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Boosting Campus Life with Real-Time Event Updates and Rewards

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Abstract

This project aims to tackle the challenge of student engagement in campus activities by developing a comprehensive event management website that provides real- time updates and incentives participation. Many students miss out on important campus events due to lack of timely information, resulting in low participation and missed networking or learning opportunities. To address this, our platform offers an interactive and user-friendly interface where students can view upcoming events, set reminders, and receive instant notifications about newly announced activities. By incorporating a unique points-based incentive system, the platform encourages active participation and competition among students.

In this system, students earn virtual coins for attending events, volunteering, or engaging in campus initiatives, with event organizers assigning points based on role and contribution level. For instance, the event head may earn 15 points, while team members earn between 5-10 points depending on their specific involvement. Accumulated points can be redeemed for valuable rewards, including bonus academic credits, exclusive merchandise, gift vouchers, and even course subscriptions, adding a gamified experience that motivates students to participate more actively.

In addition to enhancing event awareness and engagement, the platform supports event organizers by providing tools to manage RSVPs, track attendance, and award points directly to participants. By promoting a sense of community and camaraderie, the platform aims to transform the campus culture, making it more cohesive and event-oriented. To ensure its continual improvement, future developments will include expanding the reward system, allowing for a wider variety of prizes, and integrating user feedback to refine features, increase usability, and enhance the overall user experience.Ultimately, this project envisions a connected campus environment where students stay informed, engaged, and rewarded for their participation, fostering a vibrant, inclusive, and supportive community.

Keywords: Event management, Campus engagement, Real-time updates, Points-based incentive system, Gamification, Student participation, Rewards system, Educational experience, Campus activities, Student community.

INTRODUCTION

In the modern educational environment, campus events play a vital role in fostering social interaction, professional growth, and a sense of community among students. However, many students miss out on valuable campus activities due to ineffective communication methods like paper-based notices and

inconsistent email updates. The absence of real-time information significantly impacts event attendance and campus engagement. Moreover, without incentives, students often lack motivation to participate in these events, further diminishing the vibrancy of campus life.

In an age where digital communication is the norm, there is an increasing need for a dedicated platform that provides real-time updates on campus events. Such a platform would ensure that students can easily access information about what's happening on campus, empowering them to make informed decisions about their participation in various activities. Moreover, participation in these events is crucial for building a sense of belonging and community among students. Unfortunately, many students lack the motivation to engage actively in campus activities due to the absence of tangible incentives that reward their involvement.

To address these challenges, this project proposes the development of an innovative web-based event management platform tailored specifically for the college environment. The proposed platform will not only offer real-time updates on campus events but also integrate a gamified, points-based incentive system designed to foster active student participation. Event organizers will have the ability to assign points based on participants' roles and contributions during events. For instance, the head of an event may receive 15 points, while team members could earn between 5 and 10 points, depending on their level of involvement. These accumulated points can then be redeemed for various tangible rewards, such as bonus marks, merchandise, or subscriptions, creating a more engaging and rewarding experience for students.

In addition to outlining the technical aspects of the platform, this paper will also include a literature review that highlights existing solutions and their limitations. By examining current approaches to campus event management and communication, the research will provide insight into the unique contributions of the proposed solution. Ultimately, this project aims to create a more interactive and engaging college experience by addressing the critical issues of communication and participation through innovative digital solutions. Through this initiative, we hope to empower students to take an active role in shaping their educational journey and fostering a rich campus culture.

LITERATURE SURVEY

This literature survey explores various studies on the development and implementation of social media platforms within educational institutions, focusing on their impact on student engagement, communication, and academic support.

Rizka Hadiwiyanti et al. [1] developed a web-based Campus Event Management Information System designed to enhance the management of various university activities, including seminars, workshops, and cultural festivals. The system aims to provide better managerial services for both internal and external users. In their research, the authors evaluated the system's usability using the System Usability Scale (SUS**)**, resulting in an average score of 70.80, classifying it as "OK/Fair." However, they identified significant usability issues, particularly in the Graphical User Interface (GUI), where many users experienced navigation difficulties. This highlights the need for further improvements in the user interface to enhance user satisfaction and engagement.

