

## A DIGITAL ECOSYSTEM FOR SEAMLESS EVENT MANAGEMENT MODEL

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### ABSTRACT

A variety of events occurs within the institution, requiring the management and collection of information regarding these events. Manually coordinating all teams and activities can be an arduous endeavor. Historically, all information on technical and non-technical activities was disseminated to students using bulletin boards. Certain students may not obtain information and consequently miss activities. Coordinators may have challenges in conveying information and managing reports. The primary objective is to minimize paper consumption, automate the management and publication of events, and get notifications on arranged events. The contentious application pertains to event management techniques that facilitate the creation and organization of diverse opportunities. The primary goal of this project is to use a fully functional computer program to create a website in order to automate the University's event management system. The website is dependable, safe, and has a lot of storage space. The information that has been kept is readily available, manipulable, and accessible. In this project, Hutham, Kerx, Richter, Tepeskripter, Graffker, and Grapps are among the techniques used. To make a report, for instance, you must search the many registers where the file is missing in order to locate information. Entering and retrieving records takes up unnecessary time. The difficulty of identifying mistakes when entering records is another issue. It is challenging to update a record once it has been entered. This is because a great deal of information needs to be kept up to date. Consequently, a number of partial automation characteristics are provided by the suggested system.

**Keywords:** College multiple event, Event Management System (EMS), Centralized Event Information Management (CEIM).

### I. INTRODUCTION

The website was created to minimize manual labor, allowing event organizers and coordinators to concentrate on the event instead of maintaining records. The system is engineered to facilitate user interaction regarding events occurring within the institution and beyond. The initiative was designed to minimize errors in data entering. An error message is displayed upon the entry of invalid data. Users require no formal expertise to operate this system. The primary aim of this project is to oversee each incidence by offering a web interface for administrators, coordinators, and students. The administrator permits the coordinator to execute the event and submit supplementary materials and information regarding the event. It also specifies registration limitations based on the branch. Our website enables students to pay for and register for activities of interest, with this data consistently recorded in a database. Certificates of participation are also accessible in an online format. Event advertisements will be displayed on your homepage. The system can be automated using electronic equipment and sophisticated software, enabling it to store vital data and information for extended periods, with easy access and manipulation of the data. This study elucidates the management strategies for enhanced performance and improved user service [1][2].

The research focuses on the difficulties and inefficiencies linked to the utilization of conventional manual techniques for incident management. Dependence on message boards for information dissemination frequently results in communication gaps, causing some students to overlook critical updates and opportunities. Coordinators encounter considerable difficulties in processing registrations, organizing event-related information, and ensuring prompt communication. The excessive reliance on paper, coupled with insufficient automation, renders the

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process laborious, prone to errors, and unsustainable. The project seeks to resolve these challenges by creating an automated, secure, and scalable digital platform designed to enhance incident management, facilitate communication, minimize environmental impact, and establish an efficient system for record storage and access. The proposed system seeks to convert event organization into a streamlined and eco-friendly procedure that advantages both students and organizers by using a wholly digital methodology [3].

The existing model aims to automate the university's event management system through the development of a website and a fully functional computer program. The website is dependable, safe, and has a lot of storage space. The information that has been kept is readily available, manipulable, and accessible. This project uses HTML, CSS, JSP, Java, Servlets, MySQL, and Tomcat as approaches [4]. Another model produced the "Simple Touch" mobile application, a universal tool for implementing student clubs and event management adjustments. Finding the most efficient method to cut down on paper, automating the process of organizing and publishing events, and receiving notifications when events are planned are the major objectives. Regarding whether the concerns it brings up are applicable, the contentious application is made for event management concepts that aid in the creation and planning of a variety of opportunities. About the Simple Touch App for Mobile Diverse clubs and communities have ingrained and flexible needs, which guarantees the future of event management [5].

The suggested approach is a completely automated digital platform made to efficiently and successfully handle college events. A website created with contemporary technologies like HTML, CSS, React, TypeScript, GraphQL, and GraphCMS is intended to replace conventional manual methods. The platform will include extensive event management features, such as online registration, automated alerts, secure record maintenance, and the distribution of event material. In addition to helping coordinators expedite activities like data entry, mistake detection, and report preparation, it will make it simple for students to access event details and register online. The system will facilitate rapid

updates and retrieval of event-related data while guaranteeing data security, scalability, and user-friendliness. Additionally, the concept promotes sustainability and greatly saves time and effort for organizers and students by automating procedures and reducing the amount of paper used.

This research's primary contribution is the creation of an automated, scalable, and intuitive university event management system that overcomes the drawbacks of conventional manual event administration.

