Fantasy NBA Predictions

Proposal

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1 Problem Statement

The goal of my project will be to efficiently predict which NBA basketball players will have the most fantasy points on a given week. While this can be done with almost any sports, I'll focus on fantasy NBA due to the abundance of websites simulating it and the fact that I should have sufficient knowledge of the sport. While this kind of game is most of time compared to gambling, there exist a few numbers of *professional players* who have proven it is possible to win in the long term given the correct algorithms.
If I'm able to provide a decent program, I would like to extend my model to other sports. The easiest would be similar sports (as in team sports in which a given action provides a certain amount of fantasy points) such as football but I could also show interest towards individual sports.

2 Approach

The initial approach is pretty straightforward and consists of building a model using machine learning techniques on data from previous game. The idea would be to simulate a score for a given player on an upcoming game depending on how well he has been performing since the beginning of the season, in recent game, against a particular opponent, etc.

The second part of my project would be to improve my model by analysing articles or opinions of experts on the subject and aggregating the information provided. This is particularly useful for the first games of the season when there isn't a lot of data to build a model from.

3 Data

Concerning data I found multiple websites providing it. The most interesting and which I should use the most is however [4] which provides data for each game from the last 5 seasons.
In terms of articles this would be harder as I need to find archives corresponding to the previous years and some experts might delete their articles if they turned out to be wrong. However [5] does provide articles every week as well as some averaged tabular data for the current season.

4 Evaluation

Depending on the progress of my project, I could almost evaluated the data live during the NBA playoffs.
For a more formal evaluation however I can both train and test my model using data from the previous season and see how well it would have performed then.

5 References and Sources

Here is the list of the current references I came up with. This list will grow as the project progresses.

5.1 Papers

Aggregating Experts Opinions

[1] : Mohamed N. Jouini, Robert T. Clemen, Copula Models for Aggregating Expert Opinions, *Operations Research*, Vol. 44, Issue 3,pp. 444-457, May-June 1996.

[2] : Robert L. Winkler, Combining Probability Distributions from Dependent Information Sources, *Management Science*, Vol. 27, No. 4, pp. 479-488, April 1981.

[3] : Robert T. Clemen, Combining Overlapping Information, *Operations Research*, Vol. 33, Issue 3,pp. 373-380, March 1987.

5.2 Data

[4] : http://stats.nba.com/player/!/202710/gamelogs/

[5] : http://espn.go.com/nba/statistics/player/_/stat/scoring-per-game

[6] : http://www.hoopsstats.com/basketball/fantasy/nba/playerstats/16/1/eff/7-1

[7] : http://fantasydata.com/

5.3 Tools

[8] : https://www.kimonolabs.com/