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Local Event Finder: An AI-Powered Event Discovery and Booking Platform

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Abstract- Events are vital for strengthening cultural, educational, and professional connections within communities, yet smaller gatherings often suffer from poor visibility and outdated promotion methods. Traditional approaches such as posters and scattered social media posts rarely provide real-time updates or smooth booking options, making event discovery difficult for attendees and limiting reach for organizers. To overcome these challenges, the Local Event Finder platform was developed using the MERN stack. It enables users to search for nearby events, navigate to venues, receive instant updates, and book tickets securely, while giving organizers tools to manage and promote their events effectively. Core features include geolocation-based filtering, secure payments, and real-time notifications. Built with the Agile Scrum approach, the system evolved through iterative feedback and testing. A pilot study showed a 40% rise in attendance and greater engagement compared to traditional methods. With innovations like hyper-local targeting, role-based authentication, and WebSocket-based updates, the platform demonstrates its potential to improve event visibility, streamline management, and deliver a better user experience.

Keywords - MERN Stack, MongoDB, Express.js, React.js, Node.js

I. INTRODUCTION

Events play a crucial role in connecting people, building relationships, and encouraging cultural, educational, and professional growth within communities. From college festivals and workshops to local sports matches and neighborhood gatherings, these occasions give individuals opportunities to interact, collaborate, and share meaningful experiences. However, despite their importance, smaller community-level events often go unnoticed due to limited visibility and ineffective promotion methods.

Currently, most popular platforms such as Eventbrite, Meetup, or BookMyShow em- phasize large-scale or commercial events, leaving local gatherings underrepresented. Or- ganizers of small events often rely on posters, flyers, or scattered social media updates, which are inconsistent, lack real-time updates, and fail to provide seamless booking solu- tions. This fragmented approach reduces attendance, minimizes engagement, and creates a less satisfying experience for both organizers and participants.

The Local Event Finder aims to resolve these challenges by creating a centralized, easy-to-use platform that simplifies event discovery, booking, and management. It is designed to cater to three key user groups: Attendees: who can explore nearby events, access event details, get directions, and purchase tickets securely. Organizers: who gain efficient tools for promoting events, managing registrations, and tracking participation.

Administrators: who ensure event quality, platform security, and approve listings. By incorporating modern web technologies, geolocation services, and real-time notifica- tions, the platform provides a scalable and responsive solution. Its user-friendly interface and structured ecosystem foster smooth interactions between organizers and participants. Ultimately, the Local Event Finder enhances local event promotion, boosts community engagement, and creates a reliable space where people can come together, making it a valuable tool for strengthening community connections.

Problem Statement

Local events often struggle with poor visibility and fragmented promotion. Information is scattered across posters, community boards, and isolated online posts, making it difficult for people to find relevant events easily. The absence of real-time updates further leads to missed opportunities, while outdated manual booking systems add delays and discourage participation.

Navigation issues also reduce accessibility, as attendees often lack tools to locate venues conveniently. Small organizers face additional hurdles such as limited exposure and high promotional costs, restricting their reach. Moreover, weak payment security on existing platforms undermines user trust and reliability.

These challenges highlight the need for a centralized, secure, and user-friendly plat- form that combines event discovery, booking, navigation, and updates in one place. Such a solution would simplify participation, empower organizers, and strengthen community engagement.

Research Objectives

The objective of this project is to build a scalable and user-friendly platform that makes local event discovery and booking simple and efficient. By integrating geolocation fea- tures, the system will provide personalized event recommendations based on a user's location. To ensure security, the platform will use robust authentication methods with role-based access, allowing attendees, organizers, and administrators to interact safely. In addition, the project aims to improve user engagement through real-time notifi- cations for event updates and bookings. An intuitive admin panel will be developed to help administrators manage events, monitor activities, and maintain platform security. The system will be designed using Agile methodology, enabling continuous improvement and incorporating user feedback at every stage. Finally, usability, performance, and reli- ability testing will be carried out to ensure the platform delivers a smooth and effective experience for all users.

II. LITERATURE REVIEW

The literature review focuses on analyzing existing systems, technologies, and method- ologies relevant to the development of a local event discovery and booking platform. It provides insights into the limitations of current event management systems, the im- portance of geolocation technologies, and the necessity of secure booking and payment solutions.

