

Dota2 Destiny: Unraveling the Future of Battle with Machine Learning

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Introduction

Dota 2 is a popular multiplayer online battle arena (MOBA) game, has gained widespread attention in the e-sports community due to its complex gameplay and strategic depth. With an increasing number of players and spectators, understanding the factors that influence match outcomes has become increasingly important for players, coaches, and analysts. This study aims to explore the various factors influencing match outcomes in Dota 2 and develop a predictive model using machine learning techniques to enhance decision-making and performance in the game.

Methodology

Data Collection

Collected Data from the Kaggle Dataset
[mlcourse.ai - Dota 2 - winner prediction Dataset | Kaggle](#)

Data
Preprocessing

Remove Unnecessary Columns in order to
create a high Efficiency Training Data Set

Model Selection

Select Logistic Regression as Model

Model Evaluation

Produce a Model with 0.7241
Accuracy and 0.7217 ROC AUC Score

Results

Successfully output winning
percentage of all testing game.

Results

```
submission.csv
1 radiant_win_prob,match_id_hash
2 0.5434545277416486,30cc2d778dca82f2edb568ce9b585caa
3 0.955064963568513,70e5ba30f367cea48793b9003fab9d38
4 0.9617571486822216,4d9ef74d3a2025d79e9423105fd73d41
5 0.7043072411138623,2bb79e0c1eaac1608e5a09c8e0c6a555
6 0.33027922879392363,bec17f099b01d67edc82dfb5ce735a43
7 0.10096995526778697,038acbb47d9eb54c11962d07cce8d829
8 0.9145462057152549,b891f03bb2a86d78b84043437fc95e04
9 0.04047505325896331,ff898afdb5bb5c7163bde45a009503f7
10 0.5952657065227388,72e6b1c31c718c0806f9aaeb8b7290a9
```

First 10 results produced by my Model

Conclusion

The logistic regression model applied to the Dota 2 dataset demonstrated a reasonable ability to predict match outcomes, achieving a 72% accuracy and an ROC AUC score of 0.72. These results indicate that the model can provide insights into factors that contribute to winning or losing a match. However, given the complexity and dynamic nature of Dota 2, further research and refinements are necessary to enhance the model's performance. This could involve exploring additional features, experimenting with alternative machine learning models, or fine-tuning hyperparameters. Ultimately, a more accurate and robust predictive model could provide valuable insights for players, coaches, and the broader Dota 2 community, enhancing strategies, team compositions, and gameplay.

References

Dota 2, <https://www.dota2.com/home>.