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AI-Powered Event Aggregator System for Intelligent Event Recommendation

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Abstract: *The AI-Based Event Aggregator System is a web application designed to simplify and organize college event activities. It provides a single digital platform where students and staff can easily access and manage all event-related tasks. The system is developed using technologies such as Angular and .NET, along with a secure database to store and handle information safely.*

Students can explore upcoming events, register online, mark their attendance, submit feedback, and download certificates after participation. On the other hand, staff members can create new events, manage event details, and monitor student participation effectively. The system also includes an intelligent recommendation feature that suggests suitable events to students based on their interests and previous activities.

This platform reduces the need for manual work, improves communication between students and staff, and ensures that important event information is always available. It helps students stay updated and encourages higher participation. Overall, the system provides a simple, efficient, and user-friendly solution that enhances event management and student engagement in colleges..

Keywords: *AI-Based Event Aggregator System*

I. INTRODUCTION

College events play a very important role in student life as they help students develop skills, gain knowledge, and participate in various activities. However, managing and taking part in these events is not always easy. In many colleges, there is no single platform to manage all event- related information. Students usually rely on notice boards, messages, or multiple sources, which can lead to confusion and sometimes cause them to miss important events.

Even when students are interested, it can be difficult for them to find suitable events at the right time. Staff members also face challenges in handling event registrations, tracking attendance, and collecting feedback. Most of these activities are done manually, which makes the process slow and less efficient. As a result, communication gaps and delays often occur during event management.

A digital platform can help overcome these problems by bringing all event-related activities into one place. It makes the system more organized, simple, and easy to use. With the help of modern web technologies, event management can be handled more effectively through an online system. An AI- based application allows students to explore events, register easily, and stay updated with the latest information anytime.

II. RELATED WORK

Many colleges and educational institutions use different systems to manage events and student participation. Some of these platforms offer basic features such as creating events, registering participants, and maintaining records. These systems help store event information in a centralized manner and allow administrators to manage activities more easily. However, most of these solutions are web-based and do not provide advanced features like personalized suggestions or real-time updates for students.

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Several research works have introduced event management systems developed using technologies such as PHP, ASP.NET, and MySQL. These systems mainly focus on managing event details, user registration, and administrative tasks. While they improve data organization, they still rely heavily on manual processes and do not support intelligent decision-making. Students often have to search for events on their own, which can reduce their interest and overall participation.

With the growth of technology, modern systems are becoming smarter and more user-friendly. Some applications now include features like online registration, attendance tracking, and feedback collection. These improvements make event management easier, but they still lack personalization and automation. Without a proper recommendation system, students may not discover events that match their interests.

Recently, Artificial Intelligence has been used in some systems to enhance user experience.

II. LITERATURE REVIEW V. PROPOSED SYSTEM OVERVIEW

1. AI-Based College Event Management System

Authors: A. Sharma, P. Gupta, R. Singh, K. Verma, S. Patil

Explanation:

A web-based system for managing college events efficiently. It allows staff to create events and students to register online.

Additional Issues: Needs improved real-time notifications and advanced recommendation accuracy for better user experience.

2. Smart Event Recommendation Application

Authors: M. Joshi, N. Kulkarni, S. Desai, R. Pawar, A. Patil

Explanation:

Application that recommends events to users based on their interests and previous participation. Students receive personalized suggestions and real-time updates. Secure data storage ensures smooth event access and improved participation.

Additional Issues: Integration with full event management features like attendance and feedback needs improvement.

3. Online Event Registration and Tracking System

Authors: P. R. Mehta, D. Shah, V. Jain, L. Kumar, S. Bhad

Explanation:

A digital platform connecting students and staff for event registration and tracking. Simplifies event handling and ensures easy access to event details and participation records. Additional Issues: Requires automation features and AI-based decision support for better event recommendations and management.

4. QR-Based Event Attendance and Feedback System

Authors: S. Patil, V. Deshmukh, A. Kulkarni, M. Devika, R. Baraniga

Explanation:

System that uses QR codes for attendance and allows students to give feedback after events. Provides fast and accurate tracking of participation and helps improve event quality.

Additional Issues: Requires smart suggestions and live updates.

