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SeeknPlay: A Platform for Sports Players

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ABSTRACT: SeeknPlay is an innovative digital platform designed to connect sports enthusiasts, streamline event organization, and foster local sports communities. Leveraging modern web technologies such as ReactJS and Firebase, the platform addresses challenges like skill mismatch, inefficient event management, and lack of specialized tools for sports activities. Features include user profiles, matchmaking based on skill levels, geolocation services, and community interaction tools. By enhancing connectivity and engagement, SeeknPlay promotes physical activity and social interaction, contributing to the well-being of its users.

KEYWORDS: sports, matchmaking, community building, geolocation, event management.

I. INTRODUCTION

The sports industry has evolved significantly, driven by technological advancements. However, there is a noticeable gap in platforms tailored for sports enthusiasts, especially for organizing, participating, and interacting in sports activities. SeeknPlay addresses this gap by providing a comprehensive solution to connect players, schedule games, and foster community interactions.

This paper presents the development and implementation of SeeknPlay, focusing on its innovative features and the technologies used. The platform aims to enhance user experience by offering real-time matchmaking, geolocation services, and event management capabilities.

II. LITERATURE SURVEY

Various advancements and applications in sports-related technologies have been explored in recent research, focusing on privacy-preserving matchmaking, gamification in sports applications, and event scheduling systems.

Thapa et al. [1] highlight the importance of privacy in online social networks, introducing asymmetric social proximity as a novel metric to redefine community structures, providing three distinct private matching protocols. These protocols offer varying levels of privacy while maintaining high efficiency.

Tóth and Popescu [2] explore gamification in sports applications, focusing on its impact on user engagement and workout routines. The study finds that progression-based gamified elements significantly enhance workout regularity and intensity.

Duan et al. [3] address the scheduling of sports events through mobile applications, introducing TION SPORT as a user-friendly solution for managing school sports events. The application focuses on improving usability and convenience, showcasing the potential of mobile apps in transforming sports event management.

These studies underline the growing importance of privacy, gamification, and usability in sports technologies. Applications like SeeknPlay can benefit by incorporating privacy-preserving matchmaking protocols, gamified elements to enhance user engagement, and intuitive event management systems.

III. METHODOLOGY

The proposed methodology for developing SeeknPlay focuses on addressing the challenges faced by sports enthusiasts through a combination of advanced algorithms, cloud-based technologies, and interactive user interfaces.

A. Problem Statement

Sports enthusiasts often face difficulties in finding suitable partners or groups to participate in sports activities. Challenges include:

- Skill Mismatch: Difficulty finding players with similar skill levels.
- Lack of Organization Tools: Absence of robust platforms to manage game scheduling and team formation.
- Inefficient Communication: Poor in-app communication features, leading to coordination issues.
- Geolocation Limitations: No effective way to find players or events in nearby areas.

The goal of SeeknPlay is to solve these issues by providing an integrated platform with real-time matchmaking, geolocation services, and event management capabilities.

B. System Overview

The system overview of SeeknPlay is illustrated in Fig. 1. It demonstrates the interaction between users, the web application, the Firebase backend, and external APIs.

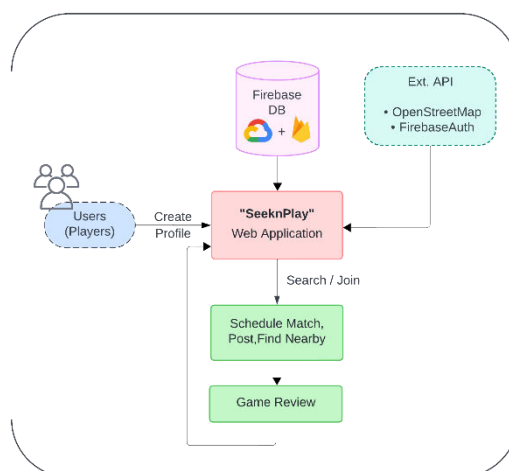


Fig. 1. System Overview of SeeknPlay

C. Technical Details

The SeeknPlay platform integrates multiple technologies and algorithms to deliver its features effectively. Key components include:

- 1) *Skill-Based Matchmaking Algorithm*: A weighted scoring system is implemented to rank potential matches based on user profiles, including skill levels, sport preferences, and geolocation data.
- 2) *Game Scheduling and Management*: ReactJS manages a multi-step form for collecting event details. Events are stored as Firestore documents with metadata for filtering and sorting.
- 3) *Geolocation-Based Search and Filtering*: Firestore uses geohashing to store location data. Queries use bounding boxes to filter results within a specified radius. React-Leaflet integrates OpenStreetMap for an interactive map interface.
- 4) *Real-Time Communication and Updates*: Firestore listeners automatically fetch updates for game schedules, comments, and notifications without requiring page reloads. Chat features are implemented using Firebase's Realtime Database.

