# Ongoing Match Prediction in T20 International

**[1]Muhammad Yasir, [2]LI CHEN, [3]Sabir Ali Shah, [4]Khalid Akbar, and [5]M.Umer Sarwar**

[1,2]School of Information Science and Technology, Northwest University, Taibai road, Xian Shaanxi Province, China
[3, 4, 5]Department of computer science, Government college university, Allama Iqbal Road, Faisalabad, Pakistan

**Summary**
Win prediction is a point of interest during cricket matches specially T20 cricket matches in the current scenario of its popularity. Prediction can be done on two different ways 1) before the start of match 2) when match is ongoing. Both these two predictions depend upon number of different dynamic ground based historical factors and team statistics. This paper describes a novice model for prediction based upon current team statistics, player's statistics& historical ground properties. We build this prediction model based upon multi-layer perceptron with adjustable factor weightage and evaluated this model on historical ball by ball match data set available online. Our proposed model interestingly achieved high performance, with 85% correct prediction before match and 89% correct prediction during match.

***Keywords***
*Player analysis, Player ranking, team ranking, Home advantages, T20 international cricket.*

## 1. Introduction

International (T20) Cricket game / T20 cricket has very sort type of cricket amusement that played over all place all through the world. Two gatherings clash every match completed within fourty overs each team played 20 overs. T20 cricket game every so often created & called T20, so routinely constricted of T20, & very shortest kind the game ICC level cricket. But from some honest contrasts (e.g. handling confinements, parameters that each player's quantity etc. cetera.), T20 cricket game offers some components to the form of 20 overs cricket game has variation to interruption checking confined the all match. To essential contrasts both T20 cricket game to each batting side in T20 international cricket game to assigned T20 overs. Motivation behind that exploration undertaking that used the deep learning machine technique that decided the match outcome on uncover understanding within various interruptions related that overall T20 cricket matches. That accompanying goals of accomplish some points. Define the composition that issued on some interruptions & gauging that cricket game. Look at some customarily used procedures that overseeing some interruptions the game of cricket. To prediction procedure of latest version to DL strategy, to describe philosophy got to the ICC. This prediction before match estimated who's one the team win.

## 2. Review of literature

Better predictive modeling depends on a better understanding of the data and select Properties. We must be between some data mining algorithms to choose. I have chosen data mining, predictive modeling because it is very flexible. it needs to find the best attributes affect match results. Recently, some work on the game in the decision-making (20), to find out how much time is remaining in the game, but did not make any previous prediction model. There are several works in cricket. Bailey et al. stated that Prediction when the game is in progress is a tough ask the best attributes that incense the match outcome [1] and Sankaranarayanan, V. V., Sattar, J., & Lakshmanan, L. V. By using a machine learning method based on previous data 14 and game data to predict one day matches. A multi item liters ogistic regression in their work to predict the results of the test match played between the two teams [2]. Roy Choudhury, D., & Bhargava, P. Reena and Samta Kain. the use of artificial neural networks to predict the results of multi-team one-day cricket over the past 10 years depending on the data. They use the training set to model data in neural networks [3]. Preston and Thomas explain The risk capacity of top batsmen utilizing a non-parametric methodology taking into account runs scored for surveying batting execution introduced [4]. Duckworth Lewis described the substantial wholes of cash are routinely bet when it comes to wagering on the results of ODI amusements as reported with the utilization of D-L approach, they demonstrated this procedure can be promptly changed to deliver 'in the run' expectations. The match result however can't be anticipated until the match begins, in addition forecast results change profoundly as match advances. Some work could be found on match result forecast in. He for the most part explored the impact [5]. Duckworth-Lewis define the technique to foresee the genuine champ and reasoned that the technique does not have adequate measure of data to foresee the match result [6]. Duckworth-Lewis describe the set up in that home groups by and large appreciate a critical favorable position. Utilizing the relative batting and rocking the bowling alley qualities of groups, together with parameters that are connected with basic home favorable position, winning the

