Cool Cyber Games

Interactive Web Application for Cybersecurity Learning

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Milestone 1 Overview

- Select Collaboration Tools
- Select Technical Tools
- Resolve Technical Challenges*
- Create Requirements Doc
- Create Design Doc
- Create Test Plan Doc
- Create "hello world" demos
- Milestone 2

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Compare and Select Tools

Tools

- **Collaborative:**
  - Github
  - Jira
  - Discord
  - Drive
  - Email/Message

- **Technical**:
  - Front-end: HTML, CSS, JavaScript
  - Backend: Node.js, Render, and Express.js
  - Database: MongoDB
  - Game Engine: GDScript(Godot)
  - Authentication: OAuth 2.0 (Google integration)

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Resolving Technical Challenges

Continued Challenges

- **Bandwidth Concerns -** Handle site traffic efficiently and cost-effectively
- **Implementing API Connections -** Design an accurate system to track user stats from games
- **Security** - Maintaining site and data security
- **Effective Learning Content*** - Continuing to evolve content to maximize learning

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Requirements

Requirements Focus

- **Purpose:**
  - A web application to teach cybersecurity concepts interactively.
  - Hands-on learning through gamified cybersecurity challenges.
- **Scope:**
  - Platform and Learning functionality
  - Gamified challenges & tutorials
  - Progress tracking & certifications
  - Cross-platform accessibility

Functional

- **User Authentication** – Google OAuth integration
- **Interactive Tutorials & Quizzes** – Multiple formats (MCQs, drag-and-drop, scenarios)
- **Gamified Learning** – Real-world cybersecurity threats, levels, hints
- **Progress Tracking** – Leaderboards, certificates
- **User Dashboard** – Personalized stats & progress

Non-Functional / Interface

- **Performance:** Supports 100+ concurrent users, <2s page load time
- **Security:** HTTPS, OWASP best practices
- **Usability:** ADA-compliant, intuitive UI
- **Scalability:** Expandable features, database growth

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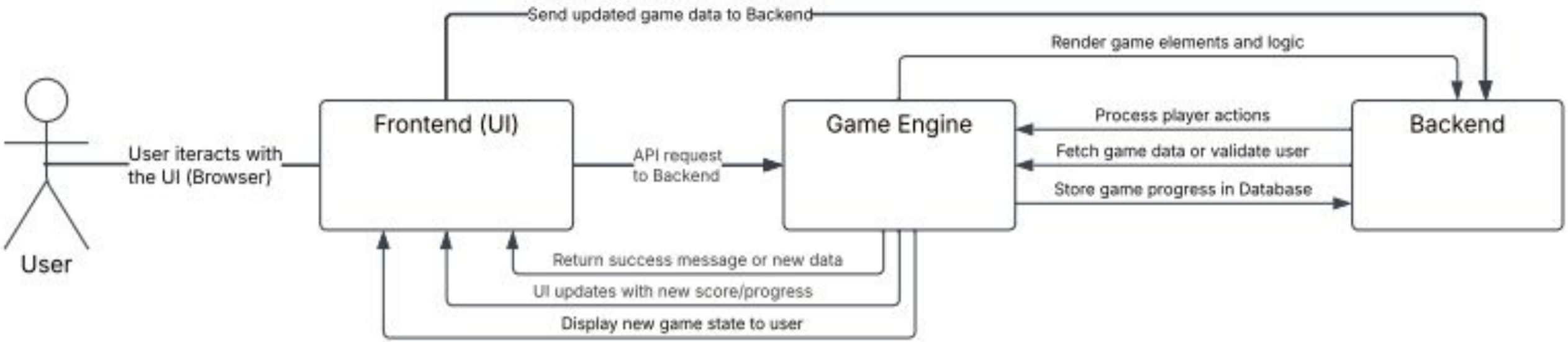
Design

