Predicting the IPL(Cricket League) 2023 winner using

Statistics

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Introduction

The Indian Premier League is a cricket league that occurs once every year. Since the 2022 edition, ten teams have competed for the title. The teams are Chennai Super Kings (CSK), Mumbai Indians (MI), Delhi Capitals (DC), Gujarat Titans (GT), Kolkata Knight Riders (KKR), Lucknow Super Giants (LSG), Punjab Kings (PBKS), Sunrisers Hyderabad (SRH), Rajasthan Royals (RR), and Royal Challengers Bangalore (RCB). The league's winner last year was the Gujarat Titans, with an easy victory over the Rajasthan Royals in the finals. This year, many teams released several players from their squads. Due to the auction, which occurred on December 23rd, the players were bought by different teams, which altered the teams' strengths, weaknesses, and experience. Thus, this research project will analyse the newly formed teams and use python to predict the potential winner of IPL 2023. Furthermore, it will also use the current ICC (International Cricket Council) rankings for batsmen and bowlers to predict the winner of the Orange and Purple Cap awards.

Process

The first step I did was to formulate a predicted playing eleven for all the teams. Then, I created a points system that incorporated several aspects of a player's game to rank them. For all batsmen, I considered their batting strike rate, average, and experience. The experience was the number of matches the player has played. I set 5 parameters for each category; for example, if the batsman has an average over 40, he receives 100 points. A similar technique was used for the strike rate and experience. I then added the points and divided them by 3(because there are 3 categories) to get a value, out of 100, for each batsman.

Parameters to determine the batsman's points:

IPL Batting Average:
1. Above 40 = 100
2. Between 35-40 = 90
3. Between 30-35 = 80
4. Between 25-30 = 70
5. Below 25 = 60

IPL Strike rate:
1. Above 150 = 100
2. Between 140-150 = 90
3. Between 130-140 = 80
4. Between 120-130 = 70
5. Below 120 = 60

IPL Experience (Matches):
1. Above 200 = 100
2. Between 150-200 = 90
3. Between 100-150 = 80
4. Between 50-100 = 70
5. Below 50 = 60

Similarly, I created three categories with five parameters for all the bowlers. The categories I considered were bowling economy, experience, and bowling average. Again, experience is

based on the number of matches played. The bowling average is the number of runs a bowler concedes for every wicket taken. I added the points from all the categories and divided them by 3 to get a value, out of 100, for each bowler.

Parameters to determine the bowler's points:

IPL Bowling Average:
1. Below 20 = 100
2. Between 20-25 = 90
3. Between 25-30 = 80
4. Between 30-35 = 70
5. Above 35 = 60

IPL Economy:
1. Below 7 = 100
2. Between 7-8 = 90
3. Between 8-9 = 80
4. Between 9-10 = 70
5. Above 10 = 60

IPL Experience (Matches):
1. Above 200 = 100
2. Between 150-200 = 90
3. Between 100-150 = 80
4. Between 50-100 = 70
5. Below 50 = 60

Finally, for all-rounders, I repeated the processes for finding the points for a bowler and batsman. Then, I found the average of those points by adding the bowling and batting points and dividing them by 2.

By following the metric, I developed a Python code that considered all of these conditions and calculations to output the player's score. The scores for each player in the teams:

CSK	Player Points	MI	Player Points
Devon Conway	83.34	Rohit Sharma	83.34
Ruturaj Gaikwad	76.67	Ishan Kishan	73.34
Moeen Ali	75.00	Suryakumar Yadav	80.00
Ambati Rayudu	76.67	Tilak Varma	76.67
Ben Stokes	70.00	*Cameron Green	70.00
MS Dhoni	90.00	Tim David	80.00
Ravindra Jadeja	83.34	Jofra Archer	80.00
Deepak Chahar	80.00	Jasprit Bumrah	86.67
Maheesh Theekshana	80.00	Jhye Richardson	60.00
Simarjeet Singh	73.34	Kumar Kartikeya	80.00
Mukesh Choudhary	70.00	Piyush Chawla	86.67

