



Higher Education Mentor

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Abstract: Choosing an appropriate career path after completing secondary education is one of the most challenging decisions for students. Many students face confusion due to the lack of proper guidance and centralized information regarding courses, colleges, entrance examinations, and career opportunities. Traditional career counseling methods are often limited in accessibility and may not provide structured guidance to all students. To address this issue, this paper presents a web-based platform called Higher Education Mentor, which provides a structured educational roadmap for students after the completion of 10th class or Intermediate education.

The proposed system integrates information about courses, career paths, entrance examinations, and colleges into a single platform to help students explore their academic opportunities effectively. The platform is developed using modern web technologies including Next.js and React for the frontend, Spring Boot for the backend, and MongoDB for database management. The system allows users to select their educational background and interests and then generates a step-by-step roadmap that guides them toward suitable higher education options.

The developed platform offers a user-friendly interface, scalable architecture, and efficient information retrieval system. By providing centralized and structured educational guidance, the system helps students make informed decisions regarding their future academic and career paths.

Keywords: Career Guidance System, Higher Education Mentor, Educational Roadmap, Web Application, Next.js, Spring Boot, MongoDB.

I. INTRODUCTION

Selecting the correct career path after completing school education is a critical decision that significantly influences a student's future. After completing the 10th class or Intermediate education, students often face difficulties in choosing the right academic stream due to the availability of numerous courses and career opportunities. Many students rely on incomplete information obtained from peers, social media, or informal counselling, which may lead to poor career decisions.

With the rapid growth of information technology, web-based platforms have become an effective solution for providing educational guidance and career information to students. Online platforms could provide combination of various sources of educational information, methodical counselling for students to know the available options for work [1].

Several online education portals provide information about colleges and courses. However, most of these platforms present scattered information without offering a clear roadmap that guides students step-by-step from school education to higher studies and career opportunities. As a result, students often struggle to understand the sequence of steps required to achieve their desired career goals.

To overcome these challenges, this paper proposes a **Higher Education Mentor platform**, which provides a structured educational roadmap for students. The system allows users to explore different streams, courses, colleges, and entrance

examinations through an interactive web interface. The platform integrates course information, college details, and educational pathways into a single system to assist students in making informed decisions regarding their academic future.

II. LITERATURE SURVEY

The increasing demand for career guidance systems has encouraged researchers to develop digital platforms that assist students in selecting suitable academic paths. Several educational portals and career guidance systems have been developed to provide information about courses, universities, and career opportunities.

Online educational systems provide valuable resources for students seeking information about higher education institutions and programs. However, many of these platforms focus only on presenting information without providing structured guidance that helps students understand their career progression [2].

Artificial intelligence and recommendation systems have also been explored to assist students in career selection. These systems analyze student interests and academic performance to suggest possible career options. Although such systems provide personalized recommendations, they often require large datasets and complex algorithms, which may limit their accessibility in practical educational environments [3].

Several web-based academic portals offer information regarding colleges, entrance examinations, and scholarships. However, most platforms lack an integrated roadmap that clearly explains the step-by-step process required for pursuing specific career paths. As a result, students may still face confusion while planning their academic journey.

The **Higher Education Mentor** system addresses these limitations by providing a structured roadmap-based career guidance platform. The system integrates course information, college databases, and educational pathways into a unified platform that allows students to easily navigate their higher education options.

TABLE I: Comparison of Existing Career Guidance Systems

Study	Technique Used	Advantages	Limitations
Sharma et al. [2]	Online Education Portal	Easy access to information	No structured roadmap
Gupta et al. [3]	AI Career Recommendation	Personalized suggestions	Requires large datasets
Patel et al. [4]	Academic Counselling Systems	Professional guidance	Limited accessibility
Proposed System	Web-based Roadmap System	Structured career guidance	Requires regular data updates

III. SYSTEM ARCHITECTURE

The Higher Education Mentor system is designed using a **three-tier architecture** consisting of a frontend layer, backend layer, and database layer. This architecture enables efficient data processing and provides a scalable platform for educational guidance.

A. Frontend Layer

The frontend of the system is developed using **Next.js and React**, which provide a dynamic and responsive user interface. Tailwind CSS is used for styling to create an attractive and user-friendly design. The frontend allows users to interact with the system, explore courses, and view career roadmaps.

