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Tennis Match as Random Walk with Memory: Application to Grand Slam Matches Modelling

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The contribution introduces a Bernoulli-like random walk with transition probabilities depending of its recent steps, thus implicitly depending on the entire walk history. The main objective is its application to modelling and then to prediction of tennis matches. The model is applied and tested on men Grand Slam tennis tournaments since 2009. The flexibility of the model is tested thoroughly on several datasets and the results are presented. It is shown that the model correctly describes the majority of all matches. Finally, the model is also used for the in-play real life betting with rather encouraging results.

Keywords:
Random walk, history dependent transition probability, tennis modelling, prediction, live betting