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3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
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Acknowledgement

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List of Acronyms

|  |  |
| --- | --- |
| ODI |  One day International |
| T20 | Twenty Twenty |
| IPL |  Indian Premier League |

Glossary

|  |  |
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| Thesis: | An extended research paper that is part of the final exam process for a graduate degree. The document may also be classified as a project or collection of extended essays. |
| Glossary:  | An alphabetical list of key terms |
|  | This is an optional page and can be removed if not used. |
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their country, then we would mention the venue as `H' (H represents Home venue) and if the match was played in Pakistan then the Venue would have been `A' (A represents Away Venue). Secondly, Australia batted rst so the `Batord' attribute is 1, on the other hand it would be 2 if they We choose Australia as the home team, then from the list of match results we have year by year data of Australia. We are going to take a match between Australia and Pakistan that played in 10 Septem-ber 2012, number 10 row as an example to elaborate our work. We opened the match with the Pakistan and went to the over compar-ison. Attributes that mentioned above, we started lling those at-tributes with proper data accordingly. Firstly, we collected data from 0-6 overs. In the rst attribute named as Venue is `N' (N represents neutral Venue) because the match played in Dubai. It is not home ground for any team. If Australia played the match in their country, then we would mention the venue as `H' (H represents Home venue) and if the match was played in Pakistan then the Venue would have been `A' (A represents Away Venue). Secondly, Australia batted rst so the `Batord' attribute is 1, on the other hand it would be 2 if they tuting the current run from the run we have till the sixth over. Same procedure followed for the OR. Both the MRN and ORN calculated by dividing the MR and OR by 10 for the reason that it is for total 10 overs. From example, we can see that Australia took 103 runs from 7-16 over whereas Pakistan only managed to score 39 runs in these 10 overs. The MRN and ORN was 10.3 and 3.9 respectively. The wicket fall in these 10 over period was 3 wickets which is same for the both team.

Figure 1: Data Collection

Figure 2: Dataset of Final Segment

tuting the current run from the run we have till the sixth over. Same procedure followed for the OR. Both the MRN and ORN calculated by dividing the MR and OR by 10 for the reason that it is for total 10 overs. From example, we can see that Australia took 103 runs from 7-16 over whereas Pakistan only managed to score 39 runs in these 10 overs. The MRN and ORN was 10.3 and 3.9 respectively. The wicket fall in these 10 over period was 3 wickets which is same for the both team.

Chapter 4
[Type your Chapter Name Here]

As we have divided our total work into 3 segments . First of all, we selected our rst 6 over data set and we have implemented the al-gorithm over it. Then we have analyzed the data visually and gure out the distribution of values. The following metrics were used to determine the performance of our model: Time taken to build the model, Kappa statistics, mean absolute Error, Root Mean Squared Error, Relative Absolute Error, Prediction accuracy.

4.1 [Type your Chapter Sub-Heading Here]

Bat First: In our modeling, we used all the matches played by Chennai Super Kings (CSK) against the other teams in IPL. All the data classi ed for training set and test set are from that data-set. In this batting rst part, we are showing that the winning chance of CSK when batting rst.Sample data-set were matches played be-tween Chennai Super Kings and Mumbai Indians in IPL history. Here is the decision tree: Evaluation of Training Set: Below gure showing the Accuracy of the training set for the batting rst. We used 70 % of the data to create a training set which gives us the accuracy of 78 %. Training set is generally used in order to building up a model.

|  |  |
| --- | --- |
| Factors | 48 |
| Correctly Classi ed Instances | 39 |
| ncorrectly Classi ed Instances | 22 |
| Accuracy | 78% |

Table 1: Training set Batting First

References

*Note: The style of quotations, footnotes, and bibliographic references may be prescribed by your department. If your department does not prescribe a style or specify a style manual, choose one and be consistent. Further information is available on the web site of the Ayesha Abed Library (*[*http://library.bracu.ac.bd/style-guides-and-resources*](http://library.bracu.ac.bd/style-guides-and-resources)*).*

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| [1]  | V. V. Sankaranarayanan, J. Sattar and L. S. Lakshmanan, "Auto-play: A data mining approach to ODI cricket simulation and prediction.," in *SIAM International Conference on Data Mining*, 2014.  |
| [2]  | S. Brian, "The Problem of Shot Selection in Basketball," *PLoS One,* 25 January 2012.  |
| [3]  | T. Tulabandhula and C. Rudin, "Tire Changes, Fresh Air, and Yellow Flags: Challenges in Predictive Analytics for Professional Racing.," *Big data,* 2014.  |
| [4]  | R. D. Choudhury and P. Bhargava, "Use of Artificial Neural Networks for Predicting the Outcome," *International Journal of Sports Science and Engineering,* vol. 1, no. 2, pp. 87-96, 2007.  |
| [5]  | F. Duckworth and T. Lewis, Your Comprehensive Guide to the Duckworth/Lewis Method for Resetting Targets in One-day Cricket, University of the West of England, 1999.  |
| [6]  | I. Bhandari, E. Colet, J. Parker, Z. Pines, R. Pratap and K. Ramanujam, "Advanced Scout: Data Mining and Knowledge Discovery in NBA Data," *Data Mining and Knowledge Discovery,* pp. 121-125, March 1997.  |

Appendix A.

An Example of an Appendix

Appendices should be used for supplemental information that does not form part of the main research. Remember that figures and tables in appendices should not be listed in the List of Figures or List of Tables. Refer to the Thesis Template Instructions for more information.