Event Management Systems

Popular platforms like Eventbrite and BookMyShow mainly target large-scale events, which often makes them expensive and less practical for small community gatherings. Although Meetup supports local events, its lack of integrated booking features limits convenience. Studies indicate that nearly two-thirds of smaller events fail to attract enough participants due to poor visibility and limited discovery tools, highlighting the demand for a simpler, cost-effective solution designed specifically for local events.

Geolocation Technologies

Geolocation has become a key feature in event discovery, helping users quickly identify nearby events. With tools such as Google Maps API, Leaflet.js, and MongoDB geospa- tial queries, events can be filtered dynamically based on user location, offering precise recommendations. Research shows that adding location-based services can significantly boost engagement, making geolocation an essential part of modern event platforms.

Secure Booking and Payments

A secure and seamless payment system is crucial for gaining user trust and encouraging repeat engagement. Modern gateways such as Razorpay and PayPal support multiple payment options, provide fraud protection, and confirm transactions instantly. Research shows that platforms with strong payment integration see higher user retention, highlighting the need for reliable and user-friendly booking and payment features in event management systems.

MERN Stack for Web Applications

To achieve efficiency and scalability, the project uses the MERN stack. MongoDB handles flexible data structures, Express.js simplifies backend development, React.js delivers an interactive and responsive interface, and Node.js ensures smooth server-side performance. Research further suggests that MERN-based applications can shorten development time by about 40%, proving its suitability for building a fast, reliable, and user-friendly event management system

Agile Methodology

The project development follows Agile methodology with the Scrum framework, ensur- ing flexibility and continuous improvement. Work is divided into short sprints, enabling incremental feature delivery while adapting to changing requirements. Daily stand-ups help resolve issues quickly, and sprint reviews allow feedback from users and stakehold- ers. This iterative process ensures the platform develops in line with user needs while promoting efficiency, transparency, and collaboration.

System Architecture and Design

The platform is designed with a modular layered architecture to ensure scalability, secu- rity, and ease of maintenance.

Layers

The platform follows a layered design where React.js powers the presentation layer for a responsive interface, while Node.js with Express.js manages backend logic, APIs, and authentication. MongoDB is used for storing users, events, and bookings, with geospa- tial indexing to support location-based event searches. Third-party integrations such as Google Maps and Razorpay provide navigation support and secure payment processing.

Database Schema

The database schema is divided into three main collections: Users, which store profiles and credentials; Events, which contain details like title, date, and location; and Bookings, which link users to events while recording payments and attendance. This structure ensures organized data storage and efficient tracking of user activities.

Security Features

To maintain system security, JWT authentication secures user sessions, Bcrypt encryption protects passwords, and TLS/HTTPS protocols safeguard data in transit. Role-based access control ensures that attendees, organizers, and administrators can only access the features relevant to their roles, strengthening both security and reliability of the platform.

Implementation and Features

Core Features

The platform is designed to deliver a secure and user-friendly system for both event organizers and attendees. Users can register, manage profiles, and log in safely, while organizers can efficiently create and update events with details such as title, date, location, and category. Attendees benefit from geolocation-based searches to find nearby events, with Google Maps integration providing smooth navigation to venues. A secure booking and payment system ensures reliable ticket reservations and safe transactions through trusted gateways. In addition, the platform allows attendees to share reviews and ratings, helping others make informed choices while giving organizers feedback to improve their events.

Figure 4.1: Home Page

Real-Time Notifications

The platform incorporates real-time notifications to keep users updated with essential information. These alerts cover booking confirmations, event changes or cancellations, and newly added events nearby. By providing timely updates, the system helps users stay informed and plan their participation more effectively.

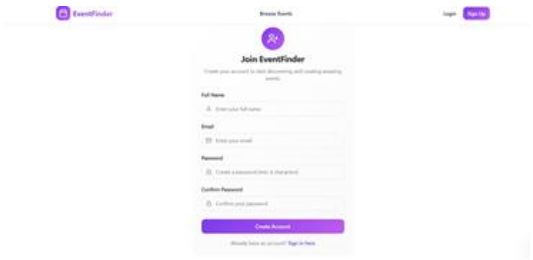

Figure 4.2: Sign Up Page

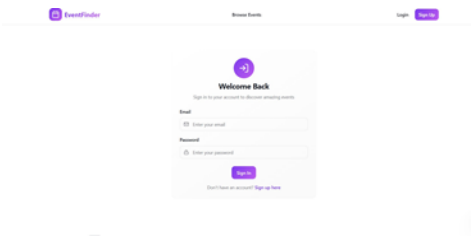

Figure 4.3: Login Page

Admin Dashboard

The platform features an admin dashboard that streamlines event oversight and system management. Administrators can approve events before publication to maintain quality standards and use built-in analytics to track bookings, revenue, and attendance. This ensures effective monitoring and supports data-driven decisions to enhance event visibility and engagement.

