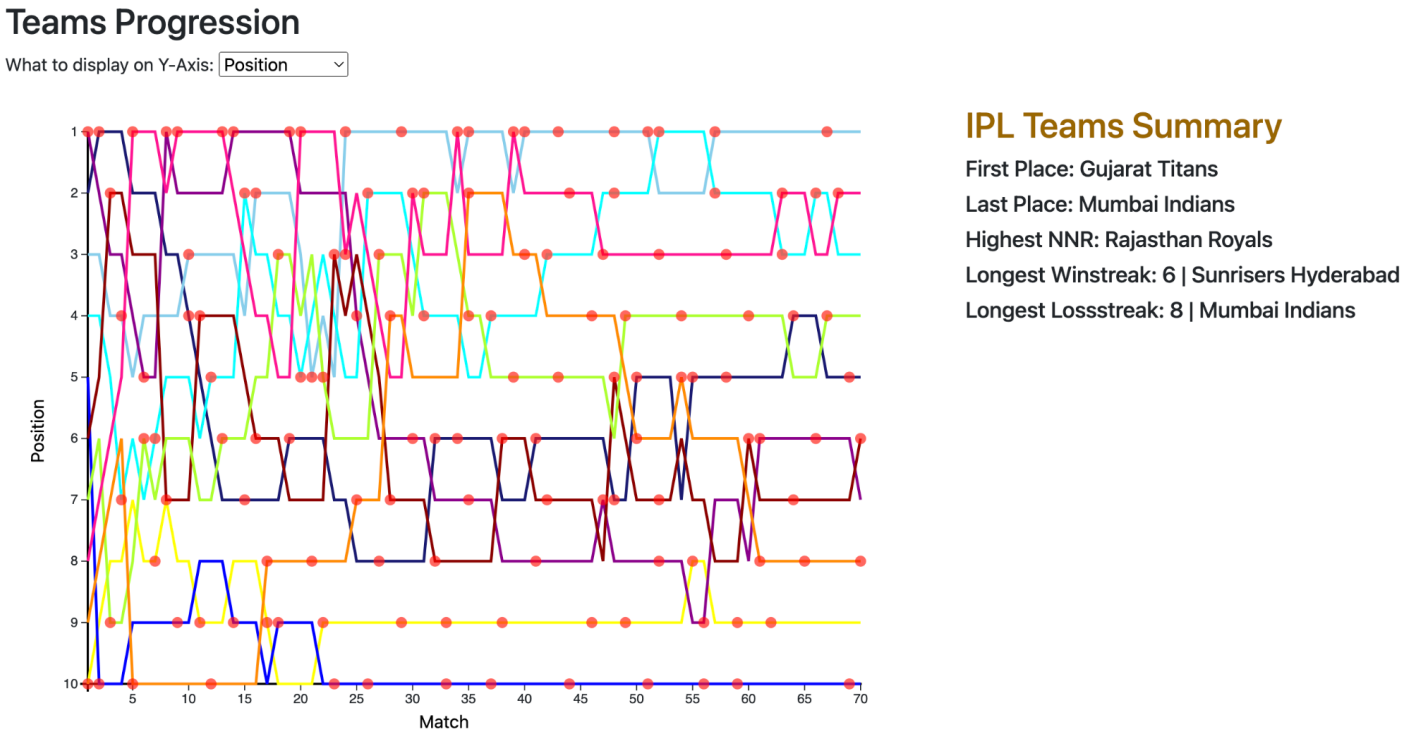
	CSK	DC	GT	KKR	LSG	MI	PK	RCB	RR	SRH	Clear

Franchise Overview

The visualization allows the user to see all the teams involved in the IPL 2022. Additionally, legend is provided for the user to understand the IPL teams more easily. Moreover, details are displayed about why the IPL 2022 season has been special.