B. Backend Layer

The backend is implemented using **Spring Boot**, which manages application logic and processes requests from the frontend. RESTful APIs are used to enable communication between the frontend interface and the backend services.

C. Database Layer

The system uses **MongoDB**, a NoSQL database, to store information related to courses, colleges, and user data. MongoDB provides flexible data storage and efficient data retrieval for web applications.

D. User Interaction Layer

Users interact with the system by selecting their educational level and exploring available career options. Based on the user's selection, the system retrieves relevant information from the database and generates a structured roadmap.

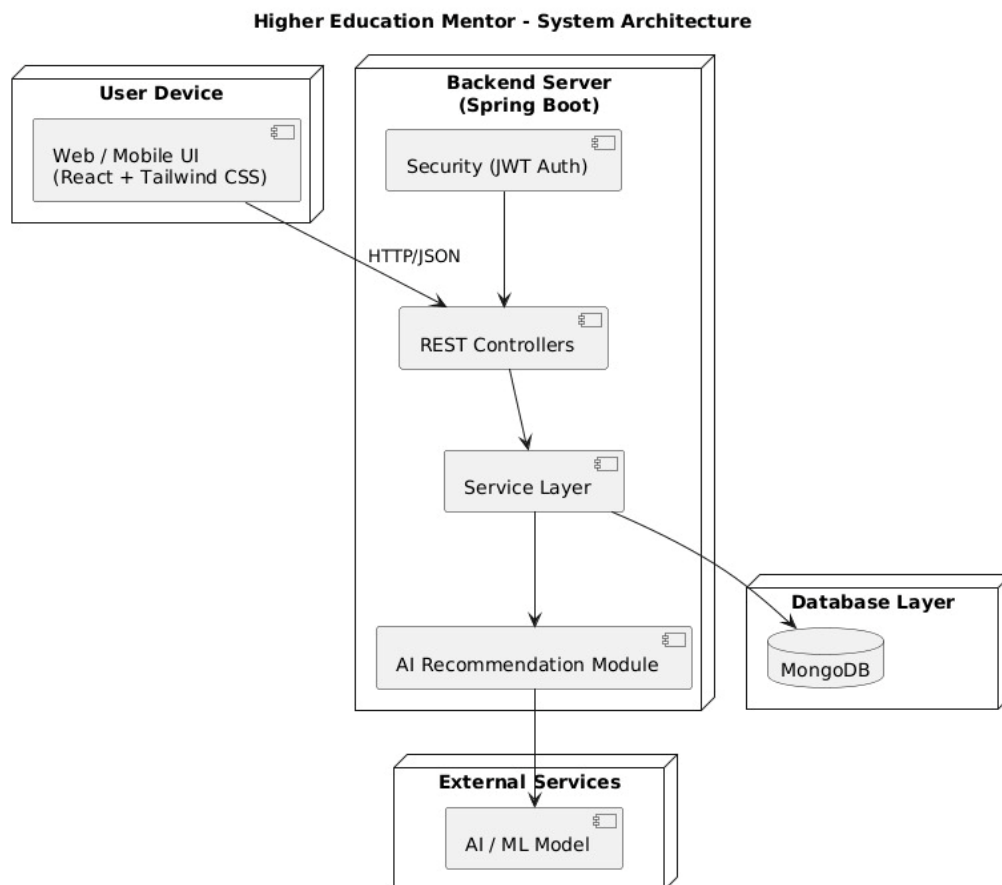


Fig. 1: System Architecture of Higher Education Mentor Platform

IV. DATA COLLECTION AND COURSE INFORMATION PROCESSING

The Higher Education Mentor system relies on accurate and organized educational data to provide meaningful guidance to students. Data related to courses, colleges, and entrance examinations is collected and structured before being integrated into the system.

A. Course Data Collection

Information regarding different academic streams and courses is collected from educational resources, institutional websites, and academic portals. The collected information includes course duration, eligibility criteria, and career opportunities.

B. College Information Storage

College details such as institution name, location, available courses, and admission criteria are stored in the MongoDB database. This information is retrieved dynamically when students explore specific courses.

C. Roadmap Generation

The system generates educational roadmaps based on the user's selected academic level. For example, a student selecting the engineering stream will be guided through entrance examinations, degree programs, and possible career paths.

D. User Authentication

The platform includes a login system that allows users to access personalized features. User authentication ensures secure access to the system and enables data management for registered users.