The findings from this study are pertinent to the development of **Event.io**, as both projects aim to improve event management within educational institutions. While the Campus Event Management Information System focuses on organizing events, Event.io introduces a gamified, points-based incentive system to encourage active student participation. This differentiation not only seeks to enhance user

engagement but also addresses the usability challenges highlighted in Hadiwiyanti et al.'s study, ensuring a more intuitive interface for users.

Guoqiong Liao et al. [2] proposed a two-phase group event recommendation (2PGER) model tailored for event-based social networks (EBSNs), focusing on the challenge of recommending unexperienced events to groups of users. Recognizing that users often participate in events with friends, classmates, or family, the model addresses the gaps in existing studies that overlook potential group interests in unfamiliar events.

The 2PGER model first constructs a global trust network among users by leveraging online social behaviors, event participation records, and the topological structures of EBSNs. It then employs random walks on the egotrust networks to predict users' preferences for unexperienced events. By utilizing a random walk with restarts (RWR) method, the model aggregates individual preferences and recommends the top N events to user groups.

The experimental results using real datasets from Meetup demonstrate that 2PGER significantly outperforms several baseline approaches, particularly in recommending unexperienced events. The study emphasizes the importance of simulating the consultation process among group members and considers external opinions from friends outside the group in the decision-making process. The findings suggest that understanding group dynamics and preferences is essential for effective event recommendations.

For future research, the authors highlight the need to explore how to integrate dynamic changes in user interests and group compositions over time, as well as to consider event constraints like participant limits and scheduling conflicts.

Aamrapali Wandhre et al. [3] created and launched a social media platform specifically designed for college campuses, aiming to improve communication and resource sharing among students, faculty, and other academic staff. This platform was developed to overcome the shortcomings of public social networking sites, which often fail to address the unique requirements of academic communities. The authors point out that conventional communication tools, such as WhatsApp, which are commonly utilized in colleges, provide limited functionality, highlighting the need for a more comprehensive solution.

The newly developed website offers a specialized environment for interactions related to campus life, allowing users to intertwine their academic, professional, and cultural experiences with their everyday activities. Built with modern web technologies like ReactJS, MongoDB, CSS, and Node.js, the platform encompasses a variety of features tailored to meet the specific demands of college users. These capabilities support multiple facets of college existence, including communication, collaboration, event management, and information sharing.

However, the platform has certain limitations, such as the lack of automatic enrollment through ERP integration and insufficient connectivity for alumni, which could have greatly improved its functionality and user engagement.

Kristen Tarantino and Jessica S. McDonough's review [4] examines the beneficial effects of student engagement with social media on learning outcomes, emphasizing its role in fostering collaboration, peer interaction, and information sharing. When social media platforms are integrated into educational environments, they can significantly boost student involvement and help establish a virtual learning community. This level of engagement not only strengthens students' connections with course material but also encourages critical thinking and personal development.

The review discusses various strategies that educators can employ to incorporate social media into their

teaching practices to achieve these positive outcomes. However, it falls short of providing specific guidelines or models for creating social media platforms that cater specifically to academic settings. This omission may hinder the practical implementation of the findings, as educators may require clearer examples or frameworks to effectively use social media in their teaching approaches. Furthermore, the review would have been enhanced by a more in-depth analysis of how different features of social media could be optimized for educational purposes.

Pranjul Singh et al. [5] developed a web-based platform aimed at enhancing the educational experience for both students and faculty. This application consolidates multiple academic functionalities, such as note sharing, attendance monitoring, and performance assessments. Its primary goal is to tackle the difficulties students encounter in accessing and managing educational materials. For instance, it simplifies the process for freshmen to obtain books and notes while providing a marketplace for seniors to sell their academic resources.

Additionally, faculty members benefit from tools that enable them to track student attendance, assess academic performance, and provide behavioral feedback. The platform also features a doubt-solving section, allowing students to post inquiries related to their interests and receive answers from fellow students, thus promoting collaborative learning.

However, one notable limitation of this application is its lack of exploration into integration with other institutional systems, which could enhance its functionality within the broader educational framework. This absence of integration may hinder the application's capacity to fully utilize existing resources and processes.

