

Project SteamSuggestion

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Abstract—Our project is to create an algorithm that will effectively recommend steam games based on different properties of the games gathered from databases online. Our project should take in some user information (game ratings, price range, games played, time spent playing a game, genre, etc.) and effectively recommend other steam games to the user.

I. INTRODUCTION

With the gaming industry only continuing to grow, more and more games are produced every year. With such a wide range of options, It is difficult to choose which game to play. Videos games are advertised and played on centralized platforms, one such platform being Steam. Steam is the largest PC game provider, and many different types of games developers sell their games on Steam, from big companies, even small independently operated studios. In May 2019, Steam had a total of 27,033 video games. With that many games, players will have a hard time finding the best choice for themselves, especially for games that seem appealing but are expensive. Customers are forced to buy games blindly (which is a time and money investment) in the hopes that they managed to pick one that they enjoy. Our project, SteamSuggestion, is designed to help players make the right choices on their gaming purchases. SteamSuggestions will filter all games on Steam based on each game's attributes such as price, genres, time investment, game intensity, etc.. Players can use SteamSuggestion's filter to shorten the area of search then decide their final choice of game.

Steam is a video game digital distribution platform developed by Valve Corporation. It was launched in September 2003 as a way for Valve to provide automatic updates for their games, but eventually expanded to include games from third-party publishers. Nowadays, the Steam platform is the largest digital distribution platform for PC gaming. By 2017, users purchasing games through Steam totaled roughly US\$4.3 billion, representing at least 18% of global PC game sales. By 2019, the service had over a billion registered accounts with 90 million monthly active users, and here are more than 27,000 games on the Steam platform. Due to the popularity of video game trends, the video game industry is developing rapidly. In the future, more games will publish on Steam and also more and more new players will use Steam platform to pick and download their games. On the other hand, since the fierce market competition, game developer companies have increased their investment to make exquisite games. Sometimes, many games need to pay and the price are on the rise. In our data set, there are least 1,000 games that cost more than \$19.99. As video games players, we surveyed

other players and most of them have the same dilemma: too many games look interesting, but not everybody has enough time to try each game or their current budget is only enough to pay for one game. Players are eager to have an independent games filter software.

II. DATA SET INFORMATION

Our initial data set includes multiple useful fields including: name, release date, English, required age, categories, platforms, genres, rating, playtime and price. Our group used these different fields to develop a collaborative filtering engine, which is designed to recommend the same games to similar users or recommend a similar game to one a user has liked. We also used genres, categories, platforms, required age. And we used users play times, positive rating and games' price as optional user inputs to filter down the results. For example, if users don't want to spend too much time on the game, we can generate a game list based on the average playtime. The rating of the game will initially have the largest weight of the recommendation engine. The games that contains more positive ratings will always on the top of the list. Should we accomplish using the data in this way, we could potentially find other, complementing data sets to augment how we recommend titles.

III. RESULT

The project is a success. There are two parts to this project; a GUI(graphical user interface) and a backend filter. Both parts met expected outcome. The GUI consist of 7 drop-down lists. Four of these drop-down lists are filter. The other three are a type of ranking. Users can select filters and ranking on the GUI. The backend program takes in arguments from GUI and sort or rank data based on selected filter and ranking option. Then, the backend program sent a list of top 20 filtered games to the GUI. The GUI correctly displayed the top 20 games.

IV. PRIMARY ISSUES ENCOUNTERED

Before completing this project, our team members lacked experience in developing GUIs. Moreover, the departure of one of our team members made the development of the entire project at one time very difficult. We spent a lot of time choosing the right GUI development method and spent a lot of time learning how to make and write a python-base GUI. Finally, we chose PyQt package as our GUI development tool. During the development process, we encountered many difficulties. For example, our first UI window is to collect user information. But when we click the

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"Go" button. How should the program jump out of a sub-window that displays results, and this sub-window should not disappear immediately after being displayed. We were struggling a problem long time. We finally found the answer in other open source projects on the Internet. Later, we were stuck with how to display the filtered data into a sub-window. Fortunately, this problem is much easier.

V. APPROACH

For the GUI part, we chose to use Qt Designer to build the framework of the interface, then used pyuic4 convert .ui files to the Python file. We added button click actions and signals to make GUI work properly. For the back-end, we used pandas to process the data. We striped some unrelated data that may interfere the sorting tasks. After that, there are only 4 attributes left which would be sorted by our program, the rest attributes are Platforms, Genres, Years, and Required Age. Based on user's option, pandas could filter the attribute and sort the game based on the Positive rating, Average playtime and Price. We only choose to show the top 20 games, so users are not confused by too many choices.

VI. TEAM ROLE

Potentially, Andy will be the team manager; he will work to keep everyone working on schedule and meeting deadlines. Also, he will verify program function, including QA before due dates. In addition, he will help Yiming with GUI. Yiming will work on display panel, menu, clickable button, etc. Yucheng work on the back end of the program. This will include parsing and storing the data, developing how each game is categorized, and creating the filtering algorithm that will recommend games based on user input.

VII. FUTURE WORK

In the future, we may consider to optimize the interface to improve the user experience. Also, user could give feedback about the sorting result, so we could use machine learning algorithm (like online learning neural network) to improve the result. In addition, we will find a way to make this filter update data in real time. For example, calling the steam API to periodically collect game information is good for once a week or once a month.

VIII. FIGURES AND TABLES

TABLE I
TIME LINE

9/30	Meeting and start on project
10/5	Meeting and discuss ways to implement
10/11	Start working on the code
10/21	Meeting and progress check
11/1	Meeting and progress check
11/2 to 11/18	Finishing GUI and the back-end coding
11/20	Combine GUI and back-end coding
11/23	From now to presentation: Debugging the program
11/24	Prepare for presentation
11/25	Present project to class
12/8	Final report for project