V. PROPOSED FRAMEWORK

The proposed framework provides a structured process that helps students explore career opportunities after completing school education.

A. System Modules

The Higher Education Mentor platform consists of several functional modules:

1. User Authentication Module – Manages user login and registration.
2. Education Level Selection Module – Allows students to select 10th or Intermediate level.
3. Course Exploration Module – Displays available courses and streams.
4. Career Roadmap Module – Generates a step-by-step academic roadmap.
5. College Information Module – Displays a list of colleges offering selected courses.

B. Workflow of the System

The system operates through the following steps:

1. The student accesses the Higher Education Mentor website.
2. The user logs into the system.
3. The student selects their educational level.
4. The system displays available streams and courses.
5. The student selects a desired course.
6. The system generates a career roadmap.
7. The platform displays colleges offering the selected course.

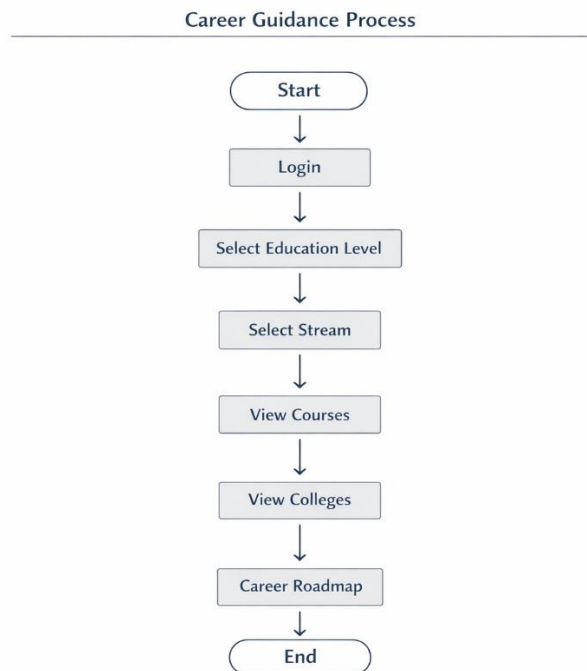


Fig. 2: Flowchart of Career Guidance Process

VI. RESULTS AND DISCUSSION

The Higher Education Mentor platform was implemented as a web-based system that allows students to explore educational opportunities through an interactive interface.

A. System Interface

The homepage of the platform provides an overview of the system and allows users to navigate to different sections such as courses, colleges, and career roadmaps.

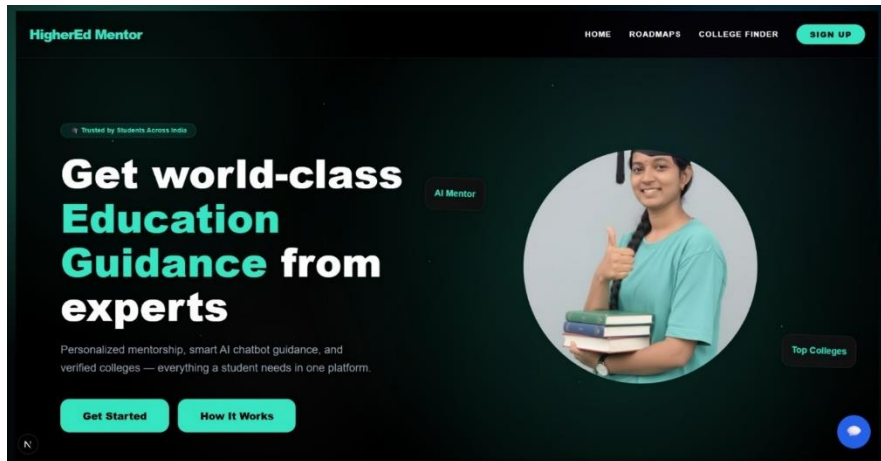


Fig. 3: Homepage of Higher Education Mentor Platform

B. Career Roadmap Interface

The system generates a structured roadmap when a student selects a specific academic path.