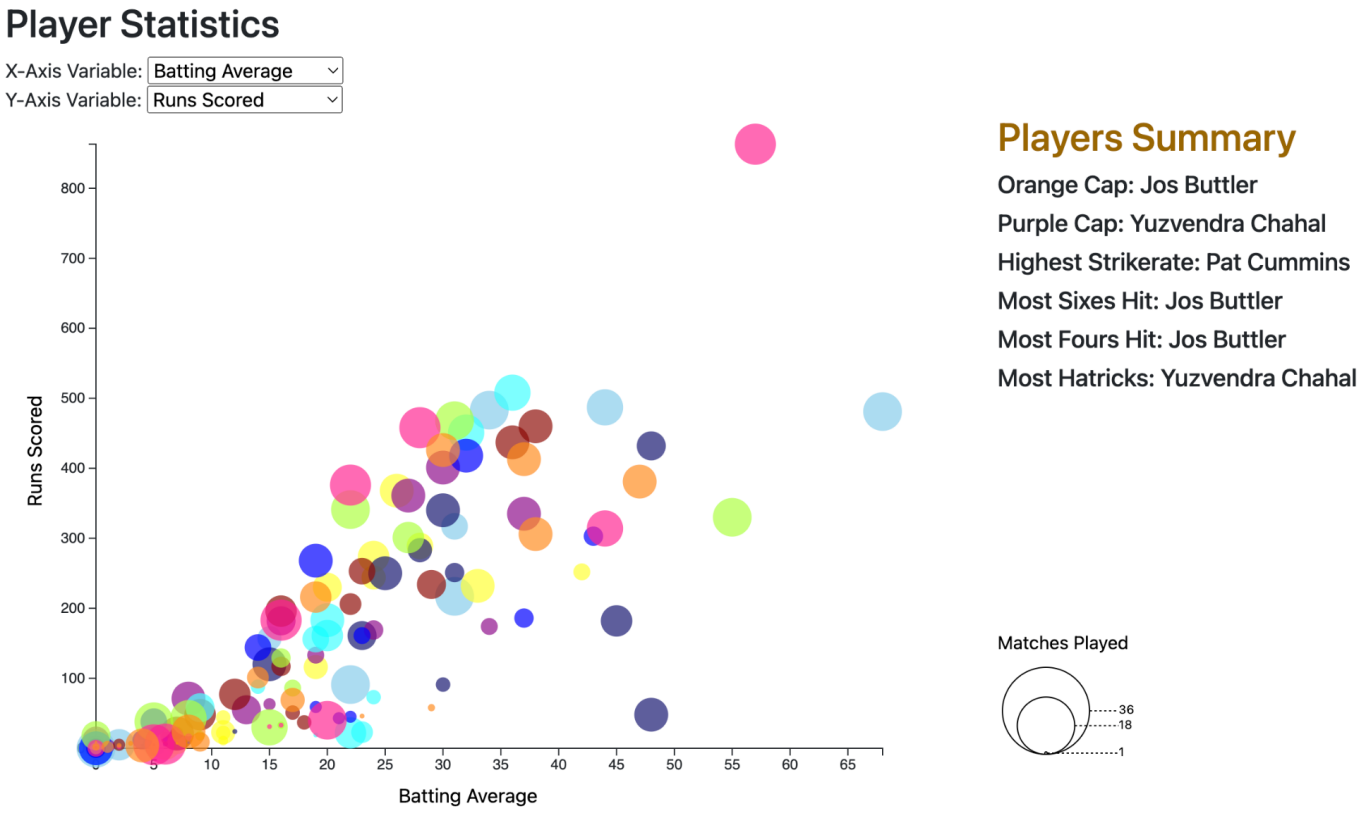
Points Progression

The visualization intends to display the position of every team in the season after every match. Additionally, the user can select wins, losses and NRR for comparison purposes as well. Hovering over any line displays the team name using tooltips and clicking on any node displays the match summary in the next visualization. Furthermore, summary is provided for the IPL season and when any team is selected in the navigation bar, the summary for the team is displayed for the 2022 season.



