Machine Learning 1.1

1. Think about the case study. Write about 200 words to answer the question: "how is machine learning used in this environment, and what does it do that humans can't (or would be too time intensive)?"

Case Study - **Using Machine Learning To Simulate World Cup Matches**

The data analyst wanted to use machine learning to predict the results of the 2018 World Cup knockout stages, using FIFA team rating data combined with prior team results data from 2004-2018. Having combined the data and refined it into a machine learning ready format, the analyst tried 3 different algorithms and selected the Support Vector Classifier which had the highest accuracy rating of 70% to predict which team is going to win. Machine learning was used to simulate the results of matches and return the winner's name. They also added a random_scale which is appropriate for football matches at the highest level where other factors like pressure/injury can affect the result.

There is a vast amount of data from 2004-2018. Machine learning can factor in all the team's performance stats combined with their prior results for their likelihood of winning. It simulates 10,000 matches which would be too time intensive for a human to do. It can stabilize the probability, here with 8,000 match simulations, and then predict the knockout results along with the probability percentage of all the teams to win. Further and more complex algorithms could be used; it could factor in current player performance data belonging to each of the teams, the more factors employed, algorithms used, and data analysed would make it even more time intensive for humans to perform.