III. PROBLEM STATEMENT

Organ donation is a life-saving process, but the lack of a cen- tralized and accessible platform creates delays in connecting donors with recipients. Many willing donors are unaware of how to register, while patients and hospitals struggle to find compatible organs quickly. Manual registration systems and scattered databases lead to inefficiency,

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miscommunication, and extended waiting times for critical patients. The proposed An- droid-Based Organ Donation Platform addresses these chal- lenges by providing a user-friendly mobile application where donors can register, recipients can request organs, and hospitals can manage and verify donation data efficiently. The platform

V. PROPOSED SYSTEM OVERVIEW

Ensures real-time updates, secure communication, and simplified processes to improve event management and increase student participation. The proposed AI-Based Event Aggregator System connects students and staff on a single digital platform. It aims to reduce manual effort, improve event discovery, and enhance the overall efficiency of event management. The system includes a web-based application, a centralized database, and an AI recommendation service. Users can register as students or staff, explore events, and receive real-time updates. Event and user data are securely stored in the database, and activities such as registration, attendance, and feedback are managed through the system. Staff members create events, students register and participate, the system provides recommendations, attendance is recorded, and notifications are sent to users. Key features include real-time updates, AI-based recommendations, secure data storage, and role-based access control. This platform provides a reliable, technology-based solution for managing college events effectively.

VI. SYSTEM ARCHITECTURE

The AI-Based Event Aggregator System is a web-based platform that connects students and staff within a single integrated system. Its main objective is to simplify event management, improve student participation, and securely manage all event-related data using modern technologies and centralized database systems.

Modules

1.1 Student Module

In this module, a student can register and securely log into the system. After logging in, the student can view available events, check event details such as title, date, venue, and description, and register for events. The system also provides AI-based recommendations based on student interests and past participation. The student can mark attendance using QR code, submit feedback, download certificates, and track their event participation within the system.

1.2 Staff Module

Staff members log into the system and manage event-related activities. They can create events by entering details such as event name, type, date, venue, and number of seats. Staff can view registered students, manage attendance, and monitor participation. They can also analyze feedback given by students and generate reports to improve future events.

1.3 Database Module

The system uses a centralized SQL Server database to store all information related to users, events, registrations, attendance, feedback, and certificates. The database ensures secure storage, fast access, and proper management of data. It also helps in maintaining records and supporting system operations efficiently.

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1.4 AI Recommendation Module

The AI module analyzes student data such as department, interests, and previous event participation to suggest relevant events. It helps students discover suitable events easily and improves engagement. The module works in the background and provides smart recommendations without requiring manual effort.

1. Backend Architecture (Firebase Integration)

The system uses modern technologies to manage authentication, data storage, and system operations:

• Authentication System: Ensures secure login and identity verification for both students and staff.

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• SQL Server Database: Stores structured data related to users, events, registrations, attendance, feedback, and certificates.
• Web API (.NET Core): Handles communication between frontend and backend, processes requests, and manages all system operations efficiently.

2. Approval and Notification Workflow
• The staff creates and publishes the event in the system.
• Students view event details and register for the event.
• If the registration is successful, a confirmation notification is sent to the student.
• If seats are full or registration fails, a notification message is shown.
• The system updates the registration status in the database and displays it to both students and staff.

VII. IMPLEMENTATION DETAILS

The implementation of the proposed AI-Based Event Aggregator System consists of four main steps: User Login and Registration, Event Management and Registration, Attendance and Feedback Handling, and Notifications and Updates.

User Login and Registration
Users, including students and staff, log into the system securely. Students register and access the platform to view and participate in events, while staff log in to manage events. All user data is validated and stored securely in the centralized database to ensure data integrity and privacy. Authentication is used to provide secure and role-based access.

Event Management and Registration
When staff creates an event, the system stores event details such as title, date, venue, and available seats. Students can view these events and register based on their interests. The system checks seat availability before confirming registration. AI- based recommendations are also provided to help students find relevant events easily.

Attendance and Feedback Handling
During the event, students mark attendance using QR code scanning, which automatically updates their status in the system. After attending the event, students can submit feedback and ratings. This information is stored in the database and helps staff analyze event performance and improve future events.

Notifications and Updates
The system sends real-time notifications to users regarding event registration, updates, and important announcements. Students receive alerts about new events, recommendations, and registration status, while staff are notified about student participation and feedback. This ensures smooth communication and timely actions.This stepwise implementation ensures a secure, efficient, and real-time event management process, improving coordination between students and staff while reducing manual effort and delays.

