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College AI Mentor

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Abstract: *The Polytechnic admission process in Maharashtra involves multiple stages of decision-making, including selection of suitable branches, colleges, and preference filling during CAP rounds. Students often face difficulties due to lack of proper guidance, scattered admission information, complex eligibility criteria, and limited understanding of career opportunities associated with different branches. Manual handling of admission data by institutions further increases the chances of errors, delays, and lack of transparency. To address these challenges, this project proposes a Smart Web-Based Polytechnic Admission Guidance and Management System that aims to simplify, automate, and organize the admission process through a centralized digital platform.*

The proposed system provides an integrated environment for three primary stakeholders: Students, Colleges, and Super Admin. Students can register and access the system through a secure login interface, where they can interact with an AI-based chatbot designed to provide admission-related assistance and guidance. Based on academic performance, interests, preferences, and predefined admission criteria, the system generates personalized branch and college suggestions.

The college module enables institutions to register on the platform and manage admission-related data efficiently. Colleges can upload student and admission information using standardized Excel templates, ensuring structured data entry and consistency across the system. This reduces manual workload, improves data accuracy, and allows easier monitoring of admission activities. The system also facilitates data validation and organized record maintenance, supporting better institutional management and reporting.

The Super Admin module serves as the central control unit of the system, responsible for managing college registrations, monitoring student activities, verifying uploaded data, and generating consolidated reports for analysis and oversight By integrating intelligent guidance, automated data management, and report generation mechanisms, the proposed system minimizes paperwork, reduces human errors, enhances operational efficiency, and improves transparency in the polytechnic admission process. The system supports data-driven decision-making, promotes accessibility of admission information, and provides a scalable framework that can be extended in future to include advanced predictive analytics, real-time admission updates, and mobile-based access. Ultimately, the system contributes towards creating a more organized, efficient, and student-centric admission ecosystem that benefits students, educational institutions, and administrative authorities alike..

Keywords: Polytechnic Admission System, Web-Based Application, AI Chatbot Guidance, Student Decision Support, Admission Management System

I. INTRODUCTION

The polytechnic admission process in Maharashtra can often be confusing and stressful for students due to multiple branches, eligibility criteria, cut-off variations, and documentation requirements. Many students struggle to decide which branch best suits their academic performance and career interests. At the same time, colleges and administrators face challenges in managing large volumes of student data, verifying records, and maintaining organized admission

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information. Traditional manual or semi-digital processes can lead to delays, errors, lack of transparency, and increased paperwork.

To address these challenges, the proposed Smart Web-Based Polytechnic Admission Guidance and Management System provides a centralized digital platform for students, colleges, and administrators. The system integrates admission guidance and data management into a single web-based solution that simplifies the overall process.

Students can create accounts, log in securely, and interact with an AI-based chatbot that collects information such as academic marks, interests, and preferences. Based on this input, the system provides personalized branch suggestions and guidance. Students can also download reports and review their admission-related recommendations, helping them make informed decisions with confidence.

Colleges can register on the platform and upload student data using structured Excel templates. The system supports sample file downloads, easy data submission, and centralized verification. The Super Admin has complete control over managing colleges, monitoring student records, verifying submissions, and generating overall reports.

By combining intelligent guidance with organized data management, the system reduces manual effort, improves transparency, enhances data accuracy, and supports better decision-making throughout the polytechnic admission process.

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II. LITERATURE SURVEY

The integration of Artificial Intelligence and Decision Support Systems in educational environments has significantly improved student guidance and administrative efficiency. Several research works have contributed to the development of intelligent admission and advisory systems

Kumar and Sharma [2] proposed a Decision Support System (DSS) for student career selection using data mining techniques. Their system analyzes student academic performance and interests to generate suitable career recommendations. The study demonstrates how rule-based and data-driven approaches can reduce uncertainty in student decision-making. This work supports the core idea of the proposed system, where branch recommendations are generated based on marks and preferences, helping students make informed admission decisions.

Wani and Agarwal [3] developed a Web-Based Admission Management System designed to digitize the admission process in educational institutions. Their system includes student registration, application management, and centralized administrative control. The study emphasizes reducing paperwork, improving transparency, and maintaining structured digital records. This research directly aligns with the proposed Polytechnic Admission Guidance and Management System, particularly in terms of centralized data handling, structured uploads, and administrative verification.

Shah and Patel [4] introduced an Intelligent Academic Advisory System using machine learning techniques to provide personalized academic guidance. The system evaluates student profiles and predicts suitable academic pathways. Their research highlights the importance of predictive modeling and intelligent recommendation mechanisms in education. This concept is closely related to the Intelligence Layer of the proposed system, which performs eligibility evaluation and branch recommendation based on predefined criteria and student input.

