Lab 1 – GameEye

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CS 410: Professional Workforce Development I

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May 4, 2020

Version 1.0

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1. Introduction

1.1. Societal Problem

Thousands of new video games are released every year on various platforms (Gough, October 9, 2019). Most of those games, especially those created by larger studios, have development times that can extend into years with little news provided by the developers. In order for a user interested in developing games to obtain information about those games, they must prevue a variety of sources for each individual game to acquire said information, a process that can becomes quite tedious and time-consuming as the user's list of games they are interested in grows. Figure 1 shows this process in greater detail.
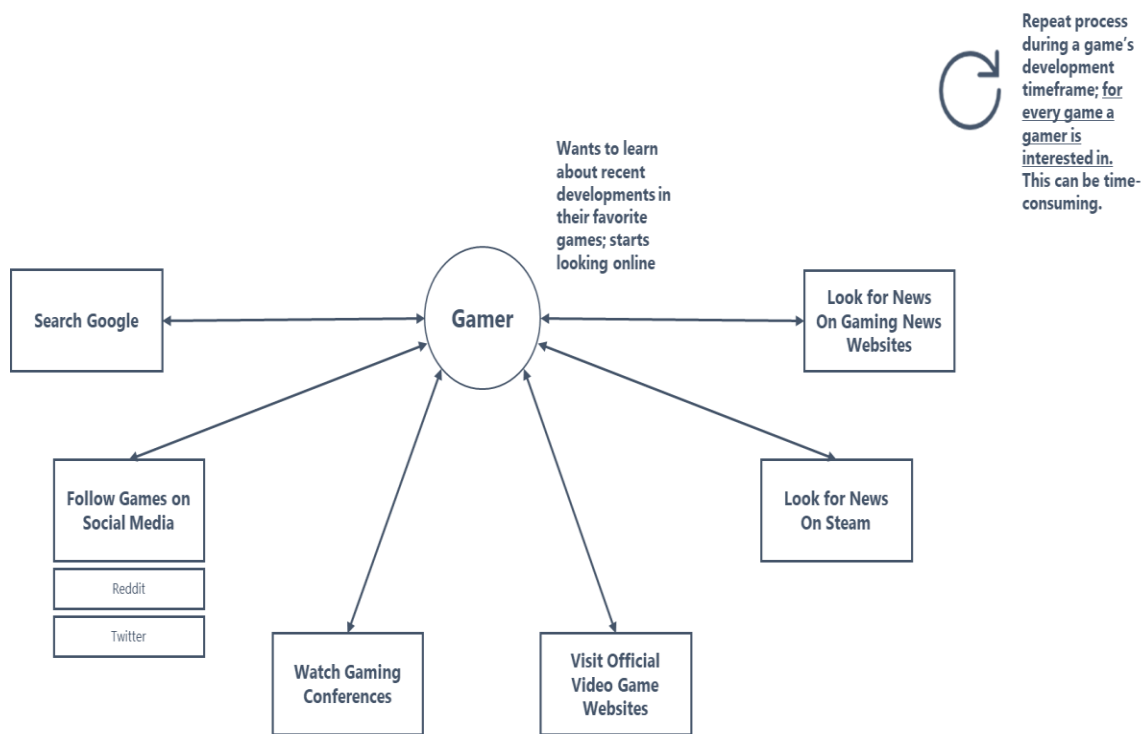

Figure 1: Current Process Flow Diagram of gamer information retrieval processes

The sources utilized for video game news have a tendency for decentralization and many fail to properly catalogue desired information. Picking through the information to find the most important bit of news takes time and attention from the user. The information stored about games

is not always relevant or helpful to the user either, as many stories that release on such sources

are unreliable in their origins, such as from fan speculation.

Games produced by small or independent studios, referred to as "indie" games, have

difficulties maintaining attention in the public sector. With less funding in general and far less to

spend on marketing, news about such projects fall into obscurity and are especially prone to

rumors and speculation.

1.2. Solution Description

The solution to this problem would be GameEye. GameEye is a web-application-based

platform that would allow the users to follow games. Users will receive notifications of any news

released by the game developers or gaming news sites. GameEye will hold a list of games

defined by the user consisting of games they wish to receive updates on, including both

developing and released games. The news about each game will be categorized based on their

content (i.e. game updates) and will be ranked by their importance to the user.

