Ranking Super Smash Characters

Zach Gormley, Jeffrey Hilton, Pearce Keesling, Trayson Keli'i, Garrett Wilhelm
CS 478, Winter 2019 Department of Computer Science
Brigham Young University

Abstract

Your abstract should concisely answer the following three questions: 1) what problem are you addressing? 2) what approach are you taking to solve the problem? 3) what are your results?

1 Introduction

1.1 Problem Description

The Super Smash Brothers series maintains a strong presence in the esports community and is praised for its large, diverse roster of characters. Professional players and amateurs alike are constantly creating lists of character rankings to determine which character would perform the best in a tournament setting. A character's rank represents the relative advantage of using one character over any other in a fight of two equally matched players, and a character tier is a grouping of characters who are ranked similarly, usually listed in letter grades. We aim to run different machine learning algorithms on the rankings and tiers of the 133 characters in previous Super Smash Brothers games, then use the best learned model on the 72 characters in the sequel, Super Smash Brothers Ultimate to predict what their rankings should be. In the future, we will compare our machine-learned rankings with the official rankings when the game stops receiving updates.

1.2 Data Sources

The bulk of our data is retrieved from the Super Smash Brothers wiki (www.ssbwiki.com). This is a community driven database for all of the Super Smash Brothers games. Another source of information that we're hoping to consider comes from SmashBoard user KuroganeHammer who is the curator of a fan-made collection of more in-depth information for the characters (http://kuroganehammer.com). For our initial tests we have chosen not to include this data because it proved to be very difficult to unify across characters. There is also a lot of missing data, especially in the newest generation of the game. For some of the attributes, we wanted to incorporate information that was not purely measurable in the game, such as character archetype. For this we had to rely on our own knowledge of the games and experiments conducted by our team members. Finally, we collected tier information and individual character rankings and tier lists from the following sources to use as potential class labels:

- SmashBoards: https://smashboards.com/threads/4br-smash-for-wii-u-tier-list-v4.452109/
- SmashBackroom (via SSBwiki): (https://www.ssbwiki.com/List_of_SSB4_tier_lists_(NTSC))
- RankedBoost: (https://rankedboost.com/ssb4-tier-list/)
- HTC eSports: https://esports.htc.com/articles/esports-tier-list
- And a collection of other tier lists (including lists made by professional players) published by IGN: https://www.ign.com/wikis/super-smash-bros-ultimate/Tier_Lists

2 Methods

2.1 KNN

2.2 K-Means

2.3 MLP

The features used to solve the problem and details on how you gathered and represented the features, including critical decisions/choices made along the way

3 Initial Results

Your initial results with your initial model.
The iterative steps you took to get better results (improved features and/or learning models)

4 Final Results

Clear reporting and explanation of your final results including your training/testing approach

5 Conclusions

Conclusions, insights

6 Future Work

future directions you would take if time permitted

A References

Cite Smash wiki