**COMP4910 Senior Design Project 1, Fall 2024**

**Advisor: Behçet Melih SARIBATIR**

**AimMaxHit: Game Performance Analyzer**

**Requirements Specifications Document**

**16.11.2024**

**Revision 1.0**

**By:**

**Efe DEMİRTAŞ, 2007001053**

**Kaan Mert KOZALI, 21070001064**

**Umut Özgür İPİN, 20070001037**

**Volkan Ege KILINÇ, 20070001058**

# Revision History

|  |  |  |
| --- | --- | --- |
| **Revision** | **Date** | **Explanation** |
| 1.0 | 16.11.2024 | Initial requirements |

#

# Table of Contents

[Revision History 1](#_Toc1386313182)

[Table of Contents 2](#_Toc68360497)

[1. Introduction 2](#_Toc321623749)

[2. Functional Requirements 3](#_Toc1334877600)

[2.1. User Registration and Authentication 3](#_Toc1309614737)

[2.2. Function 1: Enter Registration Information 3](#_Toc274742649)

[2.3. Function 2: Edit User Information 4](#_Toc471062835)

[2.4 Function 3: Display Performance Leaderboards 5](#_Toc337098770)

[2.5 Function 4: Manage User Information (Administrative Function) 5](#_Toc925309486)

[3. Non-Functional Requirements 6](#_Toc1671514837)

[3.1. Development Environment 6](#_Toc1358951932)

[3.2. Security 6](#_Toc317840758)

[3.3. Localization 7](#_Toc1231471542)

[3.4. Configurability 7](#_Toc1853232384)

[3.5. Administration Setup 7](#_Toc86187432)

[3.6. Audit Trail 7](#_Toc241298137)

[3.7. Testing Strategy 7](#_Toc35859502)

# 1. Introduction

AimMaxHit is a cutting-edge performance analytics platform specifically designed to help gamers, eSports professionals, and gaming enthusiasts elevate their gameplay to the next level. The platform offers a comprehensive set of tools for tracking, analyzing, and improving gaming performance by leveraging advanced data analysis techniques and real-time feedback mechanisms.

The gaming industry has seen significant growth in recent years, with competitive gaming and eSports gaining mainstream popularity. However, most gamers lack access to effective tools that provide actionable insights into their gameplay. AimMaxHit fills this gap by offering a user-friendly platform that integrates seamlessly with popular games and provides a wide range of functionalities tailored to individual players and teams.

The system is built using industry-standard technologies, ensuring scalability, reliability, and high performance. It utilizes Unity for an interactive and immersive user experience, .NET Core or Node.js for robust backend processing, and Python for advanced data analysis and machine learning capabilities. The platform’s data storage is powered by either MySQL or Firebase, offering flexibility based on deployment needs.

# 2. Functional Requirements

# 2.1. User Registration and Authentication

The central user interface for the **AimMaxHit** platform is designed to be intuitive, interactive, and user-friendly, ensuring seamless navigation and quick access to all key features. The main menu serves as a hub for users to explore functionalities tailored for gamers aiming to enhance their performance. It provides the following main categories:

**USER ENGAGEMENT FUNCTIONS**

1. **Register & Join the AimMaxHit** - A simple and secure registration process enabling new users to join the AimMaxHit community and access personalized analytics and tools.
2. **Profile Customization & Updates** - Users can personalize their profiles by updating preferences, linking gaming accounts, and managing performance history.
3. **Performance Analytics Dashboard** - Access detailed dashboards displaying key metrics such as accuracy trends, reaction times, and hit rates, providing actionable insights for improvement.
4. **Game History & Progress Tracking**- Review past game sessions, track progress, and identify areas for development using session-based statistics and comparisons.
5. **Real-Time Feedback During Gameplay -** Engage with dynamic, real-time coaching based on live performance data, offering immediate suggestions to optimize gameplay.
6. **Challenge & Collaborate** - Connect with other players, compare analytics, and collaborate or compete with teammates and rivals.

**ADMINISTRATIVE DASHBOARD FUNCTIONS**

1. **Manage User Accounts** - Oversee and manage user profiles, handle account issues, and maintain a thriving community of AimMaxHit users.
2. **Game Data Analytics** - Access comprehensive analytics on overall platform engagement, user performance trends, and system usage metrics.
3. **Community Engagement Tools** - Communicate directly with users through announcements, updates, and support channels integrated into the system.
4. **Performance and Feedback Moderation** - Monitor and ensure the quality of real-time feedback provided by the platform, keeping it relevant and accurate.
5. **Promotional Campaigns and Events** - Plan and execute in-app events, challenges, and promotions to encourage user engagement and retention.
6. **Security & Compliance** - Continuously monitor for system vulnerabilities, ensure data security, and maintain compliance with industry standards.