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hurl and the foundation of a first-innings lead, they connected multinomial logistic relapse systems to investigate how these elements influence results of the test-matches [7]. Curtis work on the fuzzy inference system in multiple fields, such as decision analysis, expert systems, computer vision, robotics and pattern recognition. Batting training system is the use of fuzzy set theory to help the West Indies Cricket recommendations. Decision algorithm using fuzzy logic in determining the concept of pool games Strategy Shooting proposed [8]. Lewis pointed out that the performance of the existing measures cricket players cannot access the player's real capacity. Thus, alternative performance indicators proposed to extend the Duckworth / Lewis method can even be considered in cases where the player performed [9]. Lemmer discussed the first T20 World Cup cricket athlete performance. In the first edition of IPL who bat and bowl frequently used term ideal all-rounder, batting all-rounder, and bowling all-around all-round performance to characterize the performance of these versatile players [10]. Bhattacharjee & Saikia describe the players represent different existing measures reviewed [11]. Miner et al. define the Data mining and machine learning in motion analysis, computer science there are many challenges a new area of research. He designed a result, forecasting system for T20 cricket rather than tournament game in progress. Different machine learning and statistical methods are used to find the best results. A very popular data mining algorithms, decision trees are in the research and multiple linear regression, and in order to make use of the results found were compared. Both models predictive modeling is very popular. They depend on the decision tree algorithm games played between the teams of the previous data to design our forecasting system [12]. Saikia & Bhattacharjee work on G, can be used to predict significantly predicted its current all-rounder is expected to lay Bayesian classification model. This classification is based on the all-rounder who participated in the performance of IPL-I and II of the building and the effectiveness of the incumbent classification is then tested IPL-III-rounder [13].

## 3. Proposed Method:

Players contribution = Average Strike Rate (Previous Matches) * (Average Balls Played) In case of match stoppage, predicted score = remaining players * Players contribution.

Previous score = PS
Predicted score = PSc
Sr = strike rate (Average)
Oc = over consumed (Average)
Pc = player contributions
Pc = Sc * Oc
Wr = Remaining wickets

$$Sc = PS + \sum_{i=1}^{n} Wr \ * Pci \quad (1)$$

## 4. Data set

We collect individual game-specific information from ESPN-owned Website CRICINFO [14], and Cricsheet [15], for all IPL and T20I game in the excel sheet formats. Data set consists of 100 matches recorded stored in Excel sheet in the form of tables. These data set consist of ball by ball match progress, Team ranking, Player ranking player strike rate recorded, ground win history and weather history of area added explicitly. A standard format is designed to represent data of each match smoothly.

## 5. Experiments procedure and results

### 5.1 Before match prediction

Before the match prediction this type of prediction to predict who's one the team wins the match. This prediction pattern used the same number of variables. These variables include the Home ground advantage, toss won, Team ranking, Player rating and weather factors.

#### 5.1.1 Home team advantage

Home team advantage factor include the historical factor that effect a team performance at its home level. Currently we targeting a team performance with same player with certain threshold level of changes at its home level.

$$F_{HTA=}\sum_{I=1}^{T} PM$$

If given team change $F_{tc}$ then the value of $F_{tc}=0.3$

Table 1:

| Sr. No | Match | Ground | Loss | Aus Win Matches |
|---|---|---|---|---|
| 1 | Aus vs Nz | Home | - | Win |
| 2 | Aus vs Eng | Home | Loss | - |
| 3 | Aus vs pak | Home | - | Win |
| 4 | Aus vs Ind | Home | - | Win |
| 5 | Aus vs SA | Home | | Win |
| 6 | Aus vs Eng | Home | Loss | - |
| 7 | Aus vs Ban | Home | - | Win |
| 8 | Aus vs Zim | Home | - | Win |
| 9 | Aus vs WI | Home | - | Win |
| 10 | Aus vs Afg | Home | - | Win |

Home ground factor=Total number of win matches / Total number of played matches

$F_{HTA} = \sum wm / \sum Tm$ (2)

### 5.1.2 Toss win or loss factor

Toss win or loss factor is a historical factor that effect on the match who's one the team wins or loses.

$$FTC = \sum_{i=1}^{T} PW$$

If given team change $F_{win/los}$ then the value of $F_{tc}$=0.3

Table 2:

| Sr. No | Match | Loss | Aus win toss |
|---|---|---|---|
| 1 | Aus vs Nz | - | Win |
| 2 | Aus vs pak | Loss | - |
| 3 | Aus vs pak | - | Win |
| 4 | Aus vs Ind | - | Win |
| 5 | Aus vs SA | | Win |
| 6 | Aus vs Pak | Loss | - |
| 7 | Aus vs Ban | - | Win |
| 8 | Aus vs Zim | - | Win |
| 9 | Aus vs WI | - | Win |
| 10 | Aus vs Afg | - | Win |

Toss factor= number of win toss/ total number of toss

$F_{win/loss} = T_{TW} / T_{TT}$ (3)

### 5.1.3 Player rating

Player rating comparative effect, overall effect of each for player ranking we use a simple method sum of all player's rankings in ICC ranking table. This simple method compared between the two teams team A and team B such as.