Qusay Al-Maatouk et al. [6] investigate the application of the Task-Technology Fit (TTF) and Technology Acceptance Model (TAM) frameworks to enhance the adoption of social media for academic purposes. The study aims to address inconsistencies in the literature regarding the impact of social media on students' academic performance by employing these models to assess and optimize social media utilization in higher education.

Data was collected through a questionnaire survey involving 162 students who were experienced with social media, and quantitative structural equation modeling was used for analysis. The research asserts that the application of TTF to social media for learning positively influences technology, task, and social characteristics, subsequently improving students' satisfaction and academic performance. Additionally, the study suggests that the intention to use social media enhances comprehension efficiency, ease of use, and enjoyment, further contributing to improved student satisfaction and academic outcomes.

The results indicate significant relationships among these factors, demonstrating that TTF and the behavioral intentions to use social media can cultivate a more engaging learning experience and facilitate better knowledge sharing and discussion among students.

Manisha N. Amnerkar et al. [7] introduce a social networking website specifically designed for college campuses, aimed at enhancing communication and interaction among students. This platform facilitates connections with new friends while helping users maintain existing relationships through functionalities reminiscent of popular social media sites like Facebook and Twitter. The project is built using a stack of technologies, including HTML, JavaScript, CSS, AJAX, PHP, and MySQL, and offers features such as online status visibility, friend search options, and profile viewing capabilities.

While the platform effectively promotes social interaction within a college environment, its design closely mirrors that of existing social media platforms, which may limit its uniqueness and

customization. The similarity to established sites like Facebook could hinder the platform's ability to provide distinct features or fully address the specific needs of the college community.

Kaustubh Jagasia et al. [8] investigate the creation of a social networking website aimed at providing a personalized and interactive experience for students, faculty, and industry professionals. The paper underscores the advantages of having a dedicated platform for educational purposes, enabling users to connect with industry experts, gain insights into the practical applications of technologies taught in college, and stay informed about current industry trends and projects. This platform aspires to enhance communication within the college community and facilitate connections between students and industry professionals.

The project delineates features that differentiate this social networking site from traditional social media platforms by focusing specifically on educational and professional networking. However, while it successfully promotes social interaction and industry engagement, it may not comprehensively address all academic needs, as its primary emphasis lies on fostering connections rather than providing extensive academic support.

Kaustubh Jagasia et al. [9] explore the development of a social networking website tailored to create a personalized and interactive experience for students, faculty, and industry professionals. This platform is designed to serve educational purposes by facilitating engagement with industry experts, allowing users to learn about practical applications of college- taught technologies, and keeping them informed about current industry trends and projects. By enhancing communication within the college community, the platform aims to build meaningful connections between students and industry professionals.

This project distinguishes itself from traditional social media platforms by specifically targeting educational and professional networking. However, while it effectively promotes social interaction and industry engagement, it may not adequately address the broader academic needs of its users. Its primary focus on fostering connections might overlook essential elements of comprehensive academic support that students and faculty require.

PROPOSED SOLUTION

To address the challenges of event awareness and participation among students, we propose the development of a dedicated web-based event management platform tailored specifically for college campuses. This platform will serve as a comprehensive solution that combines real-time event updates with a gamified points-based incentive system, fostering a vibrant and connected campus community.

Objectives

Enhance Communication: Create effective channels for students, faculty, and professionals to communicate seamlessly.

Foster Collaboration: Provide tools for students to collaborate on projects and share insights, enhancing the learning experience.

Facilitate Resource Sharing: Enable easy access to educational resources, making it easier for students to find and share study materials.

Build a Community: Cultivate a sense of belonging and engagement among students, faculty, and event manager or event planner.

Platform Features:

Real-Time Event Updates:

The platform will provide an intuitive interface for event organizers to create and manage events easily.

Students will receive real-time notifications about upcoming events, changes, and important announcements through mobile notifications and email alerts, ensuring they are always informed.

User-Friendly Dashboard:

The platform will feature a user-friendly dashboard for both students and event organizers. Students can view a calendar of events, filter by category (academic, cultural, sports), and RSVP with a single click. Organizers will have access to analytics on attendance and engagement levels to enhance future events.