SRH	Player Points	PBKS	Player Points
Mayank Agarwal	73.34	Jonny Bairstow	80.00
Abhishek Sharma	66.67	Shikhar Dhawan	86.67
Rahul Tripathi	76.67	Shahrukh Khan	63.34
*Harry Brook	70.00	Liam Livingstone	76.67
Aiden Markram	80.00	Sam Curran	68.34
*Glenn Phillips	80.00	Jitesh Sharma	76.67
Washington Sundar	71.67	Rishi Dhawan	66.67
Bhuvneshwar Kumar	83.34	Harpreet Brar	70.00
T Natarajan	73.34	Rahul Chahar	80.00
Umran Malik	76.67	Kagiso Rabada	83.34
*Adil Rashid	80.00	Arshdeep Singh	73.34

KKR	Player Points	DC	Player Points
*Rahmanullah Gurbaz	70.00	Prithvi Shaw	76.67
Venkatesh Iyer	65.00	David Warner	93.34
Shreyas Iyer	76.67	Mitchell Marsh	70.00
Nitish Rana	73.34	Rishabh Pant	80.00
Rinku Singh	66.67	Sarfaraz Khan	66.67
Andre Russell	80.00	Rovman Powell	73.34
Sunil Narine	83.34	Axar Patel	75.00
Shardul Thakur	73.34	Kuldeep Yadav	76.67
Lockie Ferguson	73.34	Anrich Nortje	76.67
Umesh Yadav	80.00	Khaleel Ahmed	76.67
Varun Chakravarthy	76.67	Chetan Sakariya	73.34

GT	Player Points	LSG	Player Points
Shubman Gill	73.34	KL Rahul	86.67
Wriddhiman Saha	73.34	Quinton de Kock	76.67
Kane Williamson	76.67	Deepak Hooda	70.00
Hardik Pandya	80.00	Nicholas Pooran	76.67
David Miller	83.34	Marcus Stoinis	71.67
Rahul Tewatia	75.00	Ayush Badoni	63.34
Rashid Khan	86.67	Krunal Pandya	73.34
Mohammed Shami	76.67	*Mark Wood	80.00
Alzarri Joseph	70.00	Avesh Khan	76.67
Shivam Mavi	70.00	Mohsin Khan	86.67
Sai Kishore	80.00	Ravi Bishnoi	76.67

RR	Player Points	RCB	Player Points
Jos Buttler	83.34	Faf du Plessis	80.00
Yashasvi Jaiswal	66.67	Virat Kohli	86.67
Sanju Samson	76.67	Rajat Patidar	83.34
Riyan Parag	63.34	Glenn Maxwell	78.34
Shimron Hetmyer	80.00	Mahipal Lomror	63.34
Jason Holder	70.00	Dinesh Karthik	83.34
Ravichandran Ashwin	80.00	Shahbaz Ahmed	63.34
Yuzvendra Chahal	86.67	Wanindu Hasaranga	83.34
Trent Boult	76.67	Harshal Patel	80.00
Prasidh Krishna	73.34	Josh Hazlewood	76.67
Kuldeep Sen	70.00	Mohammed Siraj	73.34

* The players with an asterisk before their name do not have IPL stats or are international players who have played fewer than 5 IPL games. Therefore, we considered their T20 International (T20I) stats.

Now that we know the individual points for all the players in each team, we can find the team's average points by adding the scores of the 11 players and dividing by 11. This is the team's average player score and **is only 50% of the team's final score**.

