

Empowering Students: Web-based Essentials at Your Fingertips

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Abstract— In today's fast-paced world, students at MIT Academy of Engineering in Alandi often find themselves in need of various essential services. This paper presents a web app, "Home Service on-demand," offering student-related services like accommodation, textbook procurement, and furniture acquisition. The system uses React and Node.js to simplify access to these essential services.

Index Terms— E-commerce, MERN, student services, user engagement, retention strategies, advanced technologies.

I. INTRODUCTION

MIT Academy of Engineering, located in Alandi, is home to numerous students who often require various services to meet their daily needs. This paper introduces an on-demand home service system designed to cater to these students' requirements. The platform seeks to bridge the gap between service providers and users by offering a convenient, web-based solution. By leveraging modern technologies like React and Node.js, this system aims to provide a hassle-free way for students to access essential services. Furthermore, this system aims to enhance user interactions, as well as address critical security and ethical concerns.

II. LITERATURE SURVEY

During COVID-19, the world saw the face of the pandemic, where nobody was able to search any service nearby. We came up with a solution of developing a web app to provide a platform for local stakeholders allowing them reach out to the needful customers and to promote their businesses as well. It enables users to sign in and log in, with administrators having the ability to add pandemic-related products to the shop service. Users can request home delivery of the products by submitting their details along with address. The paper addresses the critical need for online access to essential services during global crises and highlights the role of web applications in facilitating such access [1].

Another paper presents a Django web application deployed on the cloud, designed to promote local service providers in the Kanuru region of India. It aims to simplify the process of finding and booking services online, offering an alternative to in-person bookings. The system collects data from various sources and deploys it on cloud platforms, enabling residents of the region to access information about local service providers quickly and efficiently. The paper emphasizes the importance of cloud-based solutions for enhancing accessibility to local

services [2].

This paper introduces a web application for booking handyman services using modern web technologies such as Express.js, React.js, Node.js and MongoDB. In a world where demand for handyman services is increasing, this web application simplifies the process of hiring workers efficiently and cost-effectively. The use of React.js ensures a fast and user-friendly experience, and the paper emphasizes the importance of SEO-friendly web development to increase visibility and accessibility [3].

This paper presents the implementation of a web application which is designed to provide on-demand home services like electronic and electrical repairs, RO/Gas repair services and maintenance. Users can register on the website and search for service providers by specifying their location. This paper underscores the significance of on-demand service systems in meeting the needs of homeowners and the broader community [4].

"IronMan" is an innovative laundry service application that utilizes the Internet of Things (IoT) to create an efficient laundry service e-commerce business model. The system includes an Android app that allows users to access nearby laundry services from the comfort of their homes. This paper highlights the integration of IoT technology to enhance traditional services and offers a glimpse into the future of service-oriented IoT applications [5].

This paper follows a systematic approach of analysing, testing, and refining to ensure that the university website meets the highest quality standards in using the User-Centered Design (UCD) method. The paper discusses the development of a university website using the. It highlights how crucial it is to take into account aspects of the development process such functionality, dependability, usability, efficiency, maintainability, and portability [6]. The paper discusses the development of EASElective, a chatbot aimed at assisting college students with elective course selection. It outlines the chatbot's components, including intent detection, conversation management, and student opinion analysis. The study evaluated the chatbot's perceived usefulness, with findings indicating it's a convenient resource, particularly for final-year students. The paper suggests potential improvements, emphasizing the chatbot's role in enhancing course advising services [7].

III. METHODOLOGY

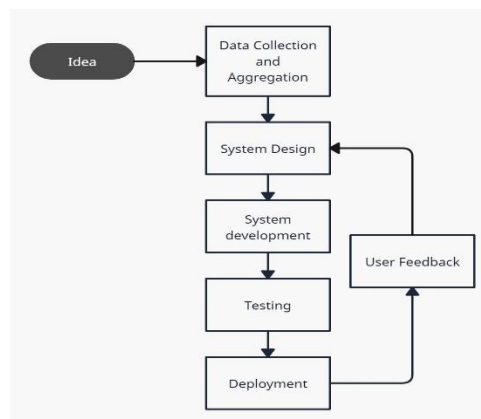


Figure 1.1. Methodology block diagram

The methodology employed to design, develop, and implement the essential services website for the students of MIT Academy of Engineering is structured into key phases, illustrated in Fig 1.1.

A. Data Collection and Aggregation

To add pertinent services to the platform, we collected and compiled all necessary data throughout this phase. The data was obtained from places like university community, nearby retailers, service providers, and other sources. The information gathered was of several kinds: it included information about services (such rental apartments, furnishings, and textbooks) as well as contact details, exact location, and cost. Ensuring the correctness and dependability of the data is done through data validation.