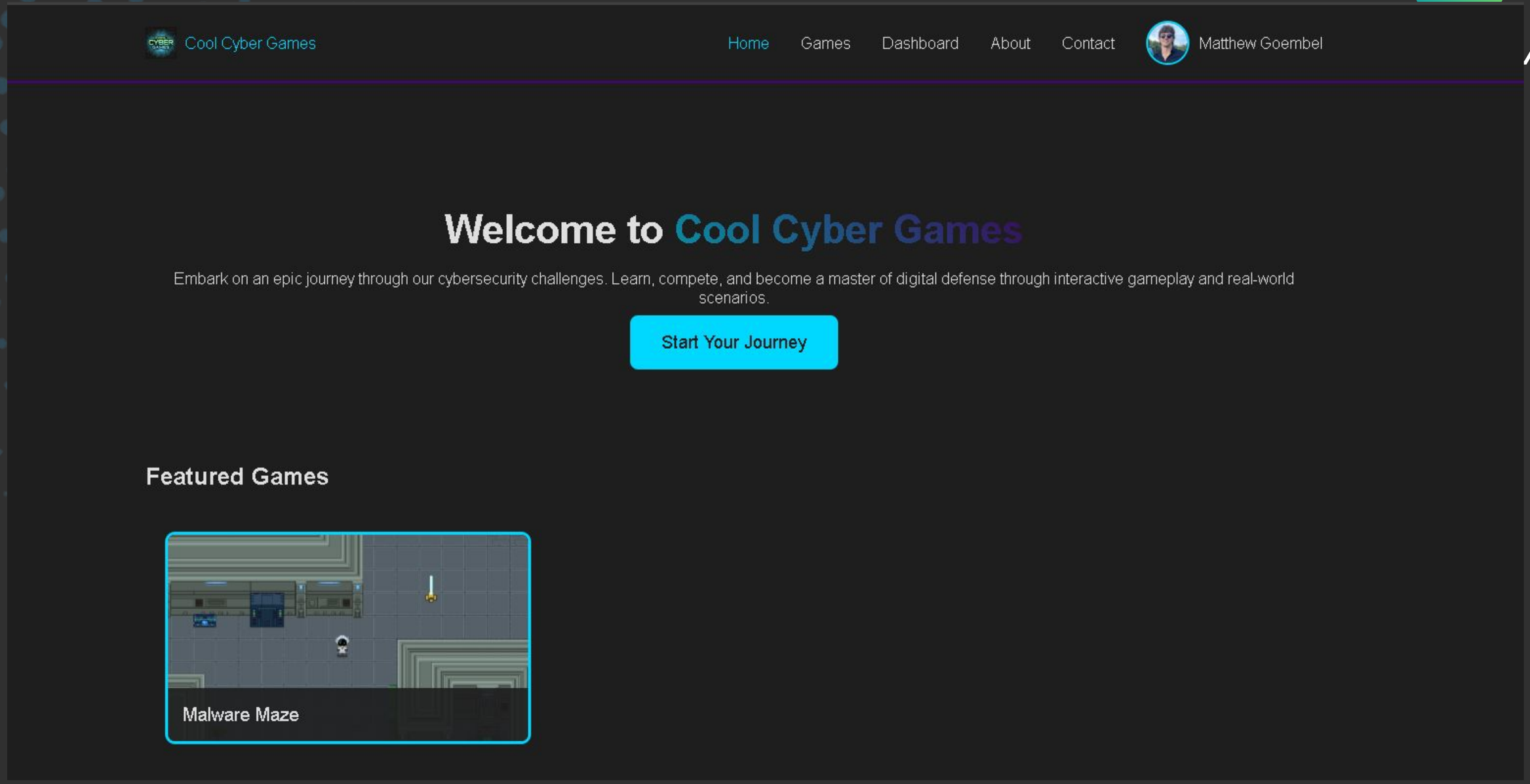
Overview

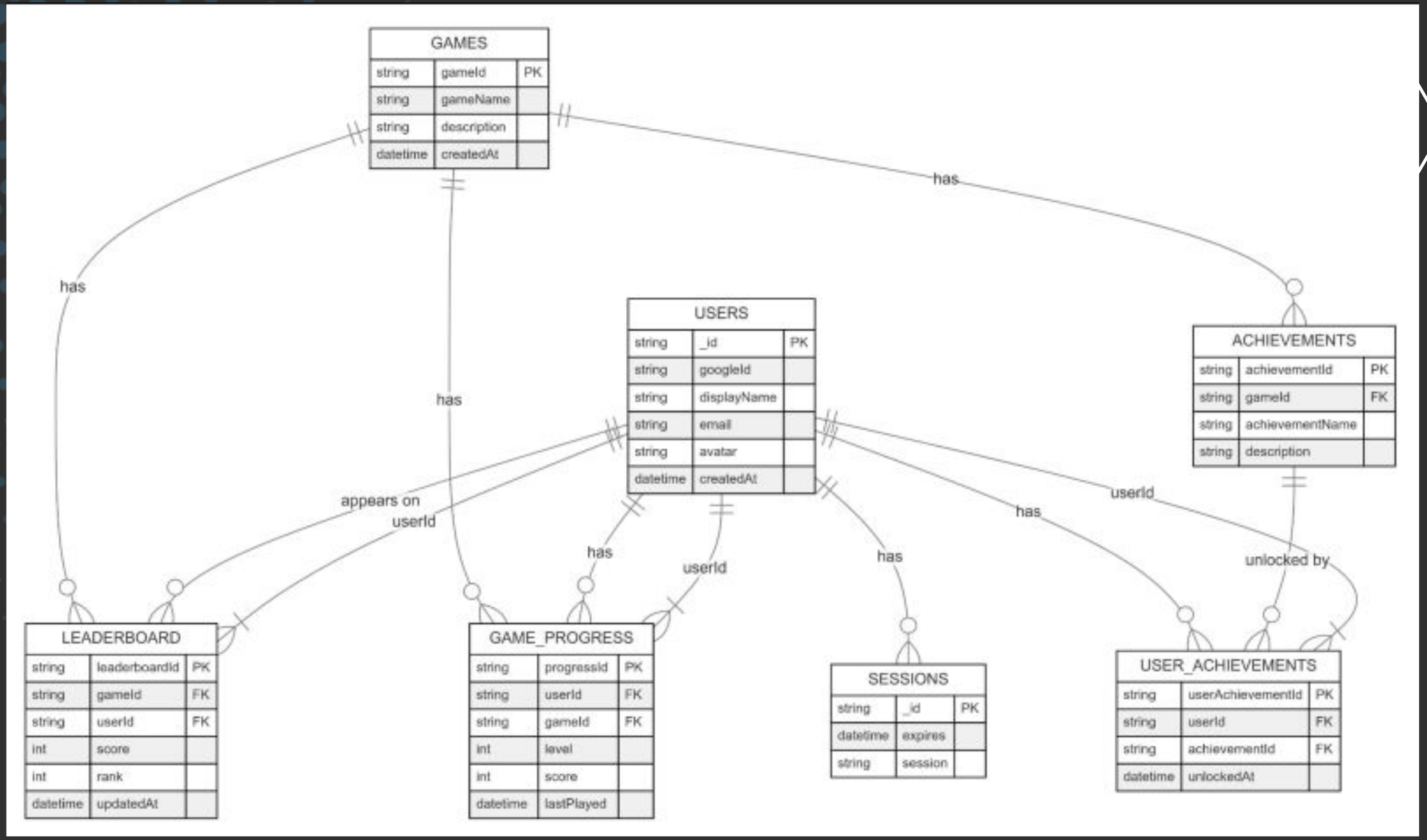
- **The system follows a modular, service-oriented architecture consisting of the following components:**
  - Frontend Module
  - Backend Module
  - Database Module
  - Game Engine
  - Authentication Service
  - User Data Tracking Service

System Architecture



Current UI


Cool Cyber Games
Home
Games
Dashboard
About
Contact
Matthew Goembel
Welcome to Cool Cyber Games
Embark on an epic journey through our cybersecurity challenges. Learn, compete, and become a master of digital defense through interactive gameplay and real-world scenarios.
Start Your Journey
Featured Games
Malware Maze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string gameName
string description
datetime createdAt
has
has
has
USERS
string _id PK
string googleId
string displayName
string email
string avatar
datetime createdAt
ACHIEVEMENTS
string achievementId PK
string gameId FK
string achievementName
string description
appears on
userId
has
userId
has
has
userId
unlocked by
LEADERBOARD
string leaderboardId PK
string gameId FK
string userId FK
int score
int rank
datetime updatedAt
GAME_PROGRESS
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string userId FK
string gameId FK
int level
int score
datetime lastPlayed
SESSIONS
string _id PK
datetime expires
string session
USER_ACHIEVEMENTS
string userAchievementId PK
string userId FK
string achievementId FK
datetime unlockedAt

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Test Plan

Overview / Scope

- **Key areas:**
