

Hill-Climbing and Cross-Entropy Optimization Applied to Deckbuilding in Magic: The Gathering

For my capstone project I investigated different methods of building decks in Magic: the Gathering (M:tG), a popular collectible deckbuilding card game. M:tG tournaments occur nearly every weekend across the country, and competitors are constantly finding new innovations in deckbuilding that give them an edge over their competition. In this project I tried using two different algorithms, Hill-Climbing and Cross-Entropy Optimization on a small set of cards to build the best deck possible. These algorithms repeatedly build decks, evaluate them, and use the best decks found so far to find new and possibly better decks. I discussed my findings on the viability of both algorithms for deckbuilding and suggest some logical extensions to use these algorithms on larger pool of cards.

Number of Games won by Cross-Entropy Optimization, out of 450