B. System Design and Development

In this comprehensive phase, the architecture and functionality of the platform were meticulously crafted using MERN Technology:

- a. *Technology Stack:* To ensure optimal responsiveness and scalability, we adopted a robust technology stack. React.js was selected for the frontend, providing a user-friendly and dynamic interface, while Node.js powered the backend, enabling rapid data processing and communication.
- b. *Database Management:* MongoDB, a versatile NoSQL database, was employed to efficiently manage user data, service listings, and other pertinent information.
- c. *Admin Module:* Ensuring the platform's integrity and reliability, an admin module was integrated. This module oversaw user registrations, verified service listings, and promptly addressed any user disputes that may have arisen.

C. Testing and Quality Assurance

To ensure the functionality and reliability of the platform, rigorous testing and quality assurance processes were implemented:

- *Functional Testing:* Extensive functional testing was conducted to verify the seamless operation of all website features and modules, including all components, assuring users of an intuitive and efficient experience.
- *Usability Testing:* User testing sessions were held to evaluate the platform's user-friendliness and intuitiveness.
- *Security Assessment:* Comprehensive security assessments were meticulously carried out to identify and address potential vulnerabilities, thereby guaranteeing the utmost protection of user data.
- *Performance Testing:* Load testing and performance optimization were meticulously executed to ensure the website's responsiveness and scalability, including website's performance under various conditions.

D. Deployment and User Training

After extensive development and testing, the platform was put live on a web server to make it available to the MIT Academy of Engineering student body. Thoughtfully designed user manuals and tutorials enable efficient user navigation and platform exploitation. These materials provided service providers and students with an overview of the capabilities and functionalities of the platform.

E. Continuous Improvement

Our commitment to excellence extended beyond the platform's initial deployment. We established a comprehensive framework for continuous improvement. This framework involved the systematic collection of user feedback, continuous monitoring of website usage analytics, and the implementation of iterative enhancements. These enhancements, including regular updates, were aimed at meeting the evolving needs and preferences student community, solidifying the platform's position as an invaluable resource for essential services. The methodology outlined above served as the guiding framework for the development of our essential services website, ensuring a systematic and comprehensive approach to effectively address the diverse needs of students at MIT Academy of Engineering.

IV. PROPOSED SYSTEM

The suggested system is a cutting-edge web-based platform created to improve the usability and accessibility of critical services for MIT Academy of Engineering students. It is an example of a user-centric strategy to meet the wide range of demands of the student body. The system provides an extensive array of services that are essential to the life of a student, from finding housing and buying textbooks to buying furniture and making meal arrangements. Leveraging cutting-edge technologies, the proposed system boasts a robust architecture, with a frontend powered by React.js and a backend driven by Node.js. This combination ensures a responsive, scalable, and user-friendly platform. Furthermore, the proposed system incorporates interactive components to provide smooth services and enhance the overall user experience.

A key highlight of the proposed system is its data-rich environment, underpinned by a MongoDB NoSQL database. This database enables seamless storage, retrieval, and management of user data, service listings, and relevant information.

This user-centric platform encompasses two primary user roles: "Service Providers" and "Students." Service providers can list their offerings, specifying crucial details such as location and contact information, while students can seamlessly browse, select, and engage with these services. The incorporation of an admin module guarantees oversight, registration validation, and dispute resolution, further ensuring the reliability and trustworthiness of the platform.