History and Reusability
The system stores all past event records, registrations, attendance, and feedback for future reference. Students and staff can track previous activities, which helps in planning and decision-making. This feature ensures continuity in event management and allows better analysis by providing access to past data efficiently.

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SYSTEM AECHITECTURE

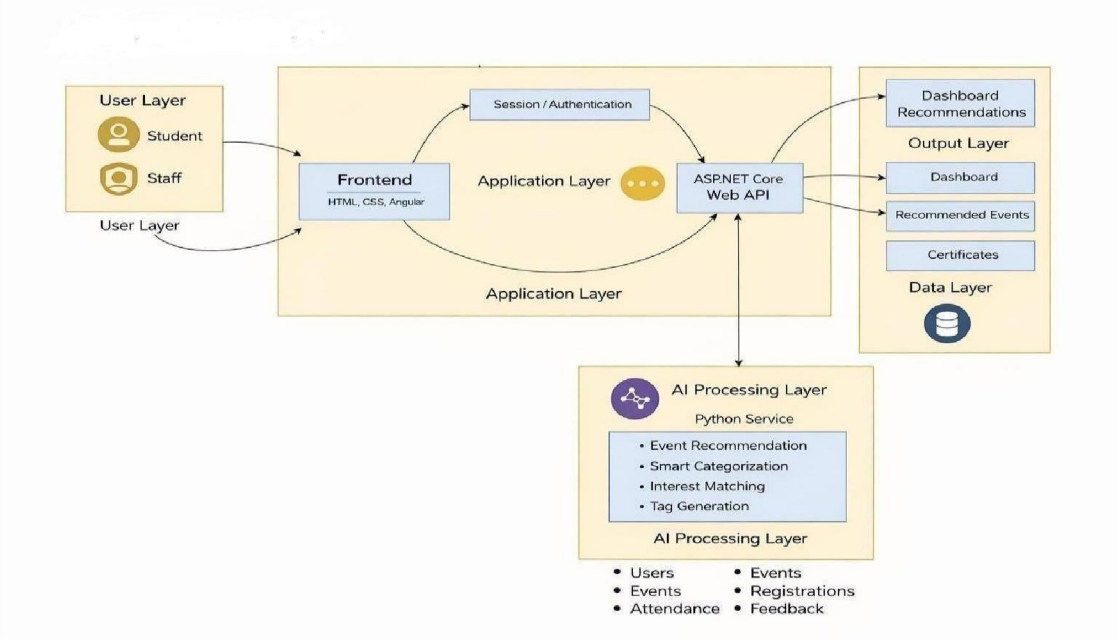

Figure 1: System architecture

VIII. PROPOSED SYSTEM

System Architecture :

System Architecture is shown in Figure 1.

Our proposed system will function in following steps:

Step 1: User Login and Registration

Students and staff register and log into the system using their credentials. The system stores user details securely and provides access based on their role.

Step 2: Authentication & Access Control

The system verifies users through secure authentication using JWT tokens. Role-based access ensures that students and staff can access only their respective features.

Step 3: Event Creation and Viewing

Staff members create and publish events with complete details. Students can view all available events along with information such as date, venue, and description.

Step 4: Event Registration

Students register for events through the system. The system checks seat availability and confirms registration by storing the data in the database.

Step 5: Attendance and Feedback

Students mark attendance using QR code scanning during the event. After the event, they can submit feedback and ratings, which are stored for analysis.

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IX. ANALYSIS OF PROPOSED SYSTEM

1. Enhanced Efficiency and Real-Time Communication:

The proposed AI-Based Event Aggregator System improves the efficiency, accessibility, and overall management of college events. By integrating modern web technologies with a centralized database, the system provides real-time updates and instant notifications to students and staff, reducing delays and improving communication.

2. Intelligent Matching With Medical Verification:

The system uses an AI-based recommendation engine that analyzes student data such as interests, department, and past participation. This helps in suggesting relevant events to students, improving engagement and participation. It provides better results compared to manual searching methods.

3. Secure Role-Based Access :

The platform uses role-based access control where students and staff have different permissions. This ensures data security and privacy, allowing users to access only the features related to their role.

4. Improved Coordination and System Reliability:

Compared to traditional manual systems, the proposed system centralizes all event data, reduces communication gaps, and improves coordination between students and staff. It simplifies event management and provides a reliable and user-friendly platform.

