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Implementing Data-driven Approach for Institutional Decision-making in Higher Education

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Abstract

This paper implements a data-driven approach for institutional decision-making in higher education using the University Hub. This integrated platform provides comprehensive information about courses offered by Indian universities, enabling students to compare programs, access facilities and faculty profiles, track student mobility, view results, and engage in online collaborations. By consolidating data from the Indian University Information Bank, the University Hub promotes transparency, eliminates information gaps, and empowers students to make informed choices aligned with their aspirations. It fosters competition, self-improvement, and breaks down tendencies of self-aggregation and inbreeding. With functionality for MOOC integration, assessment and accreditation, certificate verification, and course-related collaborations, the University Hub transforms decision-making by facilitating comprehensive comparisons across degree programs and majors. It revolutionizes institutional decision-making, enabling students to embark on successful educational journeys through data-driven insights.

Keywords- MOOC, University Hub, PhD, certificate, Master's, courses, majors

INTRODUCTION

Selecting the right college and course is a pivotal decision in a student's life, often involving a daunting process of sifting through a vast array of options and conducting comparisons based on various criteria. In India, where over 1000 universities offer numerous undergraduate, postgraduate, and doctoral programs, the task becomes even more challenging. The lack of comprehensive information leads to limited choices and potential self-aggregation among students and faculty. To address these challenges, the 'University Hub' serves as an integrated platform, offering a centralized and user-friendly interface to facilitate well-informed decision-making. By simply searching for a college, users can access crucial details such as location, fee structures, and offered courses.

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The platform leverages modern web technologies like React, JSX, and CSS to ensure an intuitive user experience and efficient retrieval of information. By streamlining the decision-making process and promoting transparency, accessibility, and informed choices, the University Hub revolutionizes the landscape of higher education, empowering individuals to explore diverse educational opportunities and make optimal decisions for their academic and career aspirations [1-3].

To design this platform we have used React, JSX and CSS.

1. **React**, a free and open-source front-end library for creating user interfaces with UI components. It serves as a foundation for creating single-page,

mobile, or server-rendered applications, often combined with frameworks like Next.js. React's main focus is on state management and rendering to the DOM ("DOM is an abbreviation for "Document Object Model." It is a structured representation of the HTML elements available on a webpage or web application, to put it simply. The whole user interface of your application is represented by the DOM. A tree data structure is used to represent the DOM"), while additional libraries are commonly employed for routing and client-side functionality. Its virtual DOM feature enables efficient element manipulation before updating the browser's DOM, making it ideal for handling API calls [4-5].

2. **JSX** React acknowledges that rendering logic is inherently intertwined with other aspects of UI logic, such as event handling, state changes, and data preparation. Instead of artificially segregating these technologies into separate files, React employs a component-based approach, where loosely coupled units known as "components" encompass both JSX and other related functionality. This approach acknowledges and accommodates the interconnected nature of rendering logic and various elements of UI logic. Instead of separating mark-up and logic into distinct files, React utilizes loosely connected units called "components" that integrate these elements. This approach allows for a separation of concerns while preserving the interconnectedness of different aspects of UI logic [6-7].
3. **CSS (Cascading Style Sheets)**, is a design language aimed at simplifying the creation of visually appealing web pages. It stores style definitions externally in CSS files, enabling easy modification of an entire website through a single file. Compared to plain HTML, CSS offers more extensive attributes to specify the appearance and user experience of a website [8].
4. **APIs (Application Programming Interfaces)** facilitate communication between different products and services, allowing them to interact without requiring knowledge of their internal workings. By incorporating APIs into the design and management of tools and products, developers can streamline the development process, save time and resources, and open up possibilities for innovation. APIs provide flexibility, simplify design and administration, and foster opportunities for creative integration [9].
5. **Next.js** is a React-based framework that adds server-side rendering, static site creation, and other features to improve speed and SEO (Search Engine Optimization) potential.
6. **Node.js** is a JavaScript runtime environment that enables the execution of JavaScript code on the server. It may be used to create the platform's backend, process API calls, and conduct server-side activities.

