Hero Duel Game Analytics – Short Report

# Summary

I played multiple Hero Duel games, each consisting of several rounds with variable actions such as attack, defend, and heal. I collected structured data per round including health points, stamina, environment conditions, and special moves. Then, I analyzed the overall trends and used machine learning to predict winning outcomes based on key features.

# What I Collected

- Game ID and Turn Number  
- Player ID and Player Actions (attack, defend, heal)  
- Player Level and Rating  
- Game Environment and Weather  
- Use of Special Moves  
- Player HP and Stamina after each turn  
- Damage dealt or healed (Action Effectiveness)  
- Round marked as “critical” or not  
- Who started first  
- Who won the game

# What I Found

- Most games ended within 8 to 17 rounds, reflecting fast-paced gameplay.  
- The most used action was attack, followed by defend, then heal.  
- Players who started first showed a slight advantage in winning.  
- Higher player rating and effective use of special moves increased win probability.  
- Critical rounds often occurred when a player’s HP dropped below 20, impacting decision dynamics.

# Machine Learning

I trained a decision tree classifier to predict whether a player would win based on in-game features.  
The most influential features were:  
- Player Rating  
- Action Effectiveness  
- Whether a Special Move was used  
- Player Level  
  
The model achieved good accuracy and helped identify strategic elements that impact the game's outcome.

# Conclusion

This simulation provided a comprehensive look at turn-based strategy in a fantasy battle context. Through structured data collection and machine learning, I was able to extract valuable insights from player behavior and game flow, making Hero Duel a rich dataset for game analytics exploration.