Mohanty et al. [5] presented a chatbot-based student support system utilizing Natural Language Processing (NLP). The chatbot provides automated responses to student queries and assists in academic guidance. The study demonstrates how conversational AI improves accessibility and reduces dependency on manual counseling services. This research strongly supports the AI-based chatbot module in the proposed system, which interacts with students, collects academic details, and provides branch suggestions in an interactive manner.

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Wang et al. [7] discussed AI-driven academic recommendation systems in higher education, focusing on personalization and data analytics. Their work emphasizes scalability, data accuracy, and adaptive recommendation mechanisms. The study highlights how AI systems can enhance
student satisfaction and decision-making efficiency. These findings reinforce the design of the proposed system's recommendation engine, ensuring scalable and reliable guidance for large numbers of students during the admission process.

Overall, the reviewed literature indicates that AI-based advisory systems, web-based admission platforms, and decision support mechanisms significantly enhance efficiency, transparency, and personalization in educational management. However, most existing systems focus either on academic advising or administrative management separately. The proposed Smart Polytechnic Admission Guidance and Management System integrates both intelligent branch recommendation and centralized admission data management within a single web-based platform, thereby addressing the limitations of previous approaches.

III. METHODOLOGY

The proposed Smart Polytechnic Admission Guidance and Management System follow a layered architecture to ensure modularity, security, and efficient data processing. The system is divided into five main layers: User Layer, Application/Service Layer, Data Layer, Intelligence Layer, and Infrastructure Layer.

User Layer:

The User Layer provides the interface for system interaction. It includes the Student Portal, College Portal, and Super Admin Dashboard. Students use the portal for registration, login, and receiving branch recommendations. Colleges upload and manage student data, while the Super Admin monitors and verifies overall admission records. All user requests are forwarded to the Application Layer for processing.

Application / Service Layer:

This layer handles the core business logic of the system. It includes Authentication and Authorization, Admission Guidance Engine, AI Chatbot Interface, and Report Generation Module. It validates user credentials, processes admission-related requests, communicates with the Data Layer for information retrieval, and interacts with the Intelligence Layer for recommendation generation.

Data Layer:

The Data Layer stores and manages all structured information required by the system. It includes the Student Database, Branch and Cutoff Dataset, and Uploaded Excel Records. This layer ensures secure storage, data consistency, and accurate retrieval of records for processing and reporting.

Intelligence Layer:

The Intelligence Layer provides decision-support functionality. It performs Student Profile Analysis, Branch Recommendation, and Eligibility Evaluation based on predefined rules and admission criteria. This layer generates personalized suggestions that are delivered to students through the chatbot and guidance engine.

Infrastructure Layer:

The Infrastructure Layer provides technical support for system deployment and operation. It includes the Web Server, Cloud Hosting Environment, Secure Storage, and Backup and Recovery System. This layer ensures system availability, security, and performance reliability.

Overall, the layered methodology ensures clear separation of responsibilities, improves scalability, enhances security, and enables efficient management of the polytechnic admission process.

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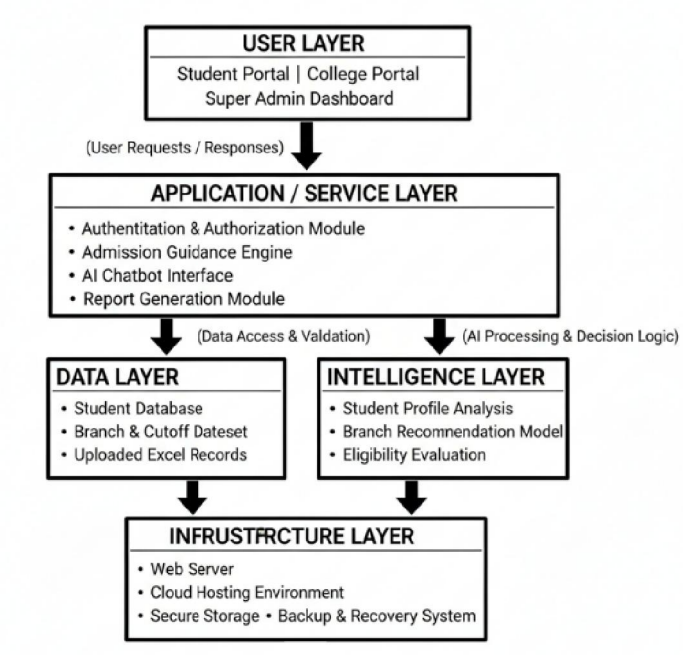

