# Chapter 5

## Discussion and Future Works

This chapter provides ideas on where the research can be taken further and where the features can be extended to expand research on cricket data analysis. As discussed in the current work here, the future works plan will try to remove the current constraints of the proposed study, enhance the accuracy of models, and extend the use of data-driven classifiers in cricket analytics. These improvements can help make decision-making in cricket better and usable in a variety of matches.

### 5.1 Real-Time Data Integration

The current research is however not without some limitations, one of which is the use of historical data to determine the performance of the players and or predict matches. Instead, future work should address the use of real-time data to make dynamic and responsive during the matches. For instance:

A. IoT and Wearable Devices: Realtime information obtained by IoT sensors to monitor the movements of players and fatigue as well as their biomechanics. It can be input to models for real-time business intelligence Data, which can be channeled to predictive models for real-time analysis.
B. Real-Time Decision Support Systems: Design models that can recommend live changes, including substitutions such as a batting order or fielding formations according to match conditions.
C. Streaming Analytics: Use mechanisms such as stream processing using frameworks like Apache Kafka or Spark Streaming to help in processing real-time data streams developed for almost real-time feedback.

### 5.2 Expansion of Data Scope:

To improve the comprehensiveness of the analysis, future research can expand the list of parameters and widen the data set.

A. Psychological and Behavioral Metrics: Add in player psychological status, the acuity of fitness, and any genuine sign of stress to them as a method of rating their preparedness as well as flexibility.

B. Cross-Format Analysis: Find out interform relationships between play patterns in one format to another (for instance, T20 to ODIs or T20 to test cricket).

C. Environmental Factors: Include weather elements, properties of pitches, and other features peculiar to a given Stadium to build better forecasts.

**5.3 New Machine Learning Methods:**

The present model of Logistic Regression has helped in giving important information to a certain level, but by applying a higher level of techniques, the accuracy of the prediction and the decision-making can be enhanced.

A. Deep Learning Models: Neural networks are most effective in capturing the encoder-decoder and convolutional structures in the data and therefore for image-based data apply Convolutional Neural Networks (CNNs) – in this case of the pitch or the player's motion analysis – and, for time-based data, Recurrent Neural Networks (RNNs).

B. Reinforcement Learning (RL): Use RL models for deciding dynamic plans – who should bat for which over, who should bowl for which over, and so on?

**5.4 Improved Visibility and 'Tone & Style':**

To enhance the usage and acceptance of this form of analysis by and for the triad of coaches, analysts, and players, the fields of visualization and user interfaces have to be advanced further.

A. Interactive Dashboards: Apply things such as Power BI or Tableau to develop interactive interfaces to visualize current and previous data in terms of trends.

B. Augmented Reality (AR) and Virtual Reality (VR): Utilize AR & VR technology and the creation of match scenarios to plan more efficiently.

C. Mobile Applications: Create friendly applications for mobile platforms to inform the user during the match or training.

**5.5 Other Uses in Sports Analysis:**

Since this study is a case of cricket, the methods and instruments applied will be useful in other disciplines. Future work can extend frameworks to other sports. Use the same analytical approaches to sports such as football, baseball, or basketball, which create giant databases.

Generalize Team Formation Models: For every sport, develop generic rules governing the selection of players so that it can be used for that sport.
Cross-Sport Insights: Discover how certain trends in one sport may be related or useful for another.

**5.6 Conclusion:**

The innovation in cricket data analytics can be more powerful if new technologies, models, and domains in sports are combined. The future is for the extension of the current study to overcome its limitations and examine proposed areas that can further improve the research for better decision-based data in the context of cricket. They are not simply likely to transform cricket strategies but also are destined to provide a solid foundation for large-scale sports analytics.