COE Project 3

Aidan Liu, Arabel Rachman

Professor: Joe Stubbs

1. Introduction and topic and/or problem statement – A short introduction and summary of the goals of the project

For this project we are doing the data from Riot games regarding Teamfight Tactics (TFT). For a brief introduction for this game, this game is a more complex version of autochess, where players are in a lobby against 7 other players (8 counting the player). In each set of the game, there are unique champions (which can resemble pawns or bishops in normal chess) and traits each champion has. Each set contains a unique set of champions and traits. Each set is swapped out for a new set every 6 months or so as to not make the game stale. For the data that we are using we will be pulling from set 13. For a deeper understanding of how the game works, there are team compositions, item builds, and augments that also add more complexity into the game. For example, Caitlyn is a 5 cost Sniper trait and Enforcer trait. She is mostly attack damage carry so we must equip her with attack items. These items are tailored for specific champions so AD (attack damage) carries cannot use tank items effectively or AP (ability power) carries either. For the data we are pulling we are not including item win rates but it affects the total win rate for multiple compositions. Compositions are composed of different champions that share unique traits. For example, if we have 6 Enforcer traits with caitlyn, all 6 of those Enforcers will benefit from their activated trait granting bonus stats to all Enforcers. Each trait will have unique benefits as well. For a team composition to work well there needs to be activated traits and also strong units. The summary of the goals of this project are: create a model that can show how strong a certain composition can be. This could be used by us to measure the strength of a comp.

2. Data sources that will be used – A reference to any data sets utilized in the project

As Teamfight Tactics is a game with constant updates, where each new set introduces completely different units and traits, we had to use the most up-to-date data for the specific set we are analyzing (Set 13). Since we could not find any thorough datasets for this set, we opted to get data directly stored by Riot Games using the RiotAPI. The RiotAPI allows us to have detailed and robust match data to train our models on. We created the dataset by making calls to the API, creating a dataframe out of the match data, and exporting it as a .CSV file. For each match, the data consists of the placement, the player level, the gold left available, the match length, the activated traits, and the player's units along with their levels. A sample of this data can be found within the .CSV file attached to the Github repository.

3. List of high-level methods, techniques and/or technologies that you are considering using.

We will be using EDA to convert the specific TFT data to usable features for the model using techniques like one-hot encoding and data normalization. In order to predict the dependent variable (the final placement), we are thinking of training a neural network; the layers used will depend on the features being fed. We could also use clustering techniques to identify compositions that are similar to each other and visualize that. Lastly, we will use exploratory data analysis to identify the most winning traits and the best units to play with them.

4. Products to be delivered – what are the primary deliverables for the project? This is what we will be grading

We will be delivering 2 main objectives. First will be a cleaned up CSV file that is mostly accurate containing the TFT data (units, winrates, team comps, traits, etc.). Secondly we will have a trained model that can predict the placement of a composition.