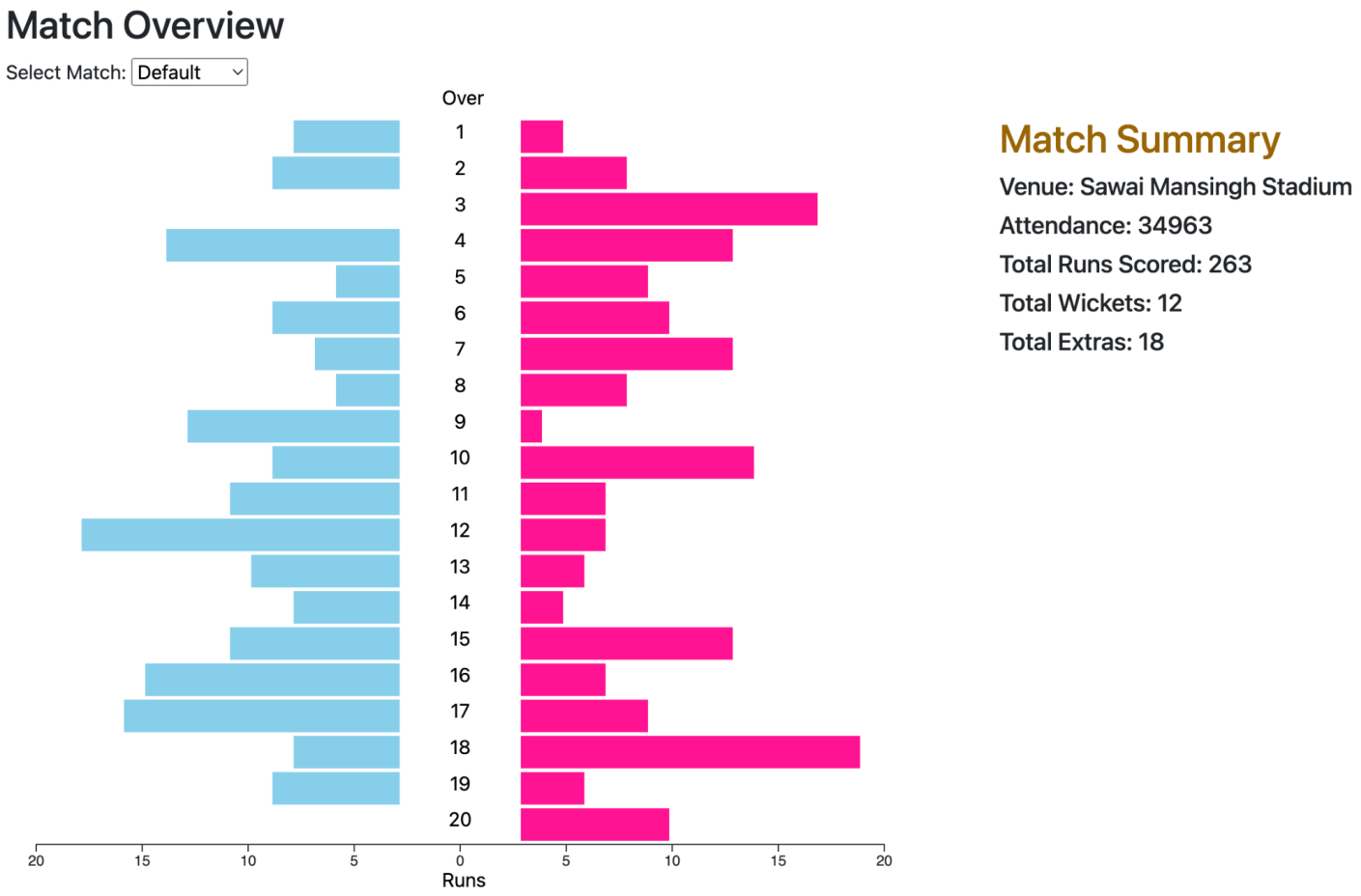
Player Statistics

The visualization intends to display every player's statistics in the IPL 2022. The user is provided with an option to select both the X-Axis and the Y-Axis variables to understand the statistics in an unbiased manner. Hovering over any circle displays the required data about the player, and clicking on any circle further displays the player details on the side. The radius of the circles in the visualizations denote the number of matches played by the player. To better understand the radius, a legend is provided.



Individual Match Overview

The visualization displays the runs scored in every single over by both teams. Hovering over any over displays the runs scored by every batsman in the over along with the number of extras and wickets. The option to select the matches until the finals are provided either in the pointschart or through the dropdown list. The specific information about the match, i.e., the match summary is displayed for the user to better understand the match.



Evaluation

We believe that we have answered most of the questions we had at the start of this project, the user can understand the data in a much better way. For instance, upon selecting a team, the points history and the players' statistics are highlighted along with the team's transfer activity. This enables the user to distinguish the players profusely and understand the data intuitively.

It is possible to see how teams performed over an entire season, and over any desired section of the season. It is possible to highlight any number of teams to specifically compare their performances, and to zoom in on any individual game to see just how the teams performed in that game. Using the story features, it is possible to see how certain teams performed relative to important events. In addition to answering our content-related questions, we also accomplished our goal of learning how to innovatively and efficiently use JavaScript and D3 to create interactive web-based visualizations, a skill that will benefit us significantly when applying for jobs later in our lives.

Overall, we believe our project can be considered an overall success, and believe that our visualization works well in terms of accomplishing our goal.