REVIEW OF LITERATURE

A literature review entails examining previously conducted research by other scholars in relation to the current topic. It involves utilizing published books, journals, and research papers as a foundation for the present study. The primary objectives of a literature review are as follows:

To critically assess prior research to identify their concepts, strengths, weaknesses, and methodologies.

To gain an understanding of existing recommendations pertaining to the subject matter and analyze the findings and perspectives of others.

To address specific questions and resolve any uncertainties associated with the present topic.

The idea for the development of system strikes the developer while the problems faced by the students applying for the Indian Universities, as there are large number of colleges with the variety of courses in Engineering, Management, Research etc. Students must visit universities in person or via numerous websites, and they must conduct extensive research before selecting a university/course based on a variety of parameters. Due to a lack of information, university and college students and faculty members are self-glorifying and inbreeding. Indian universities offer a diverse range of courses across different

disciplines, requiring students to compare these courses based on various parameters. These courses encompass undergraduate, postgraduate, and doctoral programs. Thus, the idea strike in the mind of the developer to develop an online integrated platform for more than 1000 universities in India with their offerings of thousands of courses for under-graduate, post-graduate, and doctorate degree. This idea provides solutions to the problems faced by the users. Through comparison and imitation, this will benefit the communities of students and professors. As we know everything is available to users at their doorstep so why not the colleges information should be, so an online platform strike the mind of developer for the students which provides them 24/7 access at any place and at any time [10-12].

WEBSITE FRAMEWORK

A group of resources and tools that are available to software and web developers are referred to as web development or web application frameworks. Web developers can use these frameworks to design and maintain websites, web services, and web applications as shown in Figure 1.

Figure 1. Website framework.

The literature review lays framework for future study by providing an overview of the planned system. The systems that are like to planned system have been examined to provide a baseline to application and what features are difficult to implement and what challenges might be encountered by the developer.

During the examination of the literature, domain, technical, and academic research were conducted to gain a thorough understanding of the characteristics to be incorporated in the planned system and to investigate the technology used for implementation. As a result, secondary research is carried out as part of a literature review by reviewing other people's work in order to aid the developer in constructing the suggested system.

The proposed system would provide users with important features like remote database backup, push notifications, payment options, online delivery, and many more. The developer must succeed all of the highlight discovered during the literature study; secondary research that must be executed to carry an efficient structure to the end-user.

RESULT

This is how the front page of our website looks like, On the top you can see various options like colleges, courses, exams etc. Also there is a search bar where you can type in the college name or course you are looking for. Websites that offer a variety of activities, lectures, or subject-specific information aimed at enhancing learning and augmenting in-person teaching can be classified as educational portals. In today's digital age, this website assist in making studying enjoyable and appealing for the learner as shown in Figure 2.

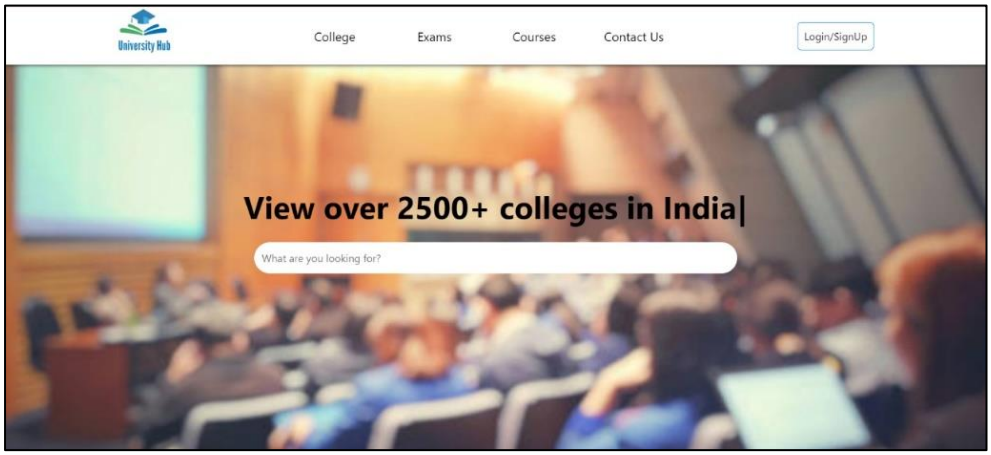

Figure 2. Result section.