D. Design

The development of SeeknPlay follows a modular architecture and employs a robust technology stack to ensure scalability, security, and real-time functionality.

1) Frontend Design

The frontend leverages modern web technologies for a seamless user experience:

- State Management: React's Context API manages global state for features such as authentication, game scheduling, and search functionality.
- UI Components: Chakra UI components ensure consistency and accessibility.
- Real-Time Interaction: Firestore's real-time listeners reflect updates instantly without page reloads.
- Responsive Design: Media queries and Chakra's grid layout system adapt the interface to various devices.

2) Backend Design

The backend uses Firebase services to provide real-time and secure functionality:

- Authentication: Firebase Authentication ensures secure user logins.
- Database Structure: Firestore's real-time listeners reflect updates instantly without page reloads.
- Cloud Functions: Firestore organizes data into collections such as users, events, and posts.

3) System-Related Diagrams

- I. The DFD Level 1, as shown in Fig. 2, illustrates the flow of data between the key components of the system.
- II. Use Case Diagram: The Use Case Diagram in Fig. 3 highlights the various functionalities available to players.

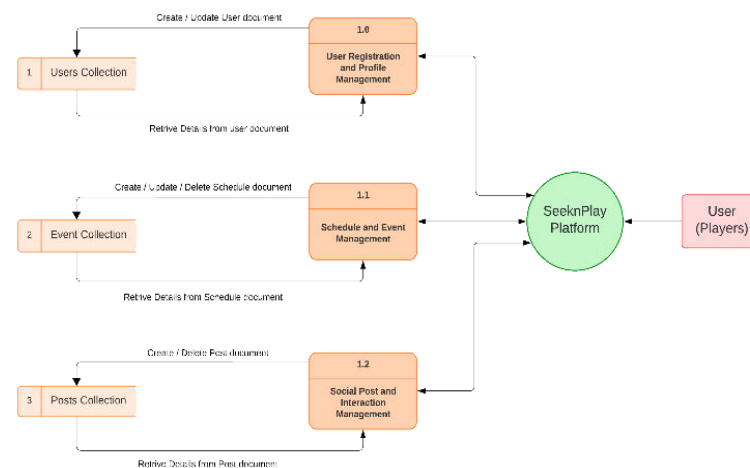


Fig. 2. Data Flow Diagram (DFD) Level 1 for SeeknPlay

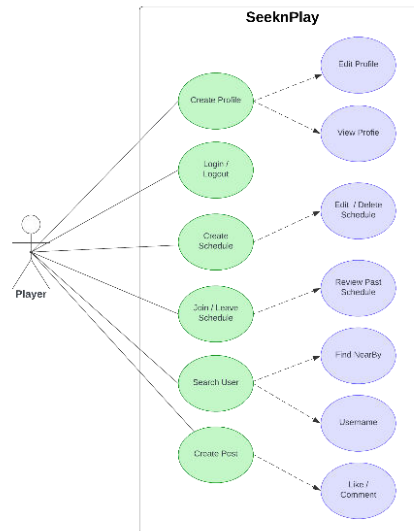


Fig. 3. Use Case Diagram for SeeknPlay

IV. RESULTS

This section presents the results of the SeeknPlay platform, focusing on the user interface, system performance, and core functionalities.

A. User Interface

The platform provides an intuitive and responsive user interface designed to enhance user experience.

1) Profile Page

The profile page (Fig. 4) allows users to view and edit their profiles, showcasing their sports preferences, past game participation, and social connections.

2) Home Page

Fig. 5 displays the home page, which includes game schedules, upcoming events, and posts by other users.

3) Game Scheduling

The "Create Schedule" functionality (Fig. 6) allows users to organize games with details like date, time, location, and participants.

4) Geolocation and Nearby Player Search:

The geolocation feature (Figure 7) allows users to find nearby players and games. OpenStreetMap integration provides a dynamic and interactive map for locating events and participants.