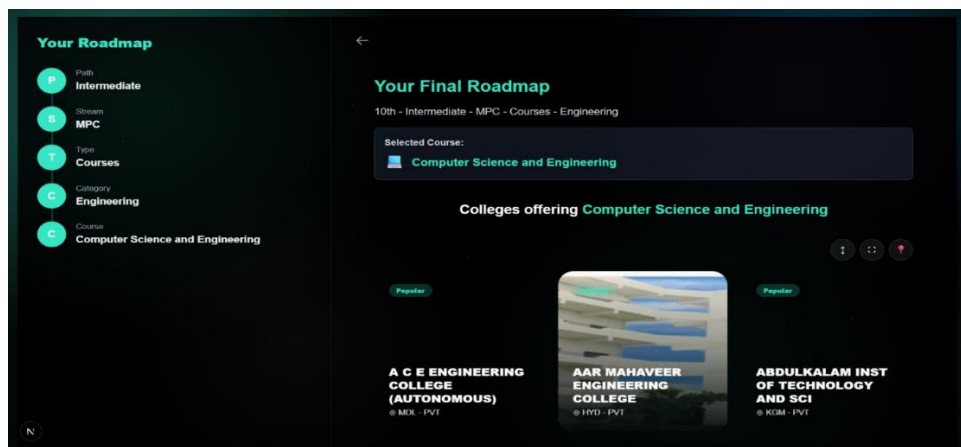


Fig. 4: Career Roadmap Generation Interface

C. Course Information Page

Students can explore detailed information about different courses including eligibility, duration, and career opportunities.

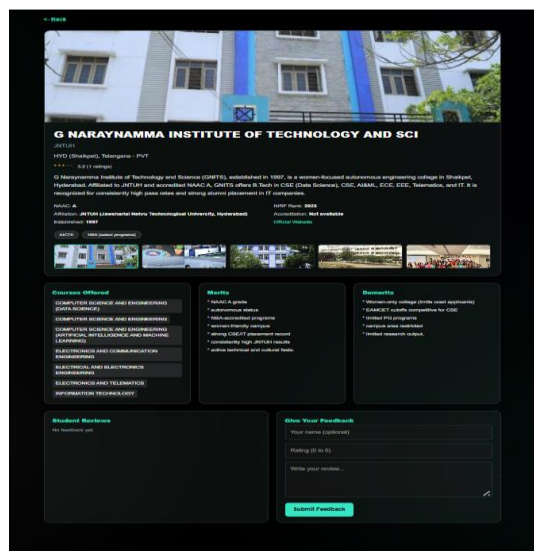


Fig. 5: Course Information Page of a college

D. College List Interface

The platform retrieves college data from the MongoDB database and displays institutions offering the selected course.