Various steps involved in the implementation of the project are-

• First of all you have to click on signup button to create an account if you are a new user.

Fill up the signup details like name, email id, phone number, current city and create a password.

If you already have an account, simply enter your login information and click the login as button as shown in Figure 3.

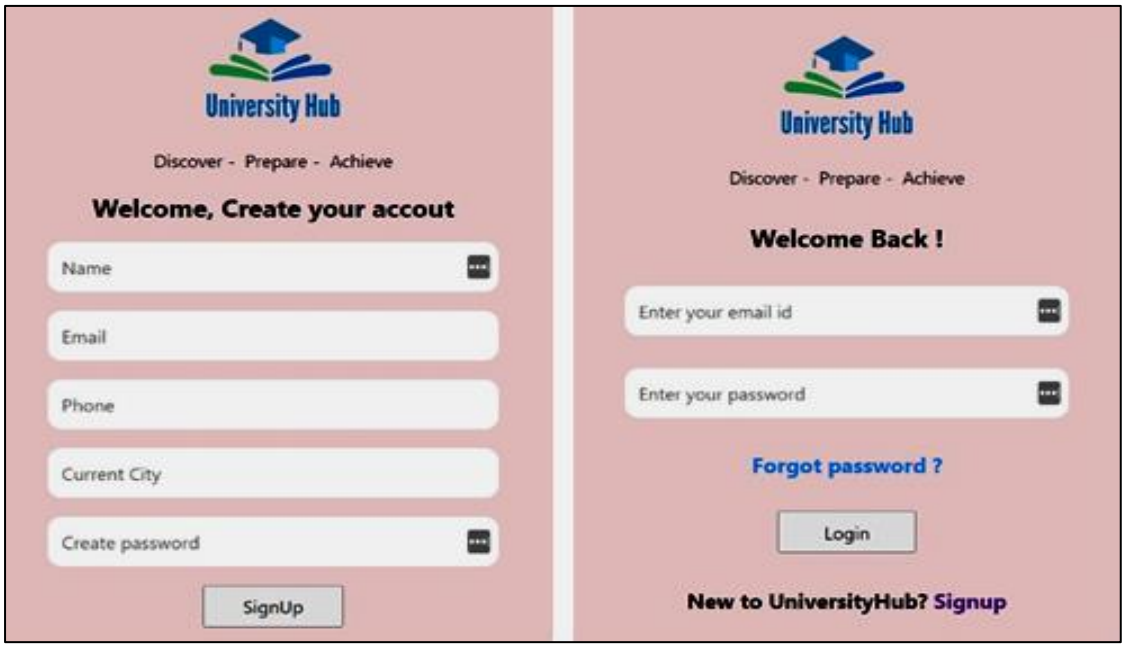

Figure 3. SignUp page.

As you scroll down you can select your study goal like Engineering, Management, Arts, Medical and so on. as shown in Figure 4.

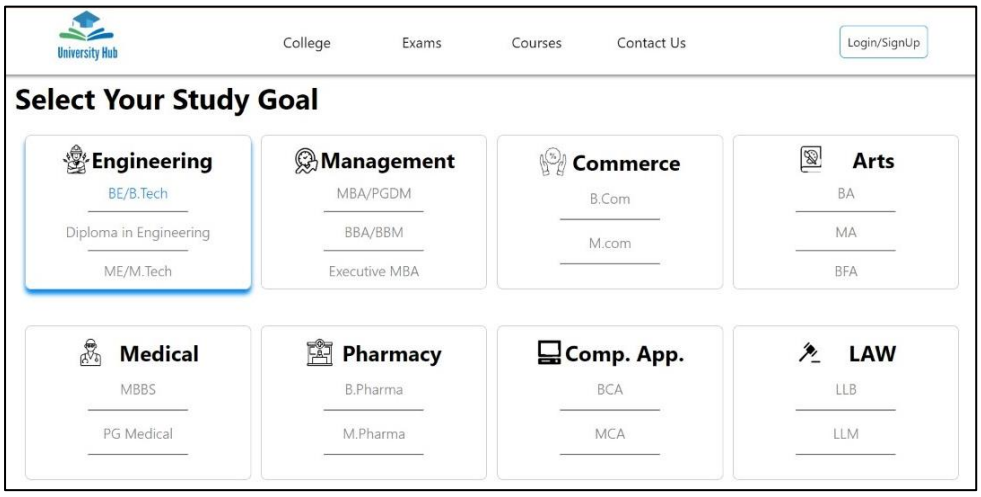

Figure 4. Engineering section.

