1. Introduction
    1.1 The video game market is oversaturated with releases [1][2].
    1.2 Customers may miss out on entertainment opportunities.
        1.2.1 Customers may loose track of a release date due to a delay.
        1.2.2 Customers may not be aware of an update.
            1.2.2.1 A game may resolve a glitch that ruins the experience for customers, only for them to not be aware of the change.
                1.2.2.1.1 One glitch is a crash, which stops a game from running at all. This is something that a user would like to be informed on if it should be fixed.[7]
                1.2.2.1.2 There are bugs that can cause a game's story to stop progressing, forcing a freezing of progress. This is usually related to no interaction with an non-playable character or the removable of a non-playable character that needs to be interacted with. [7]
                1.2.2.1.3 There are bugs that break the immersion of a player, such as a character model moving through other objects. [7]
                1.2.2.1.4 Matchmaking algorithms may be bugged, causing an inability to enter an online game.
            1.2.2.2 A game may release more content only for the customers to enjoy the content out of ignorance.
                1.2.2.2.1 Many updates are expansions, which are a form of downloadable content that is purchased.
                1.2.2.2.2 As time goes on, the "games as a service" model, which involves the use of free, continuous content updates with other revenue models become more common. These also tend to have a substantially greater revenue source for publishers, which effectively ensures that the practice will be used more[8]
        1.2.3 Customers may not be aware of events.
            1.2.3.1 Many games have in-game events on a schedule, which might be missed by the customer.
    1.3 Customers have to travel to multiple sites for unique information, resulting in wasted time.
    1.4 Customers may get blindsided by a publisher should they not be aware of their reputation.
        1.4.1 A game may be of high quality, but include predatory practices a customer might want to be informed for. This may not be the focus of reviews, but is very relevant for players if one were to go by a critic score vs a user score.[4]
        1.4.2 A game may start out user-friendly, but retroactively add in predatory elements that wouldn't be included in reviews.[3]
        1.4.3 Reputation monitoring of a publisher could be desirable if a user wishes to be informed on a preorder.

1.4.4 A game may include software that has malware elements that's not mainstream knowledge.[9]

1.5 There needs to be a product that compartmentalizes the information.

1.6 GamEye is that product.

2. X Product Description

GamEye is an app that will act as a time-saver for users who wish to monitor information for games. A user will set up their account to monitor games they wish to receive information on. GamEye will then update the user on updates and events related to their chosen games. The user then does not have to manually skim through multiple sources of information for video games.

2.1. Key Product Features and Capabilities

2.1.1 GamEye will follow/watch video games. This feature will allow the user to customize a list of games the user wishes to receive updates on. This gives the user an autonomous update feed. This cuts down on the time required to individually search for game information desired by the user.

2.1.2 GamEye will categorize information about specific video games on the web. This allows the user to not just choose what game the user wishes to follow, but what type of information the user desires to be kept up to date on.

2.1.3 GamEye filters out unimportant content. GamEye designates an importance score according to the preferences set by the user. A user can also set an ignore list. For instance, if a user decides that he doesn't want to follow fanart or popular discussion of a game, he can set the GamEye filter to either stress less importance on said content, or hide it completely.

2.1.4 GamEye will notify users in response to news articles. Should a game that's being followed receive articles containing new information, the user will receive a notification. This cuts down on the time of a user browsing through multiple news sites.

2.1.5 4 GamEye will notify users of expansion releases. Many games have paid updates that add new content to a game. This will allow the users to be aware of the release of an expansion in a game that they like even if the game is not marketed well.

2.1.6 GamEye will notify users of content updates. Games often update the content of a video game. Notifying the users of a content update not only potentially saves time for a user, but also gives the user the security of knowing when it's been released and the option to play day 1.

2.1.6 4 GamEye will notify users about date delays. Many games have development troubles that causes delays. These wreaks havoc on a user's perception. Updating users on delays in real time allows them to be firmly aware of these changes.

2.1.7 4 GamEye will notify users about game patches. Many games suffer from glitches that can be anything from minor annoyances to game-killers. Should a game have a glitch that's a deal-breaker for a user, he can return to the game later after receiving a notification that the glitch was fixed.

2.1.7 4 GamEye will direct users to sources of original content. A user might want to know the citation for the information source. GamEye will give the user access to the original news source. There, they can read about it more in depth.

2.1.8 GamEye will search for video games using a search bar with support for auto-completion. This allows for a user to find a game that they wish to follow.

2.1.9 GamEye will display top games watched by users. This allows the user to view the most popular games on the app. This potentially allows the user to discover games that they might devlope an interest in.

2.1.10 GamEye will retrieve game info from a video game database. This will act as a huge source of information for GamEye to operate on so that it can give accurate answers to the users.

2.1.11 GamEye will web scrape gaming news sites. This will allow GamEye to determine which news sites contain the information the user desires, and therefore, where to send them.

2.1.12 GamEye will web scrape gaming youtube channels. Youtubers often engage with video games. They, themselves, often cover games, as well as play through early builds. Therefore, it would be of great benefit to the user to search through youtube content for information.

