

Title: Hearthstone Counter-Deck Builder

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Abstract: Collecting cards and building decks out of them is the basic principle of collectible card games (such as Hearthstone). This task is usually very complex and requires players to think about a lot of factors, such as stability of deck's results or interactions among cards. The goal of this work is to try to make deckbuilding for Hearthstone automatic. Hill-climbing algorithm was used for this task. Generated decks were evaluated based on their winrate against chosen human-built actual decks from the game. Usage of hill-climbing brought a lot of questions – for instance, how to restrict the huge space of possible decks, what artificial intelligence to use for games' simulation, or how to make the simulation stable enough in such a non-deterministic environment. We have also tried to apply a new approach to a few of these problems. We have conducted two experiments to test our approach. Both experimentally created decks reached about 80 percent winrate against human-made decks. The results proved that even in such a nondeterministic environment hill-climbing is able to find interesting solutions. However, these solutions are highly dependent on artificial intelligence used in simulations and computational time.

Keywords: artificial intelligence, Hearthstone card game, hill-climbing