COMP 3125 Data Science Fundamentals Fall 2025

Topic of Individual Project
Due at 11:59 pm on Sunday, Nov 2

Based on the introductions of individual projects, please decide the topic of your individual project. Fill in the following questions and submit the filled PDF version before the deadline.

1. What's the topic? Add a short description here

The topic is Clash Royale card usage and win rate analysis.

Clash Royale is a very popular (and addicting) mobile game and it is constantly changing. This project will analyze data from the game to explore how card selection and deck composition affects player win rates. Using python libraries, we can see which cards are most frequently used and which combinations lead to higher success. I may be able to use a small machine-learning component to predict the likelihood of winning based on deck features like average elixir cost and card rarity.

2. If the dataset exists, what's the link of the dataset/datasets? If not, how will you create this dataset?

https://www.kaggle.com/datasets/swappyk/clash-royale-dataset

This may be a dataset I can use. If I am not able to find more datasets, I might also be able to use RoyaleAPI (Clash Royale's API) to confirm card and deck statistics

3. What's the three questions to solve/answer to this topic?

1. Which cards are used most frequently across all decks, and how do their win rates compare?
2. How does a deck's average elixir cost or card rarity distribution relate to its win percentage?
3. Can we predict whether a deck is likely to win a match baed on its overall composition and player trophy level?

4. Among your questions, which one need quantitative analysis (Training a model) to get your answer. What model/method do you plan to use?

Question 3 will involve a quantitative analysis.
As of right now, I plan to use a logistic regression model to predict the outcome of a match (win = 1, loss = 0) based on features like average elixir cost, number of legendary cards, and player trophies.

5. Are there any suggestions you want to provide for the instructor?

No suggestions, but I would love to hear about feedback because this is an interesting topic that I think would be very engaging for many of my classmates. I'm only concerened if it will fit the academic aspect for this project.