In the bottom various options related to college ranking are available including the NRF, India today and Business today.

Also you can check out the latest exams like Jee Mains, Jee advanced, CAT, GMAT, NEET etc.. as shown in Figure 5 & 6

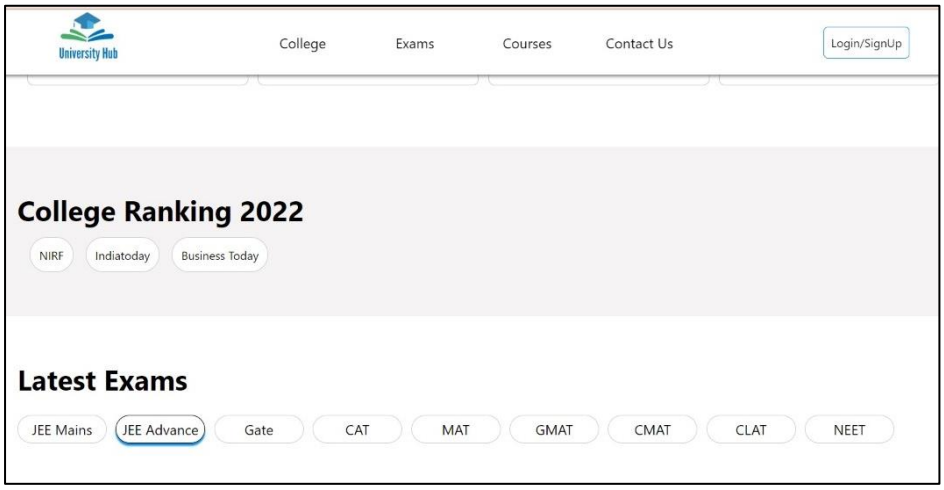

Figure 5. Exam section.

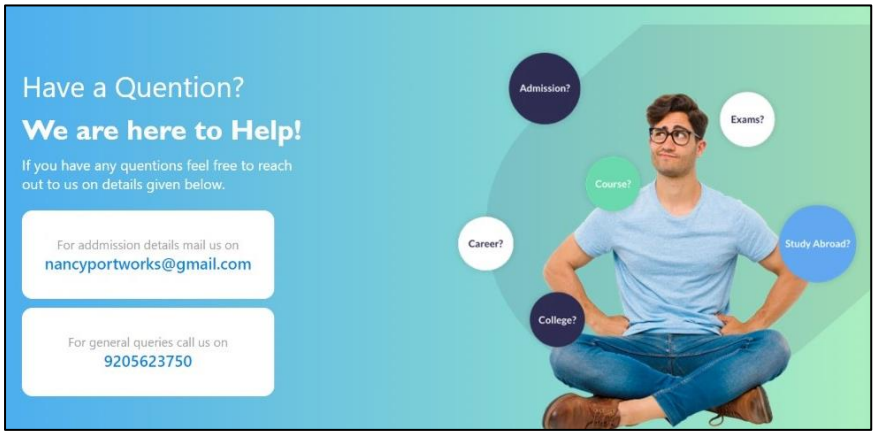

Figure 6. Query section.

CONCLUSION

The developer has recognized all of the issues faced by users. The troubles are documented together with the justification for every hassle. After all the issues are recognized, the developer`s subsequent project turned into offering suitable answers to clear up the issues. For the identical purpose, the answer similar to every hassle has been documented together with the justification. A feasibility is carried out for the system to make sure that the proposed system is operationally, technically, economically feasible and must be finished within a specific time frame. The feasibility observation is successful, creating an additional direction for the developer to transport beforehand with the project. Using interactive learning methods like lectures, audios, and other content, it is made easier to gain a thorough comprehension of the subject. The convenience of learning anywhere, anytime is economical because several educational materials are available for free and with updated contents.

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