Team Name	Average Player Score
CSK	78.03
MI	77.88
RCB	77.43
GT	76.82
DC	76.22
LSG	76.22
SRH	75.61
RR	75.15
PBKS	75.00
KKR	74.40
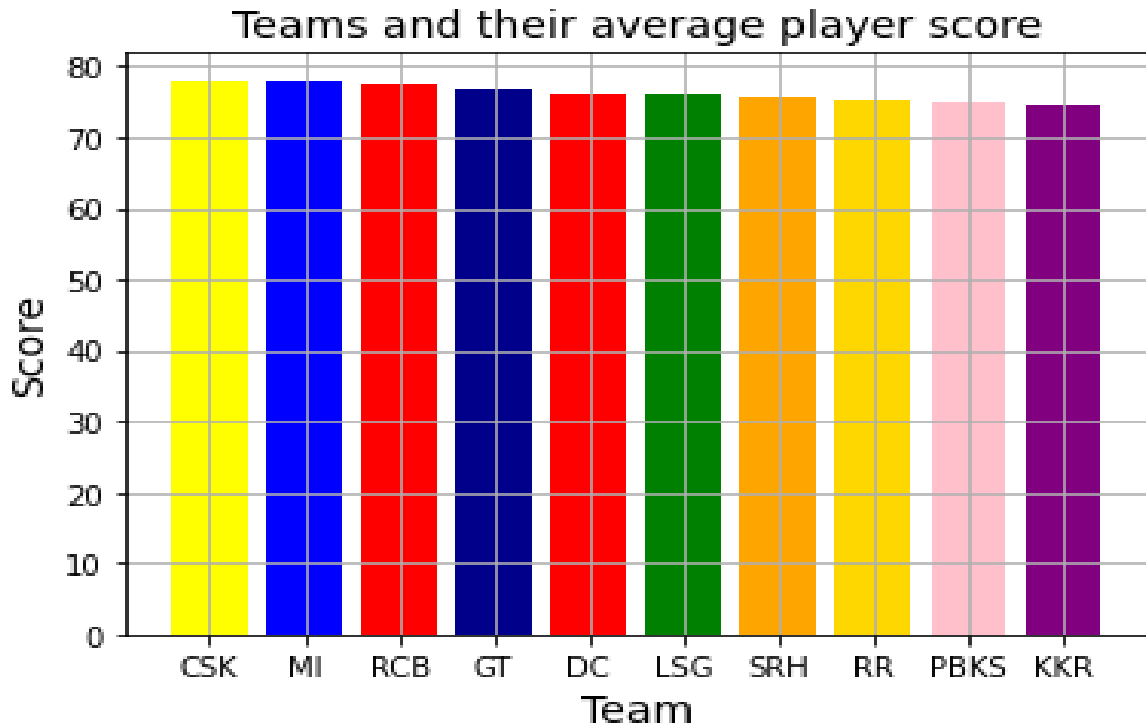
This bar graph was plotted using the matplotlib package and was imported. The code I used was:

```python
import matplotlib.pyplot as plt
import pandas as pd

data = {'Team': ['CSK', 'MI', 'RCB', 'GT', 'DC', 'LSG', 'SRH' ,'RR' ,'PBKS' ,'KKR'],
    'Score': [78.03, 77.88, 77.43, 76.82, 76.22, 76.22, 75.61, 75.15, 75.00, 74.40]
    }
df = pd.DataFrame(data)

colors = ['yellow','blue','red','darkblue','red','green','orange','gold','pink','purple']
plt.bar(df['Team'], df['Score'], color=colors)
plt.title('Teams and their average player score', fontsize=14)
plt.xlabel('Team', fontsize=14)
plt.ylabel('Score', fontsize=14)
plt.grid(True)
plt.show()
```

The other 50% of the score will be based on the team's win percentage. Gujarat Titans and Lucknow Super Giants are new teams that have only played one season which means they have relatively small data compared to the other teams. Thus, we will consider the average win percentages for all the teams until the 2021 season, and that will be their value. We will assign points for the win percentage in an alternate manner. This is because a team with a win percentage of 60, which is very good, will only receive a score of 60. Thus, we will consider the team with the highest win percentage and give that team a score of 100. Chennai Super Kings has the highest win percentage of 60.30. **Now, to find the values for other teams, we can calculate the relative percentage of each team through this formula:**

Team's Score/60.30. This value will then be multiplied by 100 to find the win percentage value. I created a code that helped us find the relative percentage scores for each team. The scores were:

Team Name	Win Percent Score
CSK	100.00
MI	97.04
KKR	85.68
GT	85.14
LSG	85.14
SRH	82.92
RR	82.44
RCB	80.10
DC	76.54
PBKS	76.40