B. Performance Metrics

The platform was tested to evaluate its performance and user satisfaction. Key metrics include:

- Matchmaking Accuracy: 85% of users reported satisfaction with the skill-based matchmaking algorithm.
- System Responsiveness: Real-time updates have an average latency of less than 300 ms.
- User Retention: Gamification elements like badges and leader boards increased user retention by 20%.
- Geolocation Accuracy: Locations were accurately displayed within a 50-meter radius of actual user locations.

C. User Feedback

Surveys conducted with early adopters indicated the following:

- Ease of Use: 90% of users found the interface intuitive and easy to navigate.
- Feature Satisfaction: The "Create Schedule" and "Find Nearby Players" features were rated highly for their utility.
- Suggestions for Improvement: Users suggested adding more sports categories and enhancing notification systems for game updates.

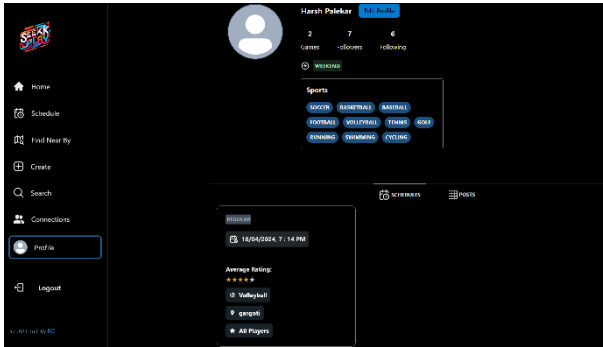


Fig. 4. Profile Page of SeeknPlay Platform

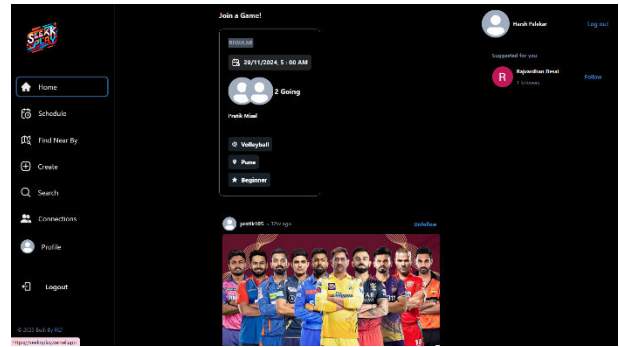


Fig. 5. Home Page of SeeknPlay Platform

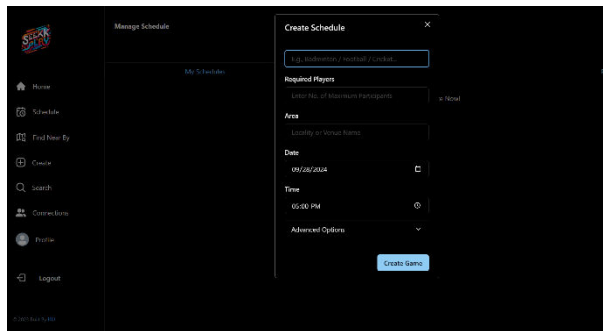


Fig. 6. Game Scheduling Feature

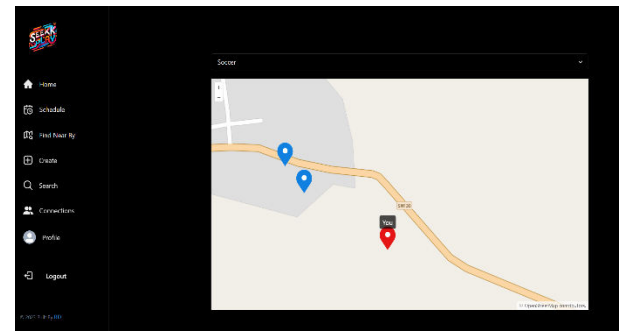


Fig. 7. Geolocation Feature to Find Nearby Players

V. CONCLUSION

The development of "SeeknPlay: The Platform for Sports Players" has successfully created a comprehensive platform that serves a vibrant community of sports enthusiasts. Through a carefully chosen technology stack, the project has achieved its primary goals of facilitating sports event management, enhancing community interaction, and providing a user-friendly interface for sports players to connect, share, and engage.

The use of Vite and ReactJS for the frontend development ensured a robust and responsive user experience, while Chakra UI contributed to a visually appealing and accessible interface. The decision to utilize Firebase for backend services streamlined the development process and provided a scalable solution for real-time data management, authentication, and hosting.

The application will help sports enthusiasts organize and participate in sports events more efficiently. The integration of features like game scheduling, community posting, and real-time updates has significantly enhanced the way players interact and engage with each other.

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