5. MODULES

The proposed AI-Based Event Aggregator System is divided into five main modules: Authentication, Event Management, Student Interaction, AI Recommendation, and Notification. Each module handles specific functionalities and ensures smooth system operation.

1. Authentication Module

This module manages user login and security. It verifies user credentials and provides secure access to the system. It also controls user roles and permissions for students and staff.

2. Event Management Module

This module allows staff to create, update, and manage events. It stores event details such as title, date, venue, and available seats, making it easy to organize and track events.

3. Student Interaction Module

This module allows students to view events, register for events, mark attendance, and provide feedback. It ensures a smooth and user-friendly experience for students.

4. AI Recommendation Module

This module suggests events to students based on their interests, department, and past activity. It helps students discover relevant events easily and improves participation.

5. Notification Module

This module sends real-time notifications to users. Students receive updates about events and registrations, while staff get updates about participation and feedback. It ensures smooth communication across the system.

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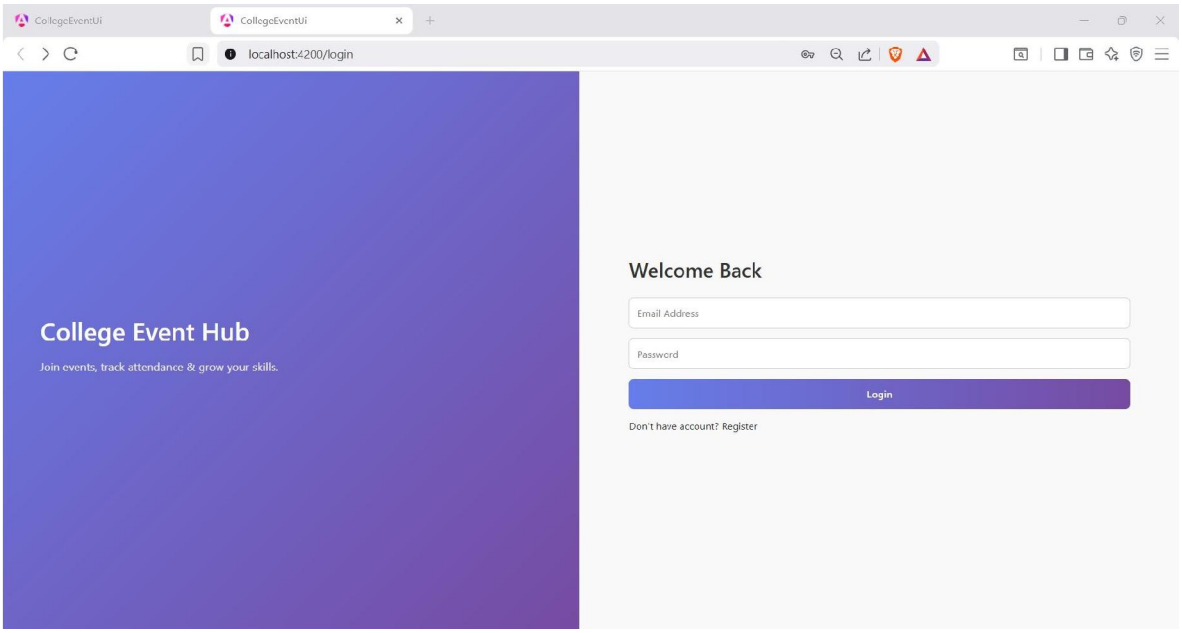
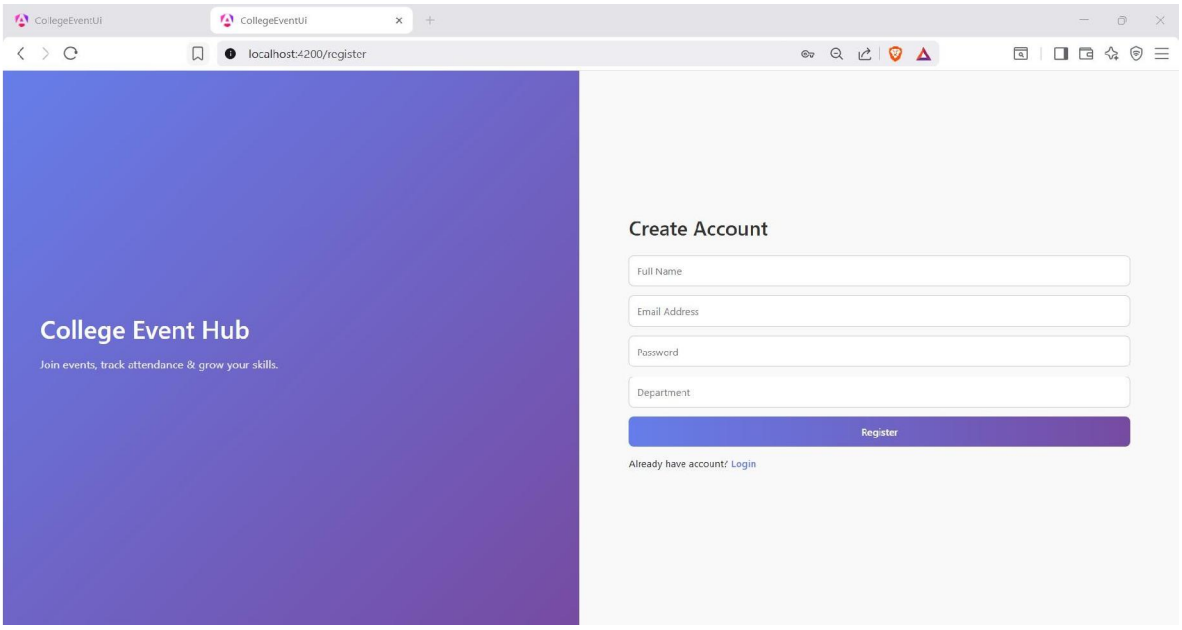
RESULTS



