

Prediction of basketball game outcome using Deep Neural networks

Deep Learning and Motivation:

Deep learning has escalated recently and has become an integral part of machine learning. Deep Learning has shown promising results specially in the domain of classification models, Deep neural network has proved to be an efficient model that could solve a lot more complicated problems of the real world when compared with other machine learning techniques. Our interest in basketball and academic knowledge of machine learning has motivated our group to build a Neural network model to predict basketball game outcome. Sports outcome prediction is always a topic of interest for large community of sports fans. Not only the fans but team coaches, managers, players, bookmakers and even betting websites want to predict the game results beforehand. Talking about the current situation, most of the accurate predictions are made by game experts rather than machine learning models, that are slightly less accurate. For instance, Sportsline website takes help of multiple game experts for their website and they have an highest accuracy of 68-70 percent, while there are multiple research papers for various sports prediction which have an accuracy of 60-65 percent approximately. We are extremely motivated to look into such instances and fill the gap between machine learning models and sports prediction that could compare to the present expert predictions.

Aim and Success Measure:

Main Aim of this model is to get the most accurate model for basketball predictions by using deep neural networks. As a baseline or we can call it a success measure is to achieve an accuracy of more than 65% which is slightly better than current machine learning models, next step is to overcome the accuracy mark of 70% to beat game experts. The better we can design the model the better it can predict, there is no upper bound on accuracy.

Model development:

Working on this model, we figure out that the data we usually capture in sports are the post-game data like total points scored or which player got most points, but the issue with this data collection technique is that we cannot give this data as input to our model and then ask the model to find output of a future game due to the lack of availability of these input before a game. After getting a useful input from my Professor Ivan, we developed a model which can use an average performance data for both the team playing the game and then trying to figure out how the outcome of the present game can be based on this previous data.

Dataset:

For this project we are using a dataset provided in Kaggle which have multiple post game statistics and trying to train the model based on 2012-2018 data. We are splitting the data to get a test set of around 500 games to find out the model accuracy. Currently the model accuracy is around 58% and we are still working on it to improve the score.

Plan and Future Work:

By end of July, we think that we can at least increase the accuracy to the range of 60-65% or maybe even higher. We can give a demo presentation or show the working of the code by July. We are in a beginner's phase of machine learning model building and also working alone on this. After we successfully find the results for this model, we will try to incorporate this model with other sports and compare them. Our ultimate goal is to reach the level of prediction of experts and surf a bit further to see how predictions could be perfected. We are looking for more experienced people to join us or at least guide us in the right direction. We have more ideas but we are not sure how to add those in the model so if we have more time, we will try to research more on this and improve the model as much as possible. One of the main reasons for us to join this competition is to see how large-scale models are created, what to think before building a model and how planning is done for successful results. We are looking forward to learn much from this competition, thank you.

Team Members

1. Animesh, Graduate Student in Engineering Science from Simon Fraser University. Enrolled in Spring 2021 and currently in my first year of study.
Email – aaa170@sfu.ca
2. Nikita, Graduate Student in Engineering Science from Simon Fraser University. Enrolled in Spring 2021 and currently in my first year of study.
Email – nba45@sfu.ca