

Abstract

In recent times, as sports get more competitive than ever, players and teams are looking for ways to get an edge over their rivals. The progressive trend of analyzing vast amounts of data has also emerged in cricket, as it brings a significant advantage against other teams. A massive amount of information in the form of scorecards, audio commentary, video broadcasts, and tracking data is generated in every match. Various graphical representations and statistical summaries are obtained from these data to build player-specific strategies. The graphs and statistics summarize player's - batting overview (wagon wheel, ground map, batting average, and strike rate), bowling overview (pitch map, bowling economy, and bowling average), and fielding overview (field position map). While interesting, the focus of these analyses has primarily been at an aggregate level. They capture the game's play at a macroscopic level and do not attend to the minute details. For example, the batting average and the strike rate tell us about the batsman's overall statistics, but not the finer details like how a batsman plays under different conditions. However, the team coach and team management require the knowledge of minute details of the game to build player-specific strategies.

Devising player-specific strategy in cricket needs a microscopic understanding of players' strengths and weaknesses. However, there is no specific computational method for this task. This thesis aims to build computational models that mine rules related to the strengths and weaknesses of a player, thereby helping devise player-specific strategies. The challenge lies in identifying a suitable dataset, defining the strength rule and weakness rule, identifying the learning algorithm, and validating obtained rules. We address these challenges systematically and make the following contributions. We propose approaches to - (i) learn the strength and weakness rules of cricket players using text commentary data, (ii) learn temporal changes in the obtained strength and weakness rules, (iii) learn strength and weakness rules of cricket players in the presence of external factors influencing the game, and (iv) find players having similar strength rules or similar weakness rules.