- ❖ Provides an entirely digital system to manage and organize events in place of conventional manual operations.
- ❖ To guarantee scalability, security, and performance, it was constructed with contemporary technologies like HTML, CSS, React, TypeScript, GraphQL, and GraphCMS.
- ❖ Ensures that coordinators and students have simple access to a single platform for managing and displaying technical and non-technical event details.
- ❖ Reduces data input errors by enabling students to register for activities online, doing away with the need for paper forms.
- ❖ Data pertaining to events is kept in a safe, centralized database that facilitates changes, error detection, and simple retrieval.

The remaining structure of the work is arranged as follows: The literature survey is detailed in Section 2. Section 3 elucidates the functionality of the suggested paradigm. The results and discussion are detailed in Section 4. Concluded with a summary and prospective endeavors.

## II. LITERATURE SURVEY

Xie et al. (2024) introduced a collaborative management model for collegiate sports events utilizing the SFIC framework, emphasizing critical elements such as leadership, institutional design, and synergistic processes. Factor analysis and regression indicate a robust association between these variables and management efficacy. The model relies on data from a singular institution (M School),

constraining its generalizability. Further investigation is necessary to address practical implementation problems and to assess broader applicability across various schools [6].

S. Dhanasekaran et al. (2024) implements the Harmony Search Algorithm to systematically coordinate collegiate events, encompassing festivals, workshops, and sports activities. It substitutes physical documentation with a digital application, optimizing data acquisition, event organization, registration, and attendance tracking. The centralized system enhances communication, automates notifications, and provides secure online ticketing and payment options. It also collects comments to evaluate event efficacy and pinpoint areas for enhancement. The system's dependence on internet connectivity and digital interfaces may restrict accessibility for persons lacking stable internet access or technological proficiency. Moreover, the system's complexity may necessitate extensive training for users to effectively leverage its functionalities [7].

Chowdary Medha et al. (2024) produced an intuitive event management platform aimed at streamlining the planning, organization, and supervision of events. It links event organizers, participants, and vendors, providing tools for the creation of customized event pages, management of registrations, and facilitation of ticket sales. Automating processes diminishes the necessity for manual records and enhances communication, enabling universities to handle event preparation effectively. The platform may have difficulties in maintaining compatibility across many devices and browsers. Moreover, individuals lacking digital literacy or dependable internet access may face challenges in fully leveraging the system's functionalities [8].

Siddharth Geeranavar et al. (2024) developed a "Simple Touch" Mobile Application aims to automate event management for college student clubs, reducing paper usage and streamlining event publicity. It allows organizers to manage and generate events, while users receive alerts as events are organized. The app is designed to be adaptable, catering to the specific needs of different clubs and communities. The app's adaptability may require frequent updates and customization to meet the evolving needs of

various clubs. Additionally, users with limited access to smartphones or internet connectivity may face challenges in fully utilizing the application [9].

Siddharth Geeranavar et al. (2024) created the "Simple Touch" Mobile Application to automate event management for college student organizations, minimizing paper use and enhancing event promotion. It enables organizers to manage and create events, while users receive notifications as events are scheduled. The application is engineered for adaptability, addressing the distinct requirements of various groups and communities. The app's flexibility may necessitate regular upgrades and modifications to accommodate the changing requirements of different clubs. Moreover, individuals with restricted access to cellphones or internet connectivity may encounter difficulties in fully leveraging the program [9].

Nur Irisya Anis Mohd Akin et al. (2024) designed a smartphone application to automate the sign-in procedure and event data management, substituting manual attendance monitoring with a secure digital approach. Participants may register, log in, evaluate events, and see their event history. The system guarantees user security using OTP-based authentication, while event organizers are able to administer event data. The application resolves problems related to prolonged lines, data disorganization, and the ineffectiveness of manually categorizing physical documents. The system's dependence on internet connectivity and mobile devices may restrict accessibility for certain users. Furthermore, the application may necessitate ongoing updates and maintenance to guarantee seamless functionality and security [11].

Lu Gao et al. (2020) introduced a college student management platform, an event-driven, service-oriented system aimed at enhancing information dissemination and management efficacy among diverse departments. This platform mitigates communication inefficiencies and enhances management staff productivity through the utilization of digital services and network development. It seeks to transition from control-oriented to service-oriented management, moving from material-centric to human-centered management, so improving the overall quality of student management. The platform's implementation may encounter difficulties in integrating with current systems and

assuring interoperability with diverse communication tools. Moreover, it necessitates ongoing updates and user training to properly harness its potential and attain widespread use [12].

