Combat Conundrum: Enhancing Dungeons & Dragons Encounters

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1 Introduction

Dungeons and Dragons (D&D) is a popular table-top role-playing game (TTRPG) in which players embody characters in a fantasy adventure [1]. Combat is a key component in D&D gameplay requiring players to battle various monsters to progress. These combat scenarios are managed by another player, known as the Dungeon Master (DM), who determines the difficulty level of a given "encounter" by selecting the monsters' strength, actions, and other combat-related components. D&D employs a challenge-rating system to help the DM estimate and create combat encounters of reasonable difficulty. However, this challenge-rating system has its limitations and is overly simplistic. Players can often find themselves either overwhelmed by unexpectedly tough encounters or bored by ones that are too easy, leading to frustration among both players and DMs.. Thus, there is a clear need for a more sophisticated tool that DMs can use to more accurately predict and plan combat encounter difficulty.

2 Dataset and Approach

We will utilize the FIREBALL: A Dataset of D&D Actual Play with Structured Game State Information [2] to create this tool. FIREBALL contains data from 25,000 unique combat sessions involving 3,000 unique players, and includes detailed information on player classes, player and monster statistics (numeric measures of abilities, overall level, etc.), actions and outcomes, and health-point counters (HP; a measure of damage taken by a player). Our objective is to build a predictive model to assist DMs in predicting combat success given player class composition, player ability level (in-game statistics), monster prevalence and ability level, and other combat-relevant factors that emerge through exploratory data analysis of FIREBALL. We will use the fraction of total player HP lost during a given combat encounter as a proxy for combat success and difficulty. By providing DMs with a more accurate method to predict and adjust combat difficulty, this tool aims to enhance the overall enjoyment and engagement levels of players.

3 Stakeholders

- Wizards of the Coast (LLC; role-playing game company that owns the rights to D&D)
- Hasbro (Parent company of Wizards of the Coast)
- D&D Players

4 Key Performance Indicators (KPIs)

- Model prediction accuracy of fractional HP loss (total party HP)
- Number of features necessary to best predict prior KPI
- Feature importance differences (ex. disproportionate impact of party class composition, etc.)
- Comparison to the baseline model (only Challenge Rating [CR] input)

References

[1] G. Gygax and D. Arneson, *Dungeons & dragons*, 1974.

[2] A. Zhu, K. Aggarwal, A. Feng, L. J. Martin, and C. Callison-Burch, "Fireball: A dataset of *Dungeons and Dragons* actual-play with structured game state information," in *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (ACL)*, Toronto, Canada, Jul. 2023. arXiv: 2305.01528. [Online]. Available: https://arxiv.org/abs/2305.01528.