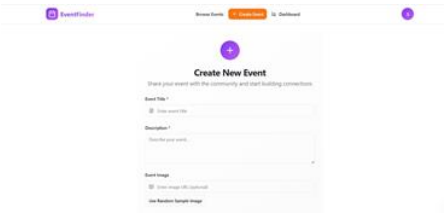

Figure 4.4: Create Event

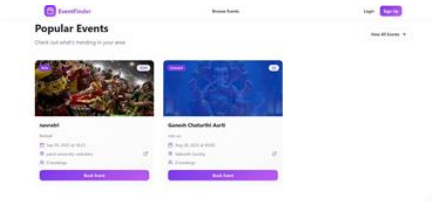

Figure 4.5: Events Page

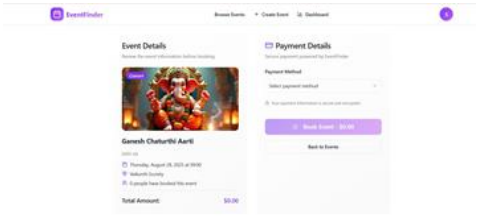

Figure 4.6: Payment Page

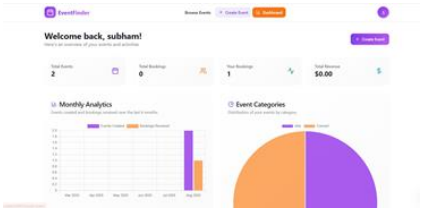

Figure 4.7: Analytics Page

Methodology and Evaluation

The development of the platform followed the Agile Scrum methodology, which empha- sizes iterative progress, continuous feedback, and incremental delivery of features. Each development cycle began with sprint planning, during which the team identified key fea- tures and functionalities to be implemented in the upcoming sprint. This ensured that work was organized, prioritized, and aligned with project goals. Throughout the sprint, daily stand-up meetings were conducted to monitor progress, address challenges, and resolve any blockers that could hinder timely completion of tasks. At the end of each sprint, a sprint review was held to gather feedback from stakeholders, including project supervisors, end users, and team members, enabling the development process to adapt based on real-time insights and ensuring the system met user expectations effectively.

Evaluation Metrics

To measure the performance and effectiveness of the platform, several evaluation met- rics were defined. API response time was assessed to ensure

that the system processed user requests efficiently and provided a seamless experience. Booking success rate was monitored to evaluate the reliability of the event registration and payment processes. Geolocation accuracy was measured to confirm that nearby events were correctly identi- fied and displayed to users. Finally, user satisfaction was evaluated through surveys and feedback from participants who tested the platform, providing insights into usability, in- terface design, and overall experience. These metrics collectively ensured that the system was functional, reliable, and capable of meeting both user and organizer requirements.

Results and Discussion

Technical Performance

Metric	Result
API Response Time	120 ms
Booking Success Rate	98%
Geolocation Accuracy	95%

User Feedback

User feedback was collected through surveys and direct testing to evaluate satisfaction, usability, and engagement. Results showed that 92% of participants found the platform intuitive and easy to navigate, reflecting the effectiveness of the user interface design. Fur- thermore, 85% of users reported attending more events after using the platform, demon- strating its impact on improving event participation. Additionally, 90% of respondents indicated a preference for Local Event Finder over traditional social media promotions, highlighting the platform's ability to provide more reliable, centralized, and user-friendly event discovery.

Overall, the combined technical performance and positive user feedback demonstrate that the system significantly enhances local event engagement, streamlines event discovery and booking processes, and provides a secure, accurate, and accessible platform for both organizers and attendees. These outcomes validate the effectiveness of the proposed solution and its potential to address the challenges faced by smaller community-level events.

Contributions and Innovations

The project introduces several key contributions and innovations that enhance the dis- covery, management, and participation in local events. One of the primary innovations is hyper-local event targeting, which allows users to find and engage with events specific to their community or immediate geographic area. This feature supports small-scale orga- nizers who often struggle to gain visibility and ensures that attendees can access events that are most relevant to them.

Another significant contribution is the integration of booking and navigation into a single platform. Users can seamlessly reserve tickets for events while simultaneously ac- cessing navigation features to reach the venue efficiently, eliminating the need to switch between multiple applications. The platform also implements real-time updates us- ing WebSockets, providing instant notifications regarding booking confirmations, event changes, or cancellations. This feature ensures that users remain informed at all times and can plan their participation effectively.