Prachi Dahiyan et al. (2020) evaluated the impact of college-level event management on the development of critical professional and managerial competencies in students. This research analyzes the MAVEN event at Sir Parashurambhau College, Pune, to assess the advantages of college-level events in promoting students' career development. The emphasis is on comprehending how the organization and participation in these activities enhance students' professional skill development and offer exposure to the external environment. The research is confined to a singular event (MAVEN) at one college, perhaps constraining the generalizability of the results to other universities. Furthermore, the research may not comprehensively consider the varied skill sets gained through different event types [13].

### III. PROPOSED METHODOLOGY

The suggested EMS model aims to automate and optimize the comprehensive process of event organization and management within a collegiate environment. The model is constructed with contemporary online technologies, providing an intuitive and effective platform for students and coordinators alike. The primary aim is to substitute manual event management procedures with a completely automated, scalable, and environmentally sustainable digital system. Block diagram of the proposed model is explained in figure 1.

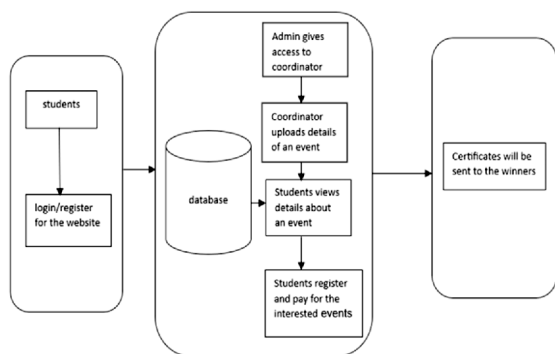


Figure 1. Block diagram of proposed model

#### A. Web-Based Platform

The suggested EMS's web-based platform is constructed utilizing contemporary web technologies, such as HTML, CSS, React, TypeScript, GraphQL, and GraphCMS. This guarantees a dynamic, responsive, and safe environment for both students and coordinators. React's component-based architecture facilitates fluid user interactions and an uninterrupted browsing experience. TypeScript introduces type safety, so augmenting the development process by minimizing errors and promoting maintainability. GraphQL facilitates effective data retrieval, enabling users to query precisely what they require without excessive data retrieving, hence enhancing platform speed and resource efficiency. GraphCMS facilitates content management, allowing organizers to efficiently update and oversee event information in real-time. The platform is engineered for accessibility from any internet-enabled device, rendering it a versatile and scalable solution for coordinating campus events [14].

#### B. Techniques used in proposed model

The proposed EMS utilizes a range of sophisticated technologies to establish an efficient, secure, and scalable platform. HTML establishes the website's structure by delineating its layout and components, while CSS guarantees an aesthetically pleasing and responsive design that adjusts to various screen dimensions. React, through its component-oriented architecture, facilitates a dynamic and interactive user interface, ensuring a seamless experience across devices. TypeScript improves the maintainability and stability of the codebase by implementing static typing, which diminishes the probability of errors. GraphQL facilitates efficient data retrieval, allowing clients to obtain only the necessary data, hence enhancing efficiency and minimizing over-fetching. GraphCMS interacts effortlessly with GraphQL to manage dynamic content, including event descriptions and participant information, enabling coordinators to edit event data in real time. Automated notifications with email, SMS, and push alerts facilitate prompt communication regarding event updates, registrations, and reminders, thereby keeping both students and organizers informed [15].



A secure Database Management System (DMS) manages all data storage and retrieval, guaranteeing rapid access to event and participant information. Security measures such as HTTPS, user authentication, and data encryption safeguard critical information, guaranteeing the platform's safety for utilization. The platform's adaptive architecture guarantees accessibility across many devices, improving user experience on computers, tablets, and smartphones. The system's modular and scalable architecture facilitates straightforward growth and adaption in response to the evolving requirements of the college and the event management system. These technologies jointly render the system resilient, dependable, and user-centric..

### **C. Centralized Event Information Management**

Centralized Event Information Management (CEIM) consolidates all event-related data into a one platform, facilitating seamless access and administration. This method integrates event schedules, registrations, participant information, and changes into a single centralized database within the EMS. It eradicates manual procedures, hence diminishing errors and miscommunication. Coordinators may efficiently modify event particulars, disseminate announcements, and monitor registrations, whereas students can obtain real-time information and receive alerts. This technology augments productivity, fosters collaboration, and streamlines reporting, rendering event administration more streamlined and transparent [16].