Gamified Points-Based Incentive System:

A unique points-based system will be implemented, rewarding students for participating in events. Points will be assigned based on their roles:

- **Event Head:** 15 points
- **Team Members:** 5-10 points based on involvement
- **Attendees:** Points for attending events, with extra points for participating
- **Rewards and Redemption:**

Students can redeem accumulated points for various rewards, such as:

- Bonus marks or extra credit from faculty
- Merchandise (e.g., college apparel, gift cards)
- Subscriptions to educational resources (e.g., online courses, e-books)

Feedback Mechanism:

The platform will include a feedback feature where students can share their thoughts on events and suggest improvements, allowing for continuous enhancement based on user experience.

Notifications: Real-time notifications will keep users informed about messages, friend requests, and important updates. Notifications will be customizable, allowing users to choose which events trigger alerts.

- **Technical Implementation**:

The technical implementation of the proposed event management platform involves several key components, including the choice of technologies, architecture design, and security measures. Below is a detailed breakdown of each aspect:

Frontend Development:

Framework: React.js will be used to create a dynamic and responsive user interface. Its component-based architecture allows for reusable UI components, enhancing development efficiency and maintainability.

State Management: Redux or Context API will be implemented for managing the application state, ensuring a smooth data flow between components.

Styling: CSS frameworks like Bootstrap or Tailwind CSS will be utilized to enhance the visual appeal and responsiveness of the platform across different devices.

Backend Development:

Server Environment: Node.js will serve as the backend framework, enabling asynchronous event-driven programming that is ideal for handling multiple connections simultaneously.

Web Framework: Express.js will be used to set up the server and manage routing, middleware, and requests, providing a robust foundation for building RESTful APIs.

Database Management:

Database: MongoDB will be the chosen database management system, providing a flexible NoSQL solution that allows for easy data storage and retrieval. The document-based model is well-suited for the

event management platform's dynamic data needs.

ORM/ODM: Mongoose will be used as an Object Data Modeling (ODM) library for MongoDB, simplifying data validation, schema design, and querying.

Real-Time Updates:

WebSockets: The platform will utilize **Socket.IO** for real-time communication between the server and clients. This enables instant updates about events, registrations, and notifications, enhancing user experience.

- **Architecture Design**

Client-Server Architecture:

The platform will follow a client-server architecture where the frontend (client) interacts with the backend (server) through APIs. The frontend will handle user interactions, while the backend will manage business logic and data storage.

Microservices Approach:

The backend can be structured using a microservices architecture, where different services handle specific functionalities (e.g., user management, event management, reward system). This approach promotes scalability and maintainability.

API Endpoints:

A set of RESTful API endpoints will be developed to facilitate communication between the client and server, such as:

User Authentication and Security

Authentication Mechanism:

JSON Web Tokens (JWT) will be implemented for user authentication, allowing for secure user sessions. Upon logging in, users receive a token that is sent with subsequent requests to verify their identity.

Password Hashing:

User passwords will be hashed using bcrypt before being stored in the database, ensuring that sensitive information is not exposed even if the database is compromised.

Input Validation:

Input validation will be performed on both the frontend and backend to prevent malicious input and protect against common vulnerabilities like SQL injection and cross-site scripting (XSS).

Secure Communication:

The platform will implement HTTPS to secure data transmitted between the client and server, ensuring confidentiality and integrity.

Proposed Modeling

The system architecture in Figure 3.1 illustrates the proposed model for a campus event management website, designed to address the challenges of real-time event updates and student engagement. This project leverages a modern web technology stack, combining ReactJS for an interactive front-end, Node.js for a robust backend, and MongoDB for efficient data storage and retrieval. The platform's design emphasizes scalability, ease of use, and performance to ensure seamless access to event information and an engaging user experience.

In alignment with contemporary web application practices, this project incorporates a MERN stack (MongoDB, Express, ReactJS, and Node.js) to streamline development, facilitate deployment, and

enhance responsiveness. Drawing from best practices in full-stack development, the system leverages MongoDB's flexible schema to handle a wide variety of event- related data, such as event details, reminders, and user activity logs.

Key implementation details include:

Frontend (ReactJS): The user interface is built with ReactJS, providing a dynamic and responsive experience. React components enable users to view upcoming events, set reminders, and track participation. By integrating a points-based incentive system, the front end also displays students' accumulated points and allows them to redeem rewards for their engagement in campus activities.