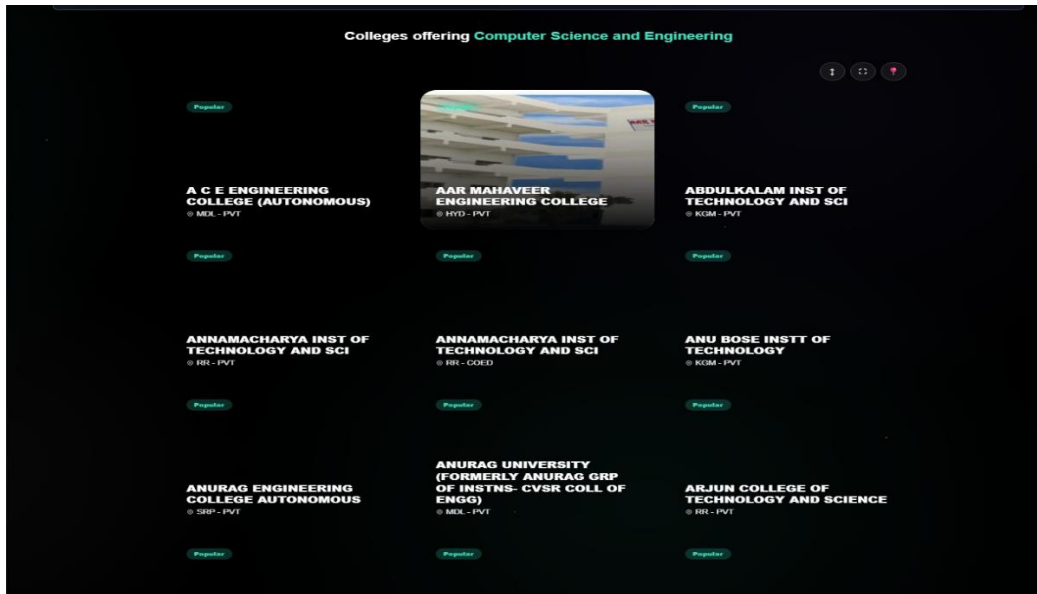


Fig. 6: College List Display Page

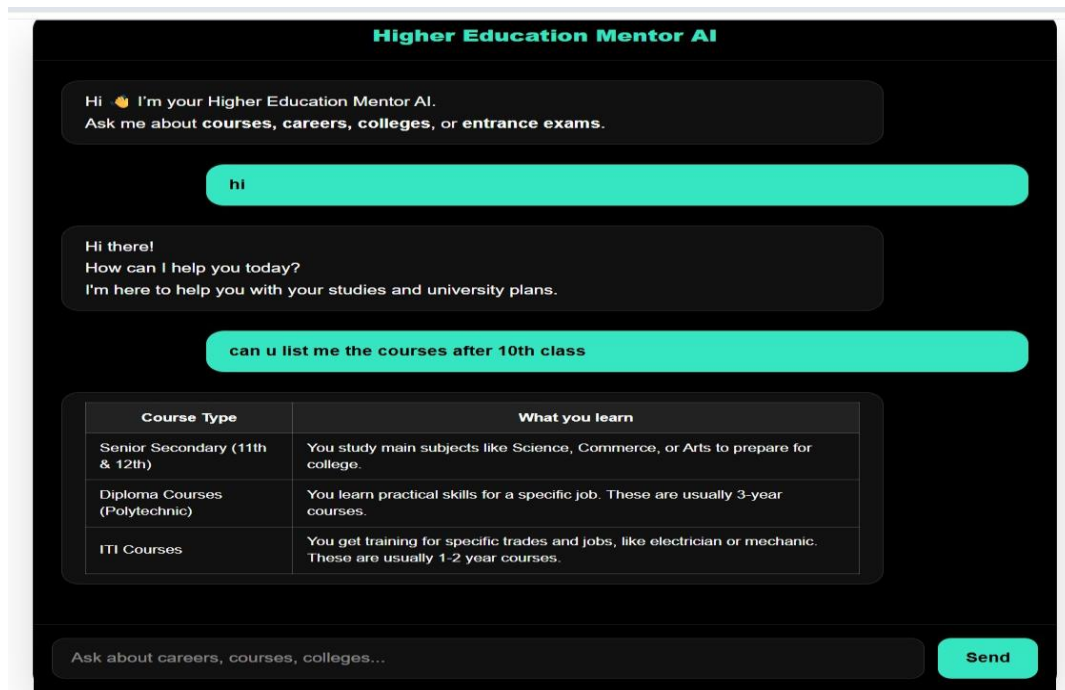


Fig 7: AI chatbot page

VII. CONCLUSION AND FUTURE SCOPE

The Higher Education Mentor platform provides a comprehensive web-based solution for career guidance. By integrating course information, college databases, and structured educational roadmaps, the system assists students in understanding their academic options and planning their future effectively.

The developed platform demonstrates the potential of web technologies in delivering accessible educational guidance systems. The system simplifies the career decision-making process by presenting information in a structured and user-friendly format.



Future enhancements of the system may include the integration of artificial intelligence-based recommendation systems, scholarship information, college ranking mechanisms, and personalized career suggestions based on student interests and academic performance.

REFERENCES

- [1]. A. Kumar and S. Mishra, "Role of Online Platforms in Educational Counselling and Career Guidance," *International Journal of Educational Technology*, vol. 7, no. 2, pp. 45–52, 2019.
- [2]. R. Sharma and P. Verma, "Design and Development of an Online Education Portal for Career Guidance," *Journal of Educational Informatics*, vol. 5, no. 1, pp. 12–20, 2020.
- [3]. A. Gupta and N. Singh, "AI-Based Career Recommendation System Using Student Interest and Performance Data," *International Journal of Artificial Intelligence in Education*, vol. 9, no. 3, pp. 88–97, 2021.
- [4]. M. Patel and R. Shah, "Academic Counseling Systems for Higher Education Navigation," *Journal of Applied Educational Research*, vol. 6, no. 2, pp. 34–41, 2020.
- [5]. React Documentation, <https://react.dev>
- [6]. Spring Boot Documentation, <https://spring.io/projects/spring-boot>
- [7]. MongoDB Documentation, <https://www.mongodb.com/docs/>
- [8]. Next.js Documentation, <https://nextjs.org/docs>