### **D. Notification and Alert System**

The Event Notification and Alert System of the EMS facilitates prompt communication between event organizers and participants. It autonomously transmits notifications on event updates, registration confirmations, deadlines, and reminders through email, SMS, and push notifications. This technology informs students and coordinators of significant changes in real time, ensuring that essential information is not overlooked. The automation of the notification process minimizes the likelihood of miscommunication and facilitates seamless event participation. The notifications are customisable, enabling event organizers to dispatch targeted alerts to specified groups, such as registered participants or event coordinators, thereby boosting participation and organization.

### **E. Efficient Record and Data Management**

The efficient management of records and data within the EMS emphasizes the systematic organization and storage of event-related information for optimal accessibility. All participant information, event timetables, registrations, and modifications are securely maintained in a single database. The system facilitates efficient retrieval, modification, and deletion of records, hence decreasing the time allocated to human data entry and mitigating errors. Automated data backups guarantee information preservation, while comprehensive search and filtering functionalities facilitate rapid access to specific event or participant information. This effective data management improves overall productivity, streamlines reporting, and guarantees data integrity, rendering the system dependable and user-friendly [17].

### **F. Report Generation**

The EMS automates the generation of comprehensive information concerning event participation, registrations, attendance, and overall event performance. Coordinators can provide reports either on request or at predetermined intervals, providing a thorough summary of event data. These reports may encompass data including participant count, event results, feedback, and other pertinent facts. The solution streamlines the reporting process by removing manual data gathering and offers tailored reports that can be produced in several formats (e.g., PDF, Excel). This tool augments decision-making, refines event analysis, and enables planners to assess event success effortlessly [18].

The innovation of the suggested concept resides in the automation of the complete event management process, including contemporary technologies into a web-based platform. It consolidates event information, optimizes registrations, and delivers real-time notifications and alerts. The utilization of GraphQL and GraphCM guarantees effective data management, whereas React and TypeScript improve performance and scalability. The technology eradicates paper-based procedures, diminishes errors, and streamlines report generation, providing significant insights into event attendance. The methodology provides a sustainable, scalable, and efficient alternative for college event management [19][20].

### III. RESULT AND DISCUSSION

The EMS enhanced event administration through the automation of registration, notifications, and event monitoring. Coordinators deemed it more efficient, as it eliminated manual processes and minimized errors. Centralized data facilitated easy access to event specifics, while real-time notifications kept participants informed. The technology optimized data handling, enabling coordinators to produce reports swiftly. Some users originally encountered difficulties with the web-based platform, and the system may necessitate additional optimization to accommodate significant traffic during peak registration periods. Figure 2 describes the home page of developed model. Figure 3 displays the interface of the event management application.

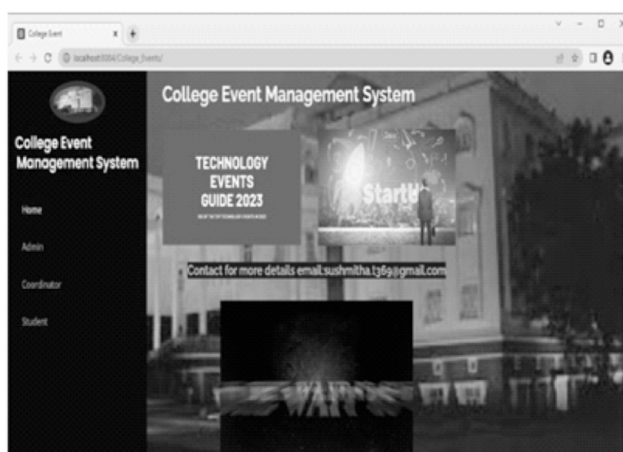


Figure 2. Home page of proposed model



Figure 3. Event details interface

### IV. CONCLUSION

The suggested system can manage all conducted events and provide details on both technical and non-technical activities for student registration. The user may modify or alter his information at any time. Current users can log in using the site, while new users may register using their email address, roll number, branch, and year. This initiative facilitates the seamless organization of events online. To ensure that all students receive information about the activities and can register via the website properly. It minimizes manual labor for coordinators and facilitates the creation of college activities using this website. We delineated the system's need specifications and the activities applicable to these elements. We comprehended the problem area and developed a model of the system that delineates the operations executable within it. We provided a comprehensive account of features and functions, encompassing screen layouts. We addressed user interface and security concerns associated with the system. The system has been implemented and tested in accordance with the test cases. Future endeavors will concentrate on augmenting system performance to accommodate elevated traffic during peak times and incorporating additional customization choices to enhance user experience and flexibility. Moreover, incorporating advanced analytics for assessing event performance could enhance the platform's optimization.

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