Project Proposal

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Domain & Goals

We plan to build a knowledge graph about **Hearthstone cards & decks**. The knowledge graph will include information about the card, such asname, text, flavor, artist, attack, cardClass, cost... Also, there will be some hot decks information in our knowledge graph.

This knowledge graph will be designed to help players discover valuable cards and better find cards suited for their deck or help them seek hot good decks.

We want to use this knowledge graph to find the hottest decks, best rating cards in different classes or different card sets, and visualize the relationships between cards, decks, classes and some other interesting entities, so that players can have fun explore the knowledge. We also want to achieve some recommendation functions by using this knowledge graph if possible.

Datasets

1. HearthstoneJSON: a json structured dataset for Hearthstone cards.
2. Unstructured data:
    - Cards: https://hearthstone.blizzard.com/en-us/cards
    - Decks: https://hsreplay.net/decks/
    - Decks:https://www.hearthstonetopdecks.com/

Ontology

1. There is no existing hearthstone ontology, we will design ontology to better fit our data(including cards and decks)

   For example:

- Card

```
 ID: 111
Name: "MORDRESH FIRE EYE"
Battlecry: "If you've dealt 10 damage with your Hero Power this game, deal 10 damage to all enemis."
Mana Cost: 8
Attack: 8
Health: 8
Rarity: "Legendary"
Class: "Mage"
Type: "Minion"
Set: "Forged in the Barrens"
Mechanics: "Battlecry, Damage All"
```

- Deck

```
ID: 222
Name: "Secret Mage"
Class: "Mage"
Has_card: 111
Has_card: ...
...
```

Technical Challenges

1. We want to explsore the hottest decks, best rating cards in different classes or different card sets, but it is difficult to define what is the hottest, best rating and to compute those metrics.
2. We need to visualize our graph to show some valuable content, like the relationship between cards, decks, classes, expansion card sets. And we want to achieve the interaction with users.
3. We plan to achieve a recommendation system based on cards, it's a challenge to make accurate prediction.

How To Slove Those Challenges?

1. We will first design some metrics to describe what is the hottest or best rating, then we use SPARQL to compute those metrics from data we collect.
2. We plan to use some front-end technologies to achieve interaction with users, like users click to explore some specific area of knowledge.
3. We plan to use graph embedding to help our system better understanding the graph and thus generate better recommendation.

Evaluations

1. We will invite some Hearthstone lover to use our interface and evaluate it.
2. We will also invite some Hearthstone lovers to test if our system gives useful recommendations on cards and decks.