2.1.13 GamEye will web scrape relevant twitter feeds. Developers and publishers are amongst the twitter userbase. They use social media to engage with their customer base. Scraping twitter can result in game info to be revealed to the user that only the developers can be a source of.

2.1.14 GamEye will web scrape relevant Reddit posts. Reddit is a blend of social media and forums. This is another way in which developers and publishers interact with customers, and can also be used as a source of information.

2.2 Major Components (Hardware/Software)

This will involve a push notification service, a primary backend server, an authentication server, a backup server, two databases, one being the main database, the other for videogame info, and a backend.

3. Identification of Case Study

This product is intended for a gamer that desires to keep up to date on developments on his or her favorite games. There are 3 main scenarios.

3.1 A customer knows that content is coming for a popular game, but doesn't want to consistently check specifically for the game. He sets GamEye to give him news about updates on the game.

3.2 A customer finds an indie game that doesn't have much of a marketing budget. The game's unique enough that he wants to keep up to date with it. He then has GamEye notify him on the game's development cycle.

4. X Product Prototype Description

1. Demonstrates ease of use
2. Demonstrates notification management
3. Demonstrates accessibility of GameEye

i. Allows users to access account from mobile device
ii. Allows users to access account from website

4.1. Prototype Architecture (Hardware/Software)

1. Web application development
2. Web scraping
3. News validity
4. Notifications
5. Risks

i. System Failure
ii. Server Delays

IV. GameEye Product Prototype Description

A. Prototype

1. Web application will provide:

2. News notifications

3. Game watchlist management

4. Feedback

B. Proof of Concept

1. Notifications are received

C. Risk Mitigation

1. Ensure user security

a) Access restrictions to database

2. Ensure compatibility with Android 2.0 and above

D. Customer Acceptance

1. Identification of customers:

a) Gamers

2. Feedback from test group

E. Facilitate Testing

1. Game development simulation for product demonstration

F. Prototype Architecture

1. Hardware Utilized

a) Windows/Mac OS computer

b) Android/Apple smartphone/tablet

2. Software Utilized

a) MySQL

3. Primary Languages

a) Application

b) Web Framework

(1) JavaScript

c) Database

(1) MongoDB

4. Target Deployment Platforms

a) Mobile

(1) Android

(2) Apple

b) Computer

(1) Windows

(2) Apple

G. Prototype Features and Capabilities

1. Demonstrates ease of use

a) Allows users to test interface

b) Allows users to test functionality

2. Demonstrates news notification

a) Allows user to experience news updates

3. Demonstrates notification management

a) Allows users to customize notifications

b) Allows users to experience notification simulation

4. Demonstrates accessibility of GameEye

a) Allows users to access account from mobile device

b) Allows users to access account from website

5. Demonstrates customer feedback

a) Allows users to provide app feedback

H. Prototype Development Challenges

1. Web Application Development

2. Web Scraping

3. News Verification

4. Notifications

5. Risks

a) System failure

b) Server delays

c) Inability to properly verify news

d) Website formatting alterations affecting web scraping processes

5. Glossary

List of terms and abbreviations:

Angular Framework: Platform for building mobile and desktop applications.

API: Application Programming Interface; a set of functions and procedures allowing creation of applications that access the features or data of an operating system, application, or other service.

AWS: Amazon® subsidiary that provides on-demand cloud computing Platforms and APIs

CSS: Cascading Style Sheets; used to stylize webpages.

Guest: Initial role for users who have not created an account on GameEye.

Hitlist: List of highly watched video games by users.

HTML: Hypertext Markup Language; used as markup for documents meant to be displayed in a web browser.

IGDB: Database of known video games, accessed by REST API to populate GameEye's database

Indie Games: Games developed by individuals or smaller teams of people without financial support of larger game publishers.

IntelliJ Idea: IDE developed by JetBrains for the purpose of writing Java and will be used in the back-end development of GameEye.

JavaScript: Object-oriented language used to create dynamic, interactive effects on webpages.

Jest JavaScript Framework: Testing framework maintained by Facebook Inc.

JSoup Library: Java library for working with real-world HTML.

JUnit Java Framework: Testing framework for test-driven development.

Keras (Python Deep Learning Library): Open-source neural-network library written in Python.

MongoDB: A cross-platform document-oriented database program

Noise Filtering: Information/news articles shown that caters to an individual's content preferences.

OIDC Authentication: Authentication protocol based on the OAuth2.0 family of specifications.

PWA: Progressive Web Application; a type of application software delivered through the web which is built using common web technologies including HTML, CSS, and Javascript.

Python: Interpreted, high-level, general-purpose programming language.

REST: Software architectural style used in creating web services.

RSS Feeds: Web feed that allows users and applications to access updates to websites in a standardized, computer-readable format.

Scikit-learn Library: Software machine learning library for the python programming language.

SpaCy Library: Open-source software library for advanced natural language processing.

Spring Framework: Application framework and inversion of control container for the Java platform.

Tester: GameEye beta testers; users of the application in its prototype phase who will provide feedback on their experience.

Web Scraping: Data scraping for extracting data from websites.

WebStorm: IDE developed by JetBrains for the purpose of writing JavaScript.

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