

Compare the choice of “Heroes” in a match of Dota2

Introduction to Dota2

Dota2 is a Multiplayer Online Battle Arena (MOBA) game developed by Valve corporation. Each match consists of two teams and each team has five players. One team stands with “Dire” and the other stands with “Radiant”. When match begins every player can choose one unique hero from 113 heroes. After that two teams will compete with each other without changing heroes in their match. Winning a game is related with the level of players and corporation among teammates but five heroes themselves picked by a team also play an important role in the match. Notably, in professional Dota2 tournament where all players are known as the top level a well picked lineup can give a great advantage to the team over opponent. Thus, here is the problem: Can I tell which team has a higher winning chance in a certain match when lineups are determined by two teams?

Why the problem is important

During ranked game where all players come from the same level, players will argue with each other on the topic which hero should be picked to win the particular game. However, each player gains experience differently so player often judges based on their personal feeling instead of convincing data. If I can provide a scientific method to tell how good is the lineup picked by one team over the other, then the argument between teammates will be more reliable and convincing.

Introduction to input space

In Dota2, each hero has his/her unique powerful ability and basic attributes. Sometimes, when teammates perform comb with their heroes the resulting effect will become even more powerful than that from a single hero. For convenience, I will not take these specific attributes into consideration. Besides, I will assume all players are from the same level in a match. Then, what is my input space? I will choose the win rate for one hero against all other hero as my input data. For example, each team will have five heroes. As a result, each hero will have five win rate against five heroes from the opponent team. Thus, for a single match I will have a input vector of the size 50 (10 heroes, each hero has 5 win rate against opponents).

Introduction to output space

The output space is simple. If team A wins, then the output should be one. Otherwise, the output will be zero. Of course, there is some exceptions like team with better lineup loses their game. In my view, this seldom happens. Or I can add one more output “Unknow” when the advantage of lineup is relatively small.

Where to gather data

I will pull data from the website <http://dotamax.com/>. Besides, I will focus on all the game played within one month and these are ranked game with mmr around 4000 to make sure players in the match are from the same level.

What learning paradigm I will use

I am still unclear about my learning algorithms but I think this learning will be supervised learning process.