LOGIN PORTAL & staff and student



REGISTRATION PAGE

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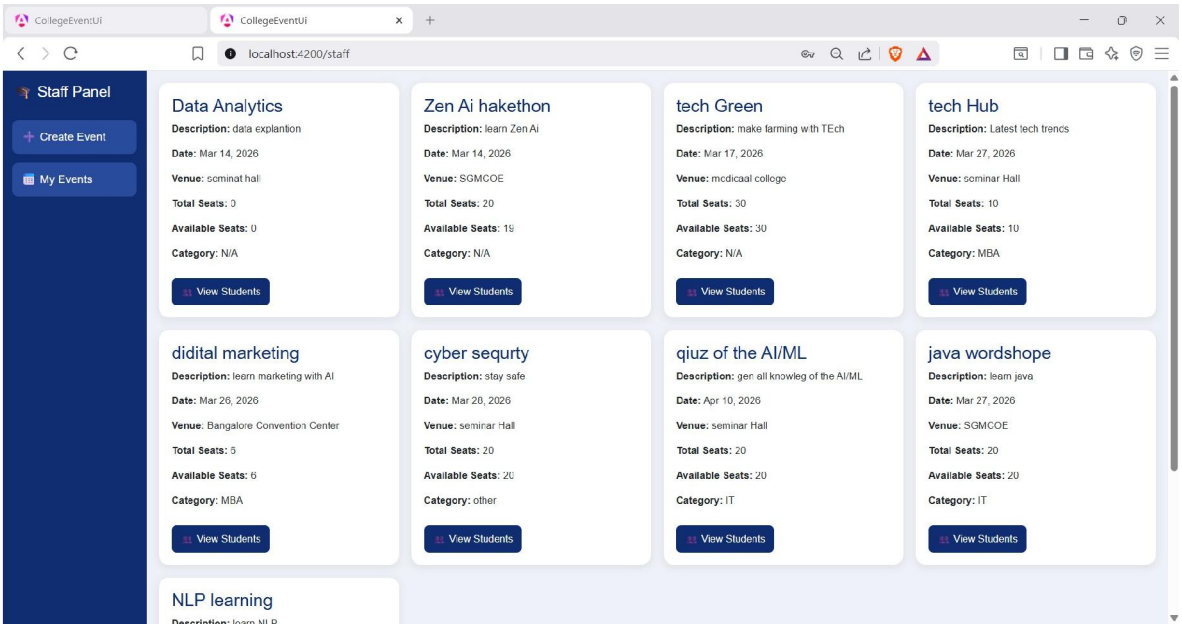
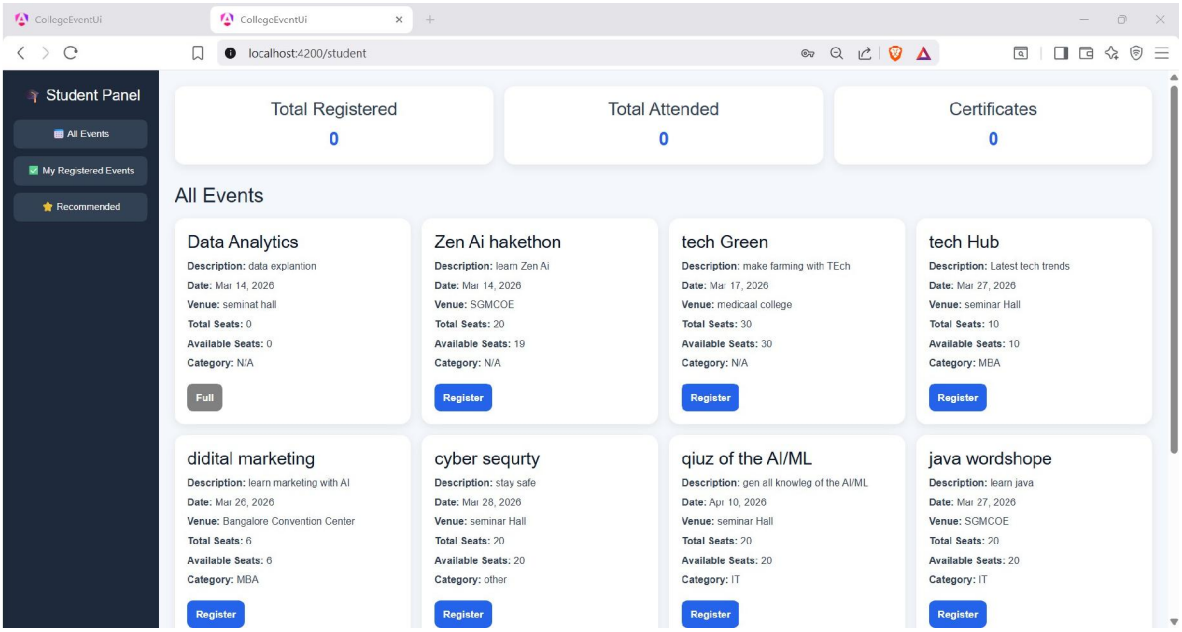