Backend (Node.js and Express): The server-side functionality is managed with Node.js and Express, which handle API requests, user authentication, and interaction with the database. The backend supports secure, efficient data transactions, ensuring that event details, user interactions, and points data are accurately recorded and updated in real-time.

Database (MongoDB): MongoDB stores all event data, user information, participation records, and points. Its schema-less nature allows for easy modifications as new features or event categories are added, supporting the system's scalability and adaptability to changing campus needs.

Cloud Hosting and Deployment: The platform is hosted on a cloud-based infrastructure to ensure high availability and reliability. By deploying the backend on a cloud provider (e.g., Amazon EC2), the system can handle large user volumes, maintaining performance and responsiveness even during peak activity.

Gamification and Incentive System: To encourage student engagement, the system includes a points-based reward mechanism. Event organizers can assign points based on participation level, with points redeemable for various rewards. This gamification aspect motivates students to take an active role in campus life, transforming the campus culture to be more event-oriented and cohesive.

In addition to addressing real-time event management and student engagement, future developments may include expanding the reward system and integrating analytics to track engagement trends, allowing the platform to continually evolve based on user feedback and usage patterns. By employing these advanced web technologies, the proposed system offers a scalable, efficient, and interactive solution to enhance the campus event experience.

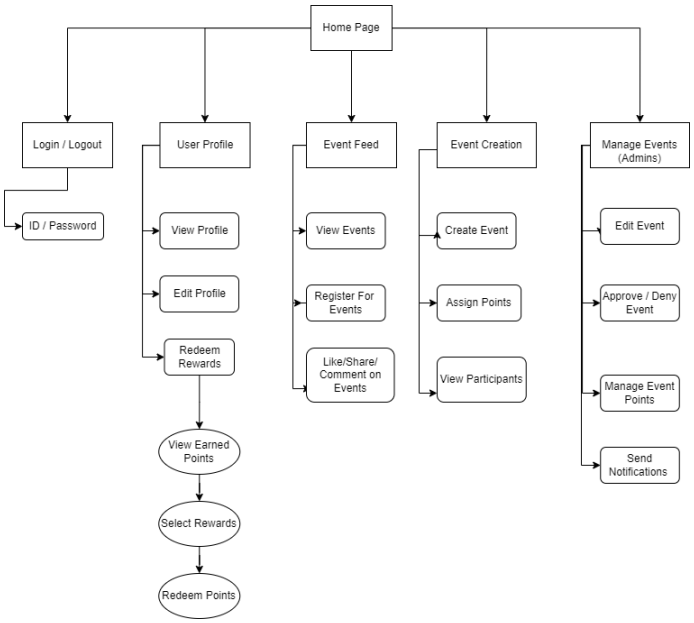

fig no.1: Architecture Diagram

Result and Discussion

This section presents the results achieved by our campus event management platform, focusing on usability, user engagement, and system performance.

Platform Usability: Initial testing shows that the platform's user-friendly design, powered by ReactJS, significantly enhances students' ability to access event information, set reminders, and monitor engagement easily. Feedback from early users indicates a positive response to the platform's intuitive interface and seamless navigation, with students reporting greater awareness and interest in upcoming events.

User Engagement and Incentive Effectiveness: The points- based incentive system has been successful in motivating students to participate in campus activities. Preliminary data suggests a notable increase in event attendance and student interaction, particularly among users who actively track and redeem points for rewards. This aligns with existing studies that show gamified incentives effectively enhance engagement in educational settings.

System Performance: Hosted on a cloud infrastructure, the platform demonstrates reliable performance under various load conditions, ensuring consistent real-time updates and minimal downtime during peak usage. The use of MongoDB for data handling has proven effective in managing dynamic event data, with rapid response times for both event organizers and participants.

In summary, the platform successfully addresses the need for improved event communication and engagement on campus, with results indicating positive trends in student participation and satisfaction. Future enhancements, such as additional reward options and engagement analytics, could further optimize the user experience and reinforce campus community building.

