Project title:
Using Machine Learning to Optimize Champion Draft for High Performance League of Legends Matches

Team members:
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A summary of the project and its broader impact (one paragraph):
League of Legends is the most popular MOBA (multiplayer online battle arena) video game in the world. Its developer, Riot Games, is a multi-million dollar corporation that thrives off of the game's commercial and competitive success. In MOBA video games, two teams compete against one another to be the first to complete an objective, with each player controlling a unique character called a "champion". Before a match can begin, each team must select five champions to play, one for each player on the team. This is called the "draft" or "champion select" phase of the game, and the impact this phase has on the rest of the game is hard to understate. Having a good draft phase can give a team a huge advantage during the game, whereas having a poor draft phase can doom a team's chances of winning before the match begins. Optimizing this portion of the game would lead to a noticeable increase in the winning percentage of high performance clubs which would boost the profits from apparel revenue and sponsorship deals.

Details of the project (Name and Sources of selected datasets, detailed training, and evaluation plan):

From OpenML:

League-of-Legend-High-Elo-Team-Comp--Game-Length
League-of-Legends-Diamond-Games-(First-15-Minutes)
League-of-Legends---(LCL)-2019

From these datasets, we can pull the different statistics we need to evaluate the likelihood of winning games based on different team compositions

From Elsewhere:

https://gol.gg/esports/home/
https://www.leagueofgraphs.com/champions/stats

Games of Legends and League of Graphs are home to all available statistics for professional and high performance League of Legends games from every region.

Using these datasets, training will begin by cleaning the data and formatting it in a way that is more suitable for our purposes. The data will then be split into a test and train set to allow us to verify the accuracy of the model. Using the various techniques learned in class, we will construct a model that determines the probability of a game being won or lost based on the selected champions of both teams. We can then test these results using the testing set. Next, using that model, we will train a second model which simulates different drafts and estimates the win percentage of the game based on the champion chosen at that point. This model will, essentially, optimize the estimated chances of winning the game based on which champion should be picked in the draft.

A projection on the achievable outcomes(few sentences):
The objective of the machine learning algorithm is to instruct the player on the best draft pick given all available data. There are two deliverable models for this project. This first model is one that estimates the probability of winning a game based on the champions played on both teams. The second model is one that uses the first model to determine the optimal champion to pick in the draft to maximize the winning chances of the team.

Individual responsibility (Few sentences per member, highlighting the member's responsibility):

Christian Martens - Team Leader: Gathering datasets, cleaning/formatting datasets for proper usage. Communicating with the team members about what needs to be done. Creating/Training Model 2

Edward Pascual-Bautista: Training Model 1