Staff Dashboard



Student Dashboard

X. CONCLUSION

The AI-Based Event Aggregator System provides a reliable and efficient way to manage and organize college events. By maintaining accurate event, student, and participation data, the system reduces manual effort and improves the overall event management process. Real-time notifications and centralized data management enhance communication

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and transparency between students and staff. Overall, this system improves event participation, simplifies management tasks, and provides a smart, user-friendly platform for handling college events efficiently.

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This research explains different recommendation techniques such as content-based and collaborative filtering. These methods help in providing personalized suggestions based on user interests and past activities, which supports the implementation of the AI-based event recommendation system in this project.
2. "Machine Learning Approaches for Event Recommendation Systems"–R.Sharma,P.Gupta
This paper focuses on using machine learning algorithms to recommend events based on user profiles and behavior. It shows how intelligent systems improve user engagement and accuracy, which is useful for developing the smart event recommendation feature in the system.
3. "Web-Based Event Management System for Educational Institutions"–M.Patel,K.Mehta
This study presents a web-based platform for managing college events, including event creation and registration. It highlights the importance of centralized systems but also shows the need for advanced features like AI and automation, which are included in this project.
4. "QR Code Based Attendance System for Academic Events"–S.Kumar,A.Verma
This research explains how QR code technology improves attendance tracking accuracy and reduces manual errors. It supports the implementation of QR-based attendance in the proposed system for better participation management.
1 Firebase Documentation
Provides complete details about authentication, database, and cloud storage services. It is useful for managing user data, real-time updates, and secure storage in event management systems.
https://firebase.google.com/docs
2. Angular Official Documentation
Provides guidelines for building modern web applications using Angular. It helps in designing user interfaces, dashboards, and event display pages for students and staff. https://angular.io/docs
3. Microsoft .NET Documentation
Offers detailed information about .NET Web API development. It is useful for building backend services, handling event data, authentication, and API communication.
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This book explains software development concepts such as system design, architecture, and development lifecycle. It helps in understanding how to build a structured and scalable event management system.
2. Roger S. Pressman – Software Engineering: A
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This book focuses on software design, system analysis, and development practices. It is useful for designing efficient and reliable applications like the event aggregator system.