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2. GameEye Product Description

GameEye is a web application that will collect news information pertaining to developing and released video games and send out notifications to users about new information. Figure 2 below illustrates how GameEye will substitute for the user's normal methods of retrieving information and save them time through automizing the process.
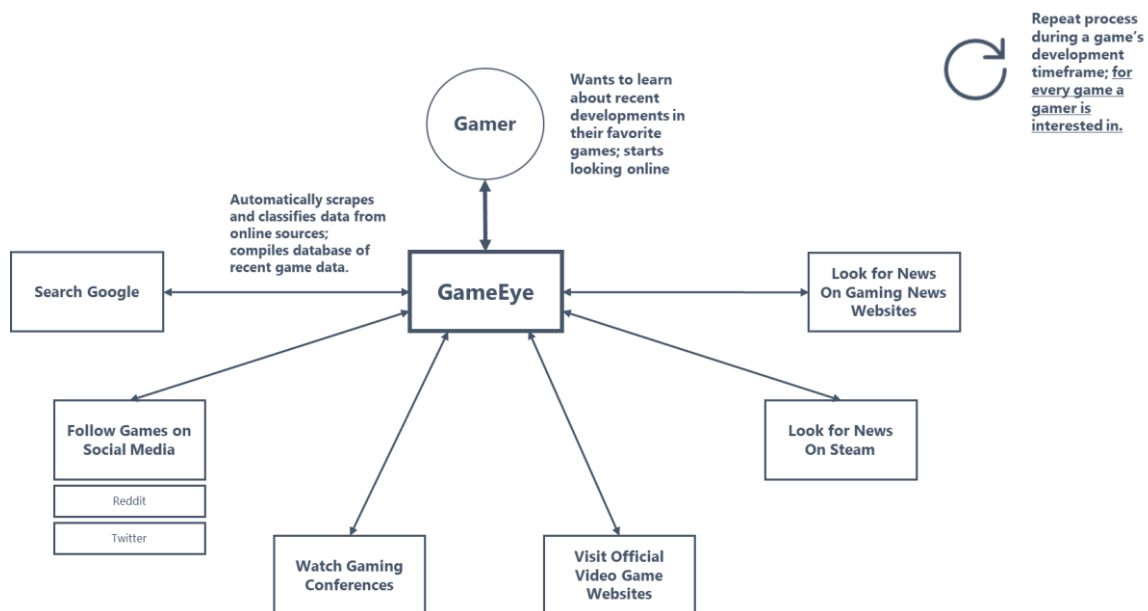

Figure 2: Solution Process Diagram describing GameEye's aggregation of information

2.1. Key Product Features and Capabilities

2.1.1. General

GameEye will be a progressive web application designed for both mobile and desktop devices. It will feature offline support, utilizing local caching and connectivity interruption resiliency features to ensure it can be used without continuous Internet connection.

2.1.2. Authentication

GameEye will feature secure user login and registration using an external provider, similar to those utilized in social media accounts. It will additionally support persistent sessions, ensuring the user does not have to login every time they start the application. Two-factor

authentication is an optional step that users can take to increase their account's security, and password recovery will be available to users.

2.1.3. Account Management

GameEye user accounts will have the ability to change the password/information associated with the user, as well as the ability to delete the account entirely.

2.1.4. Game Tracking

GameEye will have a watchlist associated to each user of video games they wish to obtain news about, whether while the game is still in development or after it is released. This list will show any updates about the game and will be organized in various categories for ease of access, as well as including thumbnails to showcase this information quickly. GameEye will also possess a separate list of the most popular/watched games currently on the platform.

2.1.5. Searching

GameEye will allow the users to search for video games based on title, as well as support for auto-completion on search terms.

2.1.6. Web Scraping

GameEye will scan multiple sources for game development updates, including game news websites and tweets/posts/videos from official Twitter/Reddit/YouTube sources.

2.1.7. Notifications

GameEye will utilize push notifications to provide new game updates. A UI count of notifications will be displayed for each game and category assigned to each game. Notifications will also be sent for suggested video games for the user based on the most-watched games list.