  - Functional Testing (core features, tutorials, challenges)
  - Performance Testing (load, response times)
  - Security Testing (OAuth 2.0, SQL Injection, XSS protection)
  - Usability and Compatibility Testing (cross-device, browsers)

Key Test Areas

- **User Authentication**
  - Google OAuth 2.0 Login & Logout
  - Token Expiry and Refresh
- **Interactivity & Progress Tracking**
  - Access and complete interactive tutorials
  - Quiz results, points, and progress tracking
- **Cybersecurity Challenges**
  - Phishing Email Identification
  - Malware file removal
  - Social Engineering
  - etc.

Server & Database Testing

- **Database**: MongoDB (User & Game Data)
  - **Test Cases:** Connection, Performance, Backup, and Recovery
- **Server**: Hosted on Render
  - **Test Cases**: Uptime, API Endpoints, Scalability, Security

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"hello world" demo

→ https://coolcybergames.com

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Milestone 2

Next Tasks

1. **Core Features Implementation**:
   - Develop progress tracking, and points earned in game.
   - More games, Quiz scoring, Progress UI, Global score tracking
2. **Gamification and Authentication Enhancements**:
   - Add interactive elements, and quiz scoring logic.
   - Develop progress-tracking/dashboard UI.
   - Focus on testing for performance and security.

Next Tasks

3. Continued Frontend & Game Development:

- Add and update web pages progressively.
- Implement and improve game functionality on the site.
- Enhance website functionality for seamless user experience

Thank you!

Any Questions?