FIG. 1 LAYER BLOCK DIAGRAM

IV. OBJECTIVE

- To develop a web-based centralized platform that simplifies and manages the polytechnic admission process for students, colleges, and administrators in Maharashtra.
- To provide intelligent branch guidance using an AI-based chatbot that analyzes student marks, interests, and preferences to generate suitable branch recommendations.
- To automate data management processes by enabling colleges to upload student records through structured Excel formats and maintain organized digital records.
- To ensure secure and role-based access control for Students, Colleges, and Super Admin through authentication and authorization mechanisms.
- To generate accurate reports and analytics that support transparency, reduce paperwork, and assist in better decision-making during the admission process.

V. PROBLEM DEFINATIONS

The polytechnic admission process in Maharashtra is often complex, time-consuming, and confusing for students due to multiple branches, eligibility criteria, and large volumes of data. Manual data handling and lack of personalized guidance can lead to errors, poor decision-making, and inefficient record management. Therefore, there is a need for a centralized, web-based system that provides intelligent branch recommendations, secure data management, and streamlined admission processing for students, colleges, and administrators.

VI. FUCTIONAL REQUIREMENTS

- The system shall allow Students, Colleges, and Super Admin to register and log in using secure authentication.
- The system shall provide an AI-based chatbot to collect student details (marks, interests, preferences) and generate branch recommendations.
- The system shall allow colleges to upload student data using structured Excel templates and manage records digitally.

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- The system shall enable the Super Admin to view, verify, update, and download admission-related data of all colleges and students.
- The system shall generate downloadable reports related to student guidance, admission details, and branch eligibility.

VII. NON FUCTIONAL REQUIREMENTS

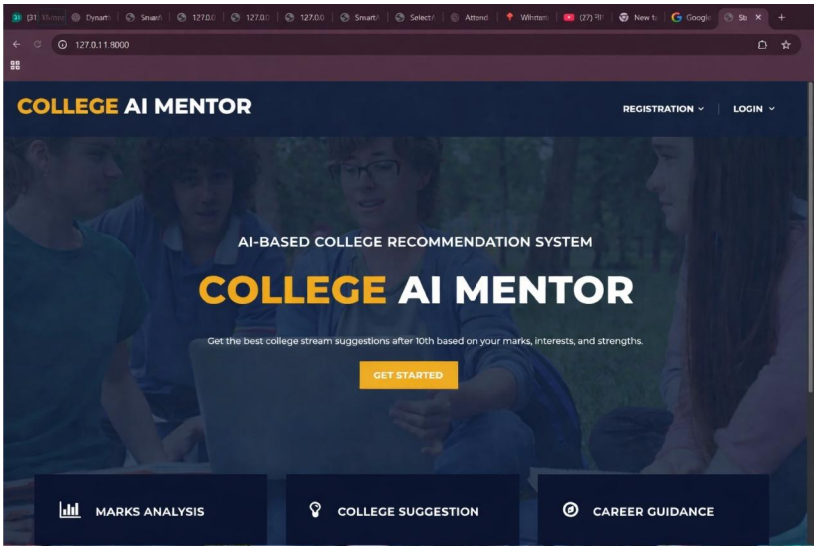
- **Performance:** The system should handle multiple simultaneous users efficiently without significant delay in response time.
- **Security:** The system must implement secure authentication, role-based access control, and protect sensitive student data from unauthorized access.
- **Scalability:** The system should support increasing numbers of students, colleges, and admission records without performance degradation.
- **Reliability:** The system should ensure data accuracy, maintain consistent operation, and recover quickly in case of failure.
- **Usability:** The system interface should be simple, user-friendly, and easy to navigate for students, colleges, and administrators.

VIII. CONCLUSION

The proposed Smart Polytechnic Admission Guidance and Management System provides a centralized and intelligent solution to simplify the polytechnic admission process in Maharashtra. By integrating a web-based platform with AI-driven branch recommendations, structured data management, and role-based access control, the system reduces manual effort, minimizes errors, and improves transparency.

The layered architecture ensures scalability, security, and efficient handling of admission data for students, colleges, and administrators. The AI chatbot enhances decision-making by offering personalized guidance based on student profiles. Overall, the system supports a more organized, reliable, and user-friendly admission process, contributing to better academic planning and administrative efficiency.

