

A novel approach for selecting the potentially best performing team in IPL

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Abstract

In this paper, we propose to design a framework to analyze what should be the playing eleven of a particular squad. The framework designed uses data mining to find out the player statistics and hence helps to choose the best possible playing eleven on the basis of the pitch. This is done by creating a rank system on the basis of strike rate, economy rate, average runs, wickets taken of each player. Then we analyze their performance with the help of the designed framework and find out the best playing eleven. Henceforth, the paper provides a method to find out the best possible team when pitch conditions are provided by the user.

Introduction

The art of prediction and its corresponding results ages back to the ancient times when prophecies were made. Similarly, cricket has its roots deep into history and is often touted as the gentleman's game. With the passage of time, like every other sport, cricket has also evolved dramatically in every dimension. The 5-day test match has given way to the 50 over One Day International and currently the most prevalent being the T-20 format.

Though the sport previously only catered to international matches, in current years we have seen the growth of cricket premier leagues where franchisees are owned by the aristocrats and businessmen. The most popular T-20 League in the world is currently the Indian Premier League (IPL).

The league featured 10 teams at maximum till date, each representing a certain state. The players were drafted into the team via auction. Hence auction plays a very important role in these leagues all over the world. There are multiple franchises bidding for a marquee player so that the team can get the best of the world in their squad.

The Indian Premier League also has some rules. Only 4 overseas players are allowed in the playing 11 of every match. Hence while bidding for the player or deciding the playing 11, a lot of the squad selection is dependent on the playing conditions and the type of player the team needs at that situation. Due to the limitation of overseas players in the squad, a lot of domestic talent from India gets a chance to hog the limelight.

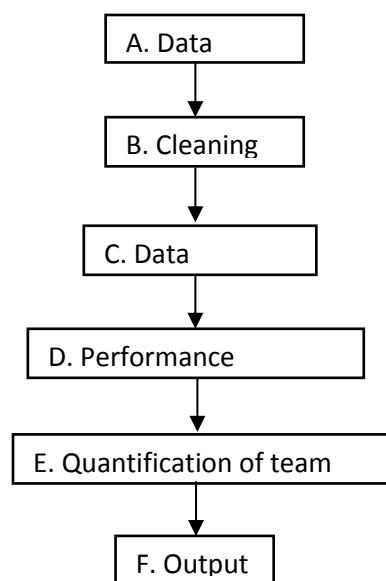
Our paper deals with this concept and caters to the following interests:

1. It analyses the player statistics of all the players who have played in T-20 leagues all over the world.
2. Further, it helps to select the best possible playing 11 from a given squad of 20 according to the field conditions.

Proposed framework:

The following flowchart and the corresponding elaboration is our suggested framework for selecting the best possible playing eleven from a squad of 20 players.

Flowchart:



Detailed Procedure:

- A. 1. DATA COLLECTION FROM WEBSITES: ESPN CRICINFO, WIKIPEDIA
2. STORING THEM IN DATABASE
- B. 1. GO THROUGH AND CHECK DATA
2. REMOVE INCONSISTENCIES OR ERRORS
3. GET COMPLETE DATASET READY
- C. DATA SEGREGATION TO BATSMAN, BOWLERS, WICKET KEEPERS AND ALL-ROUNDERS
1. FROM BATTING AVERAGE
2. FROM ECONOMY
3. FROM WICKETS TAKEN
- D. PERFORMANCE CLASSIFICATION BASED ON PLAYER ROLE:

1.

FOR BATSMEN	FOR BOWLER	FOR ALL-ROUNDERS
0.7* STRIKE RATE	0.6*ECONOMY RATE	0.25*BATTING AVERAGE 0.25* STRIKE RATE
0.3* BATTING AVERAGE	0.4* WICKETS	0.25*ECONOMY RATE 0.25* WICKETS TAKEN PER MATCH

2. *RANKING ON CONDITIONS PROVIDED (FOREIGN/DOMESTIC)

E. QUANTIFICATION OF THE TEAM POTENTIAL

1. INPUT OF PITCH TYPE AND 20 NAMES

2. SELECTION OF PLAYING 11

a. PITCH TYPE & FORMAT OF TEAM

b. SELECTION OF PLAYERS OUT OF 20 BASED ON RANK

CALCULATION OF ANALYTICS (RANKING SYSTEM)

STRIKE RATE:	AVERAGE RUNS:	ECONOMY RATE(RPO)
0-90: 1	0-10: 1	>12: 1
90-130: 2	10-25: 2	7-12: 2
130-200: 3	25-35: 3	4-7: 3
>200: 4	>35 :4	0-4: 4

FOR BATSMAN:

$$\text{SCORE} = (0.7 * \text{SRR} + 0.3 * \text{ARR}) / 4$$

FOR BOWLER:

$$\text{SCORE} = (0.6 * \text{ERR} + 0.4 * \text{WT}) / 6.4$$

FOR ALL ROUNDER

$$\text{SCORE} = (0.25 * \text{SRR} + 0.25 * \text{ARR} + 0.25 * \text{ERR} + 0.25 * \text{WT}) / 5.5$$

FOR WICKETKEEPER:

$$\text{SCORE} = W / M$$

where, SRR= STRIKE RATE RANK

ARR= AVERAGE RUN RANK

ERR= ECONOMY RATE RANK

WT= WICKETS TAKEN PER MATCH

W= NUMBER OF WICKETS

M= TOTAL MATCHES PLAYED

Playing 11 format according to pitch:

Dusty	Green	Flat
1) Foreign <ul style="list-style-type: none"> ● Batsmen-2 ● Spinner-1 ● All-rounder-1 2) Indian <ul style="list-style-type: none"> ● N.Batsmen-2 ● N.Bowler-2 ● D.Bowler-1 ● D.Wicketkeeper-1 ● Uncapped all-rounder-1 	1) Foreign <ul style="list-style-type: none"> ● Opener-1 ● Wicketkeeper-1 ● Pacer-1 ● All-rounder-1 2) Indian <ul style="list-style-type: none"> ● N.Batsman-1 ● N.All-rounder-1 ● N.Pacer-1 ● D.Batsmen-2 ● D.Spinner-1 ● D.Pacer-1 	1) foreign <ul style="list-style-type: none"> ● Batsman-1 ● Spinner-1 ● Allrounder-1 2) Indian <ul style="list-style-type: none"> ● N.Batsman-1 ● N.Pacer-1 ● D.Batsman-1 ● D.Pacer-1 ● Wicketkeeper-1 ● Uncapped batsman-1 ● Pacing all-rounder-1 3) Foreign/Indian spinner-1

Conclusion

The paper proposes a novel framework which when executed shall help any IPL team strategize every match. This model can be further enhanced implementing machine learning algorithms, which will make work for the support staff easier as we shall take into consideration the statistic of players from every possible twenty20 leagues happening in and around the world before computing the best possible playing eleven.

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