# 2.2. Function 1: Enter Registration Information

Users will complete a registration form to create their AimMaxHit account. Mandatory fields are marked with an asterisk (\*), and users will be notified that these fields are required. The form will include:

* **Username**\*
* **Email**\*
* **Password**\*
* **Date of Birth**\*
* Gaming Nickname
* Preferred Games
* Contact Phone
* Country (select from a menu of all countries)

**Buttons**: SUBMIT and CANCEL

Upon submission, the user will see the following message: *"An email has been sent to your email address. Please confirm your AimMaxHit registration by clicking the provided link. Thank you."*

Email confirmation must be completed within 24 hours. Once confirmed, the user's data will be saved to the AimMaxHit database, and the following message will appear: *"You are now registered as player number [Player ID] for AimMaxHit. Start improving your gameplay!"*

**Navigation**: A RETURN TO MAIN MENU button will allow users to go back to the main interface. Unconfirmed registrations will be discarded after 24 hours, and email addresses will serve as unique identifiers to prevent duplicate accounts. Registration timestamps will be saved in the database in the format yyyymmdd-hhmm.

# 2.3. Function 2: Edit User Information

Users can manage their account details via a secure form:

* **Email**\*
* **Password**\*

**Buttons**: REVIEW PROFILE, CANCEL, RESET PASSWORD

* **REVIEW PROFILE**: After successful authentication using email and password, users can view and update their profile details, such as their gaming nickname, contact information, or preferred settings.
* **SAVE CHANGES**: Applies updates to the user profile, displaying a confirmation message: *"Your AimMaxHit profile has been updated. Continue enhancing your performance with your new settings!"*
* **CANCEL**: Discards changes and exits the profile update interface.

**Password Recovery**:

* If users forget their password, they can use the RESET PASSWORD button to receive a secure link via email to create a new password, ensuring enhanced security.

If users forget their registered email, they must contact support, as email addresses are critical for account recovery.

# 2.4 Function 3: Display Performance Leaderboards

All registered users can view leaderboards showcasing top performers, sorted by their scores and statistics:

**Displayed Information**:

* Ranking Number. Username, Highest Score, Games Played, Win/Loss Ratio

1. AcePlayer, 1500, 120, 80W/40L

2. ProGamer, 1400, 100, 70W/30L

**Options**:

* **DISPLAY**: View leaderboards one page at a time, with navigation options and a RETURN TO MAIN MENU button.
* **EXPORT TO PDF**: Generate a PDF document including leaderboard statistics with column headers and player rows.

After exporting, users will be directed back to the main menu.

# 2.5 Function 4: Manage User Information (Administrative Function)

Administrators can manage user accounts via a secure interface. After entering the admin password, admins will have access to:

**Fields**:

* Username, Email, High Score, Games Played, Win/Loss Record, Country, Last Login, Notes

**Options**:

* **DISPLAY**: View user details one screen at a time, with navigation options.
* **EXPORT TO DOCX**: Generate a Word document containing user details.
* **EXPORT TO XLSX**: Generate an Excel file with user details.

**Admin Actions**:

* View, update, or delete user accounts.
* Log all administrative actions for auditing purposes.

**2.6 Function 5: View Gameplay Analytics (Administrative Function)**

Admins can access in-depth analytics about gameplay and user engagement. Available metrics include:

* Average session duration
* Popular games
* User retention rates
* Real-time activity monitoring

Analytics can be exported in Excel or PDF formats for detailed reporting.

**2.7 Function 6: Communicate with Users (Administrative Function)**

Admins can send bulk emails to users via a communication portal. After authentication, admins can access the following interface:

* **Subject**: Email subject line.
* **Body**: Email content.
* **Attachment**: Optional file upload.

**Buttons**: SEND, CLEAR, RETURN TO MAIN MENU

Emails will be sent individually to maintain user privacy. Admins can attach files such as event invitations or patch notes.

# 3. Non-Functional Requirements

# 3.1. Development Environment

The AimMaxHit platform will use **.NET Core or Node.js** for backend services and **Unity** for interactive game-related interfaces. The database will be hosted on **MySQL** or **Firebase** for scalability and performance. Cross-platform compatibility will be ensured for Windows, macOS, and Linux.

# 3.2. Security

* All communication will use HTTPS for data integrity and confidentiality.
* User data, including credentials, will be encrypted using industry-standard practices.
* Role-based access control will ensure that sensitive actions are restricted to authorized personel.

# 3.3. Localization

The platform will support multiple languages using a dictionary-based localization approach, allowing deployment to diverse regions.

# 3.4. Configurability

Admins will be able to add or modify platform features via a configurable admin panel without significant redevelopment.

# 3.5. Administration Setup

 During initial setup, the system will guide administrators in configuring key platform settings and creating master admin accounts with enhanced privileges.

# 3.6. Audit Trail

A comprehensive logging system will track all critical user and admin actions. Summaries of these activities will be sent to the primary administrator for oversight.

# 3.7. Testing Strategy

Testing will include unit, integration, and stress testing to ensure resilience and reliability. Automated tests will validate the platform’s core functionalities, while manual testing will cover edge cases and user experience.