The below graph was also plotted using the Matplotlib package and was imported:
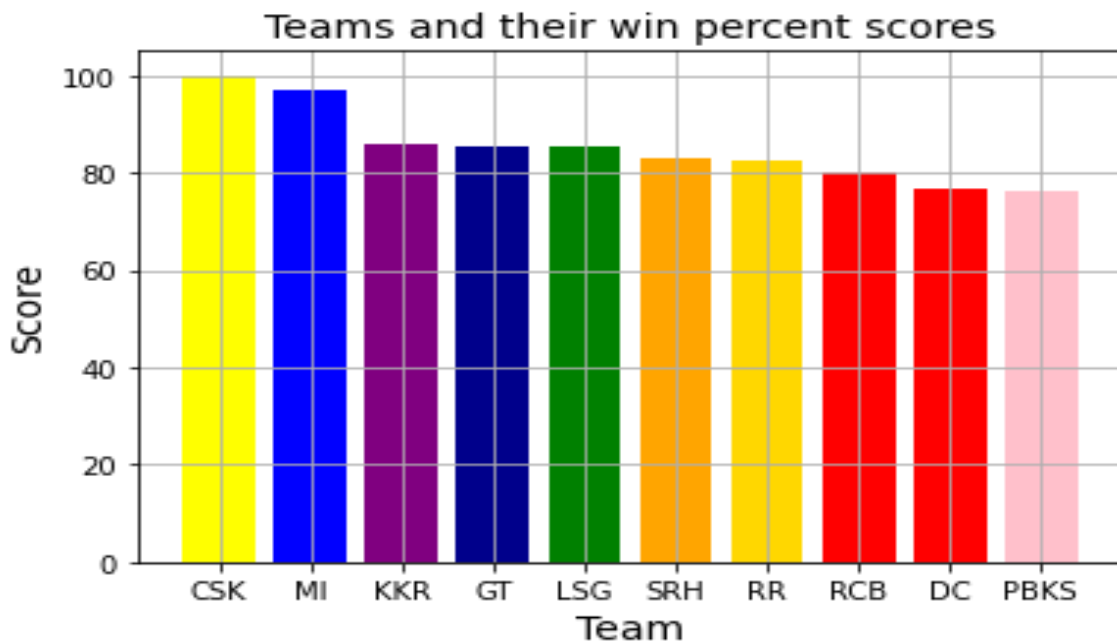
Now that we know the teams' win percent and player average scores, we can calculate their final scores by finding the average of the two. The team with the highest points after calculating the average is our predicted winner of the 2023 edition of IPL.

The final scores:

