Final Project Proposal

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The topic of my final project will be to create an information retrieval system for completing decks of the online card game Hearthstone. The game consists of various modes, with the primary mode being games between individual players that each have a deck of 30 cards. The cards have various costs, abilities, and classes. It is common for players to begin building a new deck with a specific group of cards in mind that does not fill up the 30 card deck. Another common situation is that a player will have 30 cards in mind but the player does not own one or more of the cards. In these scenarios, the player needs to fill their deck with other cards. There are a huge number of cards in the game and it can be hard to find cards that synergize well with the rest of the deck. The game has an auto-complete feature, but it doesn't give the player the ability to pick from a set of recommended cards, it simply just adds cards to the player's deck. The goal of this project is to create a system that will recommend different cards for deck completion, among which the player can choose for themself.

Implementation and Evaluation

This project will be implemented in Python. The datasets that will be involved include the complete list of cards available in the game and a list of completed decks. These are available from the Blizzard API. There are also a variety of websites where players can share their own decks, such as HearthPwn and Tempo Storm. It is very difficult to evaluate a given deck because of the high complexity of synergies that exist within the game. So, the system will be evaluated by comparing the final deck chosen by the user to known existing decks and evaluating whether that existing deck is well known or not, and if not, how many of the missing cards were filled with cards that match a known existing deck. One method for doing so will be to remove cards from known well-performing decks and test whether the system is able to reconstruct that deck.

Outline of Tasks

Task	**Expected Time**
Scrape the Blizzard Hearthstone API and build a simple DB of the cards	5 hours
Build an inverted index with information from the card titles and text from the card body	5 hours
Build an API (and a UI if time permits) through which a user can submit their current cards, enter search keywords and ask for recommendations	5-10 hours
Build an evaluator with known existing decks	5 hours