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2.1.8. Settings

GameEye users will be able to customize their experience with the application. They map wish to see the importance rating of news received about games, customize the notification system or disable it entirely. The user will also be able to submit feedback about the application.

2.1.9. Machine Learning

GameEye will use machine learning alongside natural language processing to categorize any incoming news based on their content (i.e. distinguish between game updates and game announcements). It will also rate the news based on its important to the user and extract information such as release dates from news based on these importance ratings.

2.2. Major Components (Hardware/Software)

GameEye will consist of the frontend server, main backend server, web scraping backend server, machine learning backend server, and the main database server. Figure 3 below showcases the relationship between the major components of the hardware.
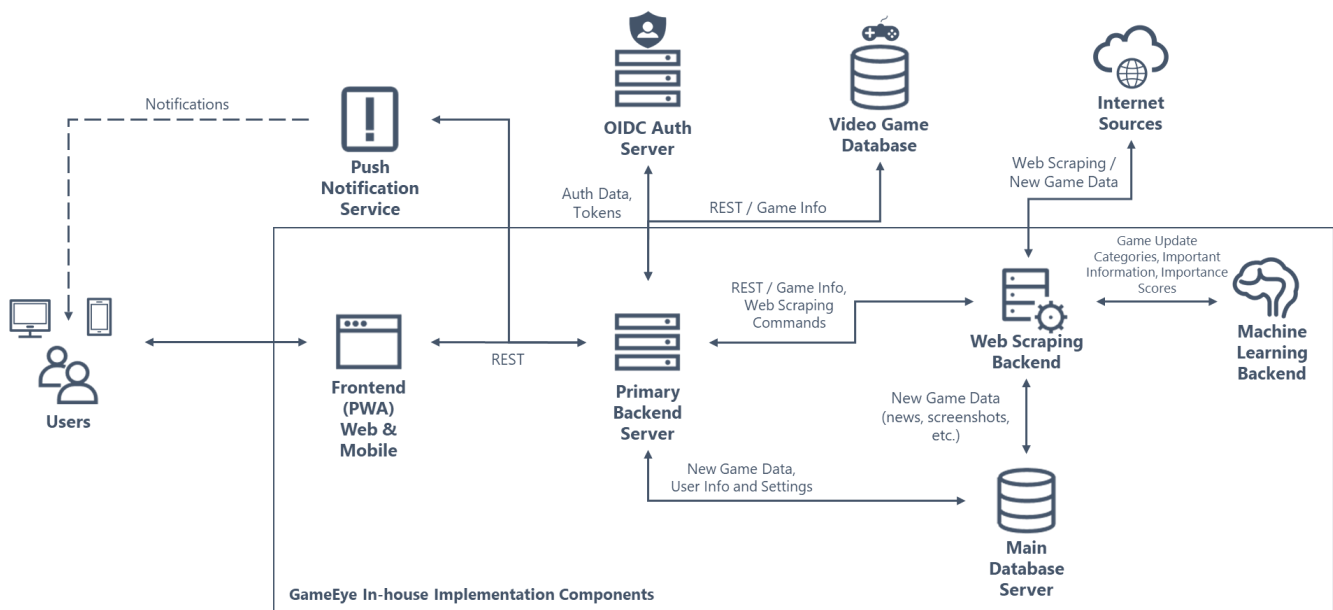

Figure 3: GameEye Major Functional Component Design (MFCD)

The frontend server will consist of a progressive web application built utilizing Angular, Workbox, HTML, CSS, and Typescript that will serve as the UI for GameEye. The main backend server will be built with Spring framework and Java and will communicate with the web scraping backend, databases, and other third-party sources. The web scraping backend server will be built with Spring framework, jsoup, and Java with an emphasis on extracting important information, working alongside the machine learning backend. The machine learning backend server will be built with Python, Keras, scikit-learn, and spaCy, working alongside the web scraping backend to classify important information. The main database server will be maintained with MongoDB and will store all information related to GameEye, including the data retrieved by the web scraping server.

3. Case Study

GameEye is being developed for usage by gamers who wish to stay notified about upcoming and released games. The number of gamers in the world is continuously increasing (Gough, October 9, 2019), and those wishing to become gamers in the future may be interested in the application.

4. References

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