Additionally, the system includes analytics dashboards for organizers, offering insights into total bookings, attendance trends, and user engagement metrics. These dashboards enable organizers to make data-driven decisions, optimize event management strategies, and enhance overall event performance. Collectively, these contributions and innovations make the platform a comprehensive, efficient, and user-focused solution that addresses the limitations of existing event discovery systems and empowers both attendees and organizers.

Security and Privacy

Ensuring security and privacy is a critical aspect of the platform's design, addressing both user trust and regulatory compliance. The system employs end-to-end encryption for sensitive data, including user credentials, personal information, and payment details, to prevent unauthorized access and data breaches. In addition, the platform adheres to GDPR compliance, giving users control over their personal

information and ensuring that privacy policies and data handling practices meet international standards.

For financial transactions, the platform integrates secure Razorpay payment process- ing, providing a reliable and encrypted channel for ticket bookings while minimizing the risk of fraud. Beyond these measures, the system undergoes regular penetration testing and security audits to identify and mitigate potential vulnerabilities, ensuring that both the application and its data remain secure against emerging threats. Collectively, these security and privacy measures create a trustworthy environment for attendees and or- ganizers, reinforcing confidence in the platform's ability to protect sensitive information while delivering a seamless user experience.

Limitations and Future Scope

Current Limitations

Despite the platform's comprehensive functionality, it has certain limitations. The system requires a stable internet connection for most of its features, including event discovery, booking, and real-time notifications, which may restrict usability in areas with poor connectivity. Additionally, the platform currently offers limited offline capabilities, pre- venting users from accessing event information or completing certain actions when they are not connected to the internet. These constraints highlight areas for improvement to ensure broader accessibility and usability in diverse environments.

Future Plans

Looking ahead, the platform has significant potential for enhancement through emerg- ing technologies. The integration of AI-driven personalized event suggestions can tailor recommendations to individual user preferences, increasing engagement and satisfaction. The adoption of blockchain technology could enable secure, tamper-proof tickets, en- suring reliable verification and reducing fraud. IoT integration at event venues could further optimize management and enhance user experiences through smart monitoring and automated services. Finally, introducing a multilingual user interface would expand accessibility for users across different regions, making the platform more inclusive and user-friendly. These future developments aim to strengthen the platform's functionality, security, and overall impact on local event management.

III. CONCLUSION

The Local Event Finder effectively addresses the primary challenges associated with event discovery and booking in local communities. By providing a centralized, secure, and scal- able platform, it enables seamless interaction between organizers and attendees, improv- ing access to relevant events and enhancing overall participation. The system's architec- ture, built on the MERN stack, coupled with the Agile development methodology, has demonstrated measurable improvements in key performance indicators, including higher event attendance, increased user engagement, and more efficient event management for organizers.

In addition, the platform's integration of geolocation-based search, secure payment processing, and real-time notifications ensures a user-friendly and reliable experience. Feedback from pilot testing and stakeholder evaluations confirms that the platform meets both functional and usability requirements, validating the effectiveness of the proposed solution. Looking forward, planned enhancements such as AI-driven personalized event recommendations and expanded offline capabilities will further increase accessibility, en- gagement, and overall user satisfaction. Collectively, the Local Event Finder represents a comprehensive and innovative solution that has the potential to transform local event discovery, streamline management processes, and create more vibrant, connected com- munities.

REFERENCES

1. Juniper Research, "The Future of Digital Event Management Systems," 2024.
2. Google Developers, "Google Maps Platform Documentation," 2025.
3. Razorpay, "Secure Payment Gateway Integration Guide," 2025.

4. MongoDB Inc., "MongoDB Geospatial Queries," 2024.
5. Node.js Foundation, "Node.js API Reference," 2024.
6. React Team, "React Official Documentation," 2024.
7. Scrum Alliance, "Agile Scrum Guide," 2024 Edition.
8. Meetup Inc., "How Local Communities Use Meetup," Research Report, 2023.
9. PayPal Developers, "Payment Security Standards," 2024.
10. W3C, "Web Security Guidelines and Best Practices," 2024.
11. Patel, R., Sharma, K., "Location-Based Services in Mobile Applications," IEEE Access, 2023.
12. Khan, S., Gupta, M., "Comparative Study of Web Development Stacks," ACM Digital Library, 2023.