Table 3:

| Player | Rating |
|---|---|
| 1 | 6 |
| 2 | 10 |
| 3 | 23 |
| 4 | 21 |
| 5 | 12 |
| 6 | 9 |
| 7 | 4 |
| 8 | 7 |
| 9 | 3 |
| 10 | 5 |
| 11 | 2 |

Ranking sum Rs (A) = $\sum_{i=1}^{11} W_{pi}$ : $F\ pr = \frac{1}{Rs}$ (4)

Table 4:

| Player | Rating |
|---|---|
| 1 | 5 |
| 2 | 12 |
| 3 | 25 |
| 4 | 22 |
| 5 | 15 |
| 6 | 9 |
| 7 | 14 |
| 8 | 9 |
| 9 | 8 |
| 10 | 5 |
| 11 | 4 |

Ranking sum Rs (B) use the same rule of team (A) just only change team name (B)

### 5.1.4 Weather factor

How much are probabilities matching estimations? This is historical factor for T=10 (Same month)

Table No.5.

| Sr. No | Match | Date | Status |
|---|---|---|---|
| 1 | Aus vs Nz | 03/12/2014 | Complete |
| 2 | Aus vs Eng | 04/12/2014 | Complete |
| 3 | Aus vs pak | 08/12/2014 | Complete |
| 4 | Aus vs Ind | 10/12/2014 | Complete |
| 5 | Aus vs SA | 12/12/2014 | Complete |
| 6 | Aus vs Eng. | 14/12/2015 | Complete |
| 7 | Aus vs Ban | 16/12/2015 | Uncompleted |
| 8 | Aus vs Zim | 18/12/2015 | Complete |
| 9 | Aus vs WI | 20/12/2015 | Uncompleted |
| 10 | Aus vs Afg | 28/12/2015 | Complete |

$F_w = completematches - uncompletematches$ (5)

### 5.1.5 Team ranking factor

It's a supporting factor that is compered between the two teams' we argue this support the team with high ranking Team A and team B. If Tr (A) > T r (B)

Table 6:

| Sr. No | Team A | Ranking | Team B | Ranking | Match Status |
|---|---|---|---|---|---|
| 1 | Aus | 1 | NZ | 3 | Aus |
| 2 | Aus | 2 | Eng | 3 | Eng |
| 3 | Aus | 1 | Pak | 6 | Aus |
| 4 | Aus | 3 | Ind | 4 | Ind |
| 5 | Aus | 2 | SA | 4 | Aus |
| 6 | Aus | 1 | Eng | 2 | Eng |
| 7 | Aus | 4 | Ban | 7 | Aus |
| 8 | Aus | 5 | Zim | 10 | Aus |
| 9 | Aus | 3 | WI | 8 | Aus |
| 10 | Aus | 2 | Afg | 9 | Aus |

Team ranking factor=Total number of win matches/Total number of played matches

$$T_r = T_{winm} / T_{tm} \quad (6)$$

Fig.No.1. Show the result of before match prediction on the bases of all match factors.


Fig. 1

## 5.2 During match prediction

During match prediction type of prediction to predict who's one the team wins the match. This prediction pattern used the same number of variables. These variables include the Home ground advantages, player rating, Weather factor and pressure factor

### 5.2.1 Pressure factor

Presser factor are including the sum sub factor such as.

### 5.2.2 Target

Presser of target historically factor that has static weightage depending upon win probability of a team having similar target condition. Given the fist batting side team or second batting side teams chasing the target.

Table 7:

| Sr. No | Team Aus vs Other teams | Target | Status |
|---|---|---|---|
| 1 | Aus vs Nz | 170 | Win |
| 2 | Aus vs Eng | 220 | Loss |
| 3 | Aus vs pak | 175 | Win |
| 4 | Aus vs Ind | 177 | Win |
| 5 | Aus vs SA | 160 | Win |
| 6 | Aus vs Eng. | 200 | Loss |
| 7 | Aus vs Ban | 190 | Win |
| 8 | Aus vs Zim | 197 | Win |
| 9 | Aus vs WI | 195 | Win |
| 10 | Aus vs Afg | 190 | Win |

Pressure target = number of loss matches – number of win matches

$$P_T = \sum Loss - \sum Win \quad (7)$$

### 5.2.3 Remaining wickets

R (w) its +ve or negative. CO = Current over its comparative with other team at the same time or same level of the match. What was condition of other team wickets?

$$\text{If } \left(W_A > W_B\right)_{O_c}?$$

$$RW_A \; ? \; RW_B = Rw\,(A) \quad (8)$$

If the remaining wickets of team (A) greater than current position of team (B). The match win chance of team (A). Else the remaining wickets of team (B) is greater than the current position of match team (A) so the match win chance of team (B).

