

Prediction of Football Match Using Recurrent Neural Network

Authors : Shankar Isaac Karnagaren, Raja Rajeswari Ponnusamy

Abstract : Football is the most popular sport in the world which captivates a global audience of millions. The prediction of football match outcomes has garnered increasing interest due to its potential applications in sports analytics and the betting industry. The inherent unpredictability of football, wherein weaker sides may occasionally triumph over stronger opponents and where conditions or fortune can unexpectedly influence outcomes, renders match result predictions impossible. Despite numerous attempts, machine learning models have yet to attain high accuracy in predictions, hence maintaining the excitement of the sport and sustaining the vitality of the sports betting industry. This research specifically employs advanced deep learning models, which are the gated recurrent units (GRU) and long short-term memory (LSTM) networks, to analyze and predict match results for the five major European Football leagues, which include English Premier League, La Liga, Serie A, Ligue 1 and Bundesliga. It employs feature engineering techniques, including ELO ratings, rolling averages, ELO dynamic changes, and team form, to enhance model inputs. The performance of the model yielded an accuracy of 70% for the training and test data, indicating that GRU and LSTM models outperformed traditional machine learning techniques by effectively leveraging temporal relationships. The precision and accuracy measures have demonstrated their efficacy, while the profitability metrics highlight their practical significance for betting methods. This research represents a possible avenue for advancement by integrating player-level data and psychological variables to enhance predictive accuracy.

Keywords : deep learning, recurrent neural network, gated recurrent units, long short-term memory

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