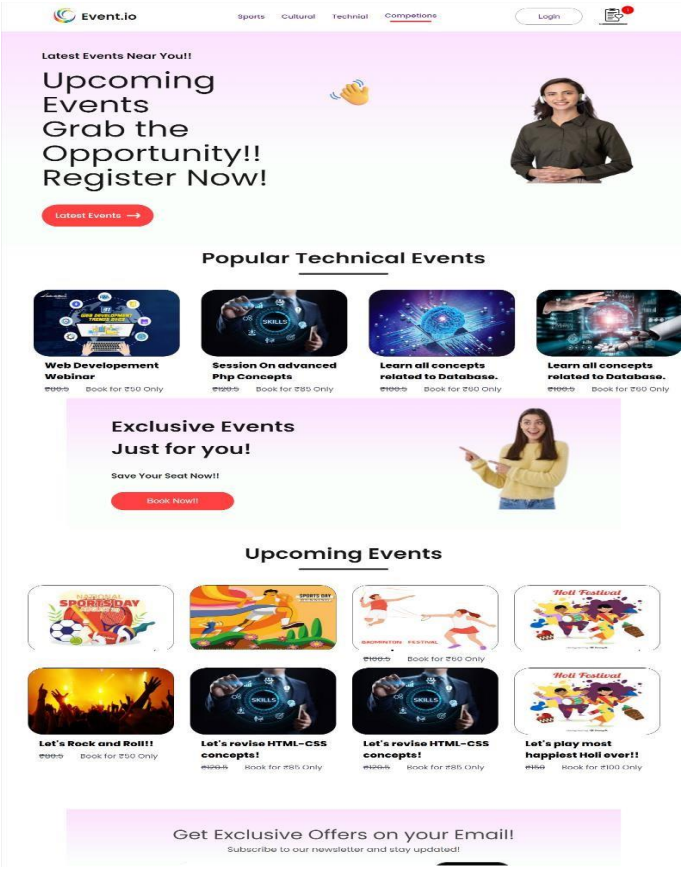

Fig no 2: Home Page

DISCUSSION

Addressing Communication Gaps

The platform serves as a centralized hub for real-time updates on campus events, overcoming the limitations of traditional communication methods like paper flyers and emails. This ensures that students have immediate access to information, encouraging greater awareness and participation in campus activities.

Fostering Student Engagement through Gamification

By implementing a points-based incentive system, the platform gamifies event participation. Students earn points based on their involvement, which can be redeemed for rewards. This approach motivates students to engage actively in events and creates a culture of recognition and achievement, thereby enhancing overall engagement.

Building a Sense of Community

The platform fosters social interaction and collaboration among students, faculty, and industry professionals, contributing to a sense of belonging and community. This is crucial for personal growth and academic success, as it allows students to connect with diverse perspectives and experiences.

Feedback and Continuous Improvement

Collecting user feedback through surveys and suggestion features will enable the platform to evolve based on user needs. Future updates can expand the rewards system, ensuring it remains relevant and appealing to students, thereby enhancing user experience and satisfaction.

Challenges and Considerations

Potential challenges include resistance to adoption, technical issues, and ensuring data privacy and security. Addressing these challenges through effective marketing, user-friendly design, and compliance with data protection regulations will be crucial for successful implementation.

Future Research Directions

Future research can focus on assessing the platform's impact on student participation and academic performance, scalability to larger institutions, and integration with existing campus systems. This research will help optimize the platform's functionality and user engagement in the long term.

Technical Challenges

Providing real-time updates on events requires efficient data handling and notification systems to ensure timely communication without lag.

CONCLUSION

The proposed event management platform aims to revolutionize campus engagement by addressing the critical issues of communication and participation in college activities. By providing real-time updates on events and integrating a gamified points-based incentive system, the platform not only enhances awareness but also motivates students to actively participate in campus life. The unique rewards system encourages students to engage more deeply with events, fostering a sense of community and belonging.

This project highlights the importance of leveraging technology to improve the educational experience, recognizing that effective communication is paramount in today’s digital age. By offering a dedicated platform tailored to the specific needs of students, faculty, and event organizers, we can bridge the gap between event availability and student participation.

Ultimately, this initiative seeks to empower students to take ownership of their campus experience, encouraging a vibrant, engaged community where individuals can thrive academically, socially, and professionally. By transforming how students connect with events and each other, we are laying the groundwork for a more dynamic and connected educational environment.

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