IX. OUTPUT



Home Page Of College AI Mentor System

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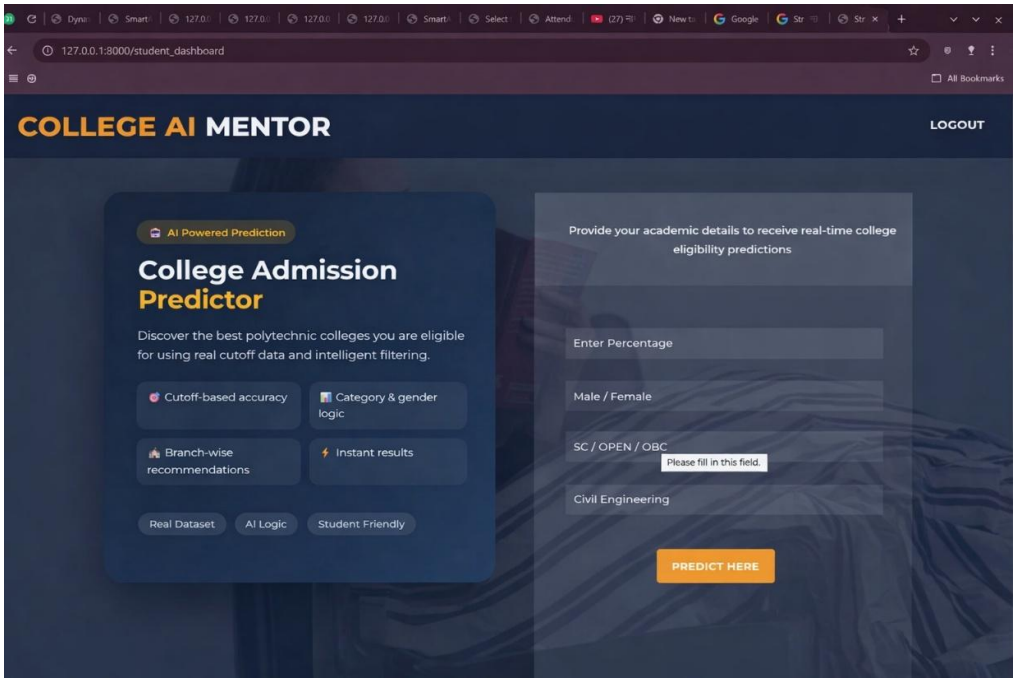
Student Login Dashboard For Admission Prediction



College Admission Predictor Dashboard

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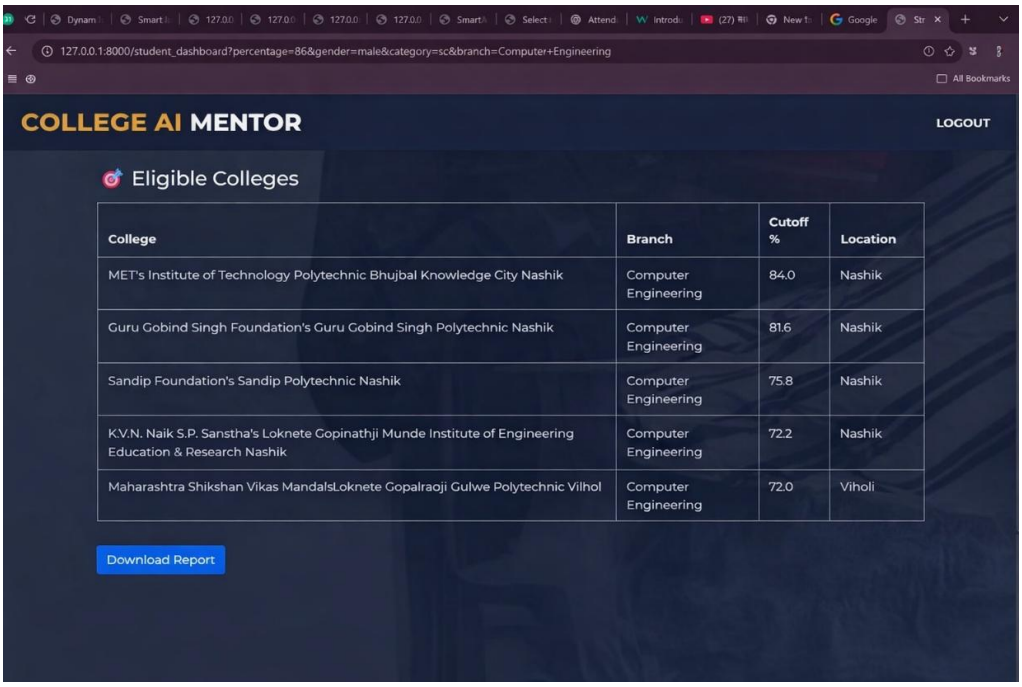

Predicted Eligible Colleges Based on Student Profile

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