1st: CSK: 89.02

2nd: MI: 87.46

3rd: GT: 80.98

4th: LSG: 80.68

5th: KKR: 80.04

6th: SRH: 79.27

7th: RR: 78.80

8th: RCB: 78.77

9th: DC: 76.38

10th: PBKS: 75.70

WINNER: Chennai Super Kings

Through our model, we have predicted that Chennai Super Kings will be the winner of the Indian Premier League- 2023. Our top 4 qualifiers will be CSK, MI, GT, and LSG. To visually represent this, I created a horizontal bar graph using the Matplotlib package. The code I used was:

```python
import matplotlib.pyplot as plt
y=['PBKS', 'DC', 'RCB', 'RR', 'SRH', 'KKR', 'LSG' ,'GT' ,'MI' ,'CSK']

x=[75.70,76.38,78.77,78.80,79.27,80.04,80.68,80.98,87.46,89.02]
plt.barh(y, x)

plt.ylabel("Teams")
plt.xlabel("Final Score")
plt.title("Teams and Their Final Score")
plt.show()
```
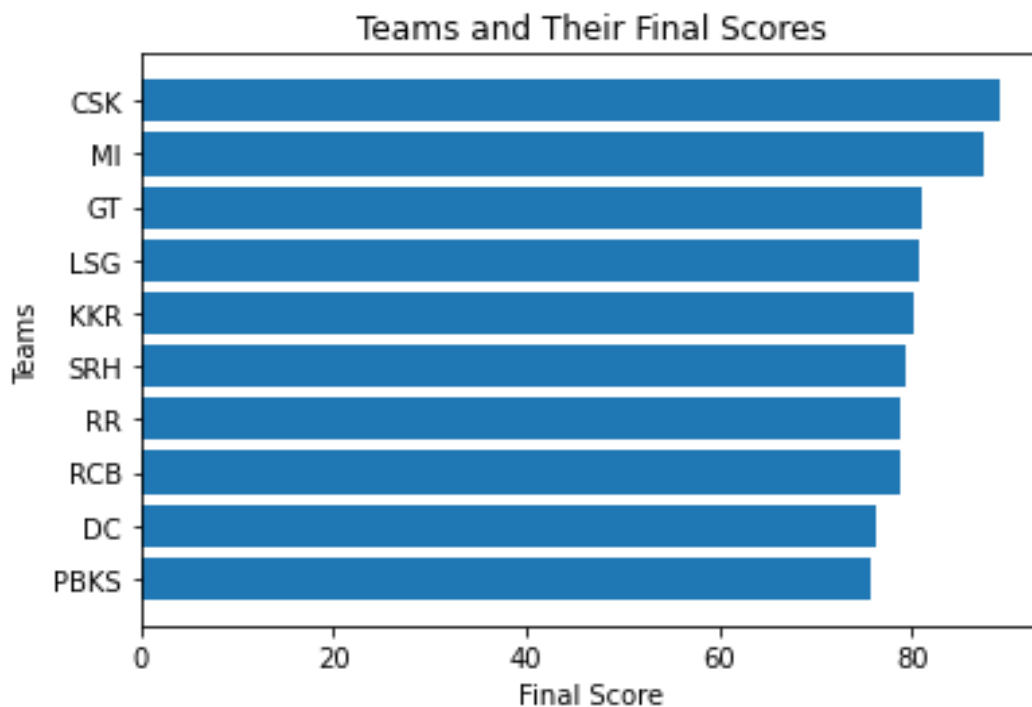
Now that we have predicted the winner, we will attempt to predict the Orange Cap and Purple Cap winners. The Orange Cap is awarded to the batsman with the most runs scored in a season, whereas the Purple Cap is given to the bowler with the most wickets taken in a season.

For the Orange Cap award, **we will only consider the top 3 batsmen (openers and 1-down)** for each team as they face significantly more balls than the others. The category we will use to find the winners is based on the T20I ICC (International Cricket Council) batting rankings. This ranking system would be an accurate method of formulating a prediction as it incorporates moving averages, it is a points-based system, and it mainly considers recent performances. The rankings suggest that the three highest run scorers could be:

Suryakumar Yadav, Devon Conway, and Jos Buttler

To predict the winner of the Purple Cap award, we will consider the ICC T20 bowler's rankings for 2022. Our predicted three highest wicket-takers are:

Wanindu Hasaranga, Rashid Khan, and Adil Rashid.

Conclusion
This research project presented a model which predicts the winner of IPL 2023. We set several parameters to determine the final score for each team's batsmen, bowlers, and all-rounders. Using Python, I could output the final score of each player and find the team's average player score. The average player score was half the team's final score, while the other half was the team's win percentage. We calculated the scores for all the teams by finding the relative percentage. Then, we found the mean of the team's average player score and win percentage score to output their final value. The final values were used to rank the teams and show the predicted order from the best to worst teams. We also predicted the winners of the Orange and Purple Cap award with the help of the ICC batsman and bowler rankings. Our results portrayed that the Chennai Super Kings would win the upcoming edition of IPL with an average score of 89.02. The highest scorers would be Suryakumar Yadav, Devon Conway, and Jos Buttler, whereas the highest wicket-takers would be Wanindu Hasaranga, Rashid Khan, and Adil Rashid.

References

Best Win Percentage In IPL | Best IPL Win Percentage (crictracker.com)

Live cricket scores, match schedules, latest cricket news, cricket videos (espncricinfo.com)

Live Cricket Score, Schedule, Latest News, Stats & Videos | Cricbuzz.com

How to Create a Bar Chart in Python using Matplotlib – Data to Fish

ICC Men's T20I Bowling | Player Rankings | ICC (icc-cricket.com)

Sports News: Live Scores, Results, Schedules of All Sports - myKhel

Draw a horizontal bar chart with Matplotlib - GeeksforGeeks

ICC Men's T20I Batting | Player Rankings | ICC (icc-cricket.com)