### 5.2.4 Required run rate per over

The difference of required run rate – current run rate.

$$R_{r.r} = R_r - R_c \quad (9)$$

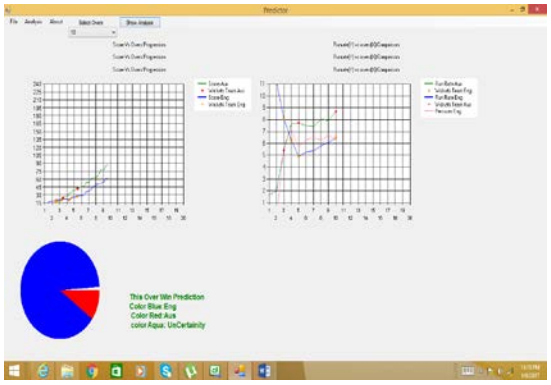

Fig.2

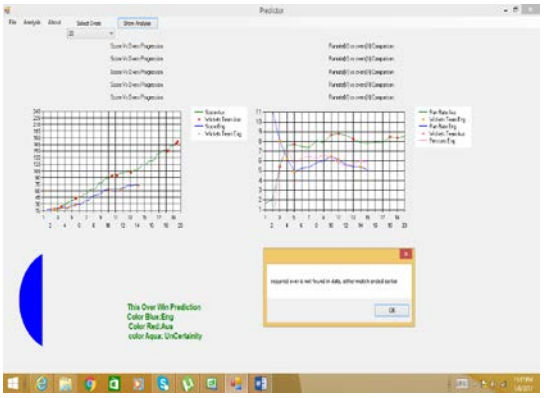

Fig.3

Fig.No.2. & Fig.No.3. show the result during the ongoing match predictions.

Experiment is performed on data set to validate the method proposed in this Paper. We obtained the accuracy of prediction with this method. These some factor discuses in the before match prediction Section such factor are. Weather factor, Player rating, Team ranking factor, Toss win or loss factor and Home team advantage.

Analysis table of predicted total number of matches

Table 8:

| Predictions | Total number of matches | Average win % |
|---|---|---|
| Before match | 100 | 85% |
| During match | 100 | 89% |

Table No.1. show the result of both before & during match prediction of 100 matches experiments.

## 6. Discussion

To conclude our work, we compared it with the core features of DL method was tackle the problem of interrupting playback by the International Crick Council (ICC) commonly used method. In this Speed competition both sides of each method were compared, team fit DECLARED high speed as the winner. Speed simple way to achieve, but it may unfairly favor either side, depending on the situation. Such other versions Methods, such as the run-rate method and the speed of the girls ignore factors Method, but also by the ICC (Cricket Archive, 2012) test. however, the method based on the fundamental question still has not been resolved operating speed. The method of operation of the defect rate is based on lost ticket negligible effect, and the value (in Prospects scoring run) to take over all alike. In this method can be used as an example of the consequences of these abnormalities show way to do the experiment. Duckworth and Lewis (1998) lýsir their revised target method Matching accounts in the case of a number of aspects of wickets lost, take over. In the remaining time of the interruption. This method is called the D/L. Now implemented by the ICC. The base on the D/L method the both teams have a 100% resources, just analysis the base on the current player on the strike. There is no adjustment factor remaining player's. Team 1, does not mean the team 2 "resource, then the target must be adjusted for the team2. Both these two methods do not focus the current performance pattern of a player either he is bowler of batsman. We argue that t20 is fast game of cricket and in this sort of game, any player can ruin the party of other team as he has to play a very few overs. In this situation, performance of player is affected only by the factors that we addressed in our study. In case a player finds suitable conditions for his play, he can make good contributions to his team's win. While on the other hand if a high ranked player is sent to non-suited conditions, he will not be able to contribute to his team's win. Ground realities for a match affect the player's performance resultantly team performance as well. Pressure build up in case of high run-rate difference between chasing team and defending team are some other type of factors that can affect the win party of any team with pressure. Historical factors addressed in this paper like ground attitude and team player performance, his current rating has an effect in prediction and they must be taken into account for prediction.

## 7. Conclusion

T20 is type of match that is gaining rapid popularity for the last 5 years. T20 world cup is considered as the mostly viewed tournament in cricket events. This papers reviews the previously used win predictions techniques that are used. We proposed a very new method for predicting the team results. This method contains dynamic team properties for win prediction like player history, winning percentage or ground history as well. We evaluated this technique over 100 matches as results are very interesting because of 85% correct predictions. Predictor is developed app that is used for prediction using this method.

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