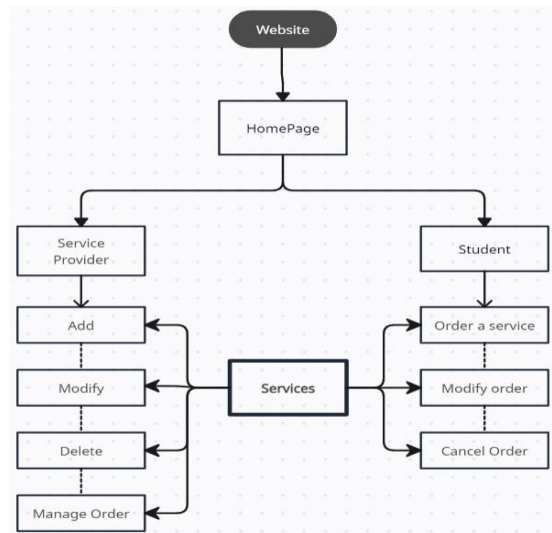


Figure 1.2. Proposed System Block Diagram

Fig 1.2 shows illustrates the main roles, actions, and components of the web-based service platform designed for students at MIT Academy of Engineering in Alandi. The platform has two main roles: Service Provider and Student. The Service Provider is responsible for adding, modifying, or deleting services, as well as managing orders. The Student can order a service, modify an order, or cancel an order. The website has a homepage and a services page. The platform has a range of functions and features, including Add, Modify, Delete, Manage Order, and Order a service. Fig 1.2 shows the steps involved in ordering a service, modifying an order, and cancelling an order. These steps include selecting a service, providing details about the order, confirming the order, and receiving updates or notifications about the order status. The flowchart also shows the steps involved in adding, modifying, or deleting a service. These steps include providing details about the service, setting the price and availability, and managing the service listing. The flowchart highlights the importance of the Manage Order function, which allows the Service Provider to track and update orders, communicate with Students, and resolve any issues or disputes. A feedback and review system foster transparency and continual service improvement, with analysing user feedback sentiment for actionable insights. Additionally, a chatbot is seamlessly integrated to assist users with inquiries and enhance the overall user experience, providing instant responses and assistance. Moreover, students can easily track service requests, with service allocation and delivery. Secure payment integration facilitates transactions for services such as textbook purchases or rental payments, ensuring user convenience and data security. This holistic approach aims to provide MIT Academy of Engineering students with a user-friendly, responsive, and intelligent system, effectively addressing their essential service needs.

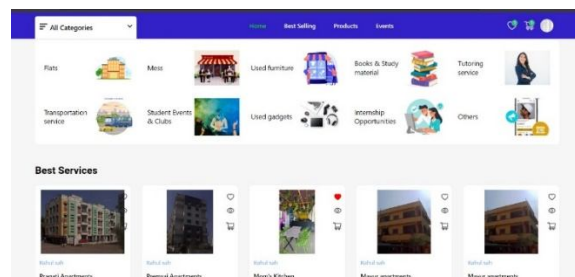


Figure 1.3. Website Interface

In conclusion, the proposed system not only streamlines access to essential services but also sets a precedent for intelligent and user-centric platforms in the academic community. Its potential impact on the informal sector is substantial, providing an efficient platform for job seekers, especially handymen, to connect with potential clients.

As we look to the future, the integration of advanced tracking systems, further AI/ML enhancements, and expanded service offerings are envisioned to continually enhance the user experience and provide valuable resources to the MIT Academy of Engineering student community.

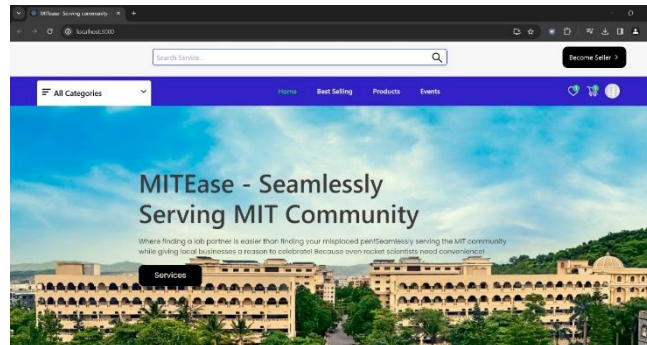


Figure 1.4 Landing page

V. CONCLUSION

In conclusion, the development and implementation of the essential services platform for MIT Academy of Engineering students represent a significant stride toward enhancing accessibility to vital resources and services. The platform seamlessly connects students with essential services, ranging from accommodation searches to textbook procurement, and from furniture acquisition to meal arrangements. By combining modern technologies such as React.js and Node.js, the system not only streamlines access but also offers intelligent, data-driven services. The user-centric design allows students and service providers to interact seamlessly, supported by an admin module that ensures platform integrity. A feedback and review system promotes transparency and continuous service enhancement, while an integrated chatbot enhances the overall user experience.

As the platform evolves, it has the potential to transform the informal sector, offering efficient avenues for job seekers and service providers to connect with clients. The integration of advanced tracking systems, AI/ML enhancements, and expanded service offerings will further solidify the platform's position as a valuable resource for the MIT Academy of Engineering student community.

In essence, this platform addresses the critical need for accessible, efficient, and intelligent student services, bridging the gap between service providers and users, and paving the way for future innovations in student service delivery.

FUTURE WORKS

Looking ahead, there are several avenues for future development and expansion of the platform:

- a) *User Experience Refinement*: Continuous optimization of the platform's user interface and responsiveness, particularly on mobile devices, to ensure an intuitive and seamless experience for all users.
- b) *Advanced Tracking Systems*: Implementation of comprehensive tracking systems to allow users to monitor service requests in real-time, providing a complete view of their interactions with service providers.
- c) *Expanded Service Offerings*: Exploration of opportunities to expand the range of services offered, including additional essential services that cater to the diverse needs of the student community.
- d) *AI/ML Enhancements*: Ongoing improvement and updates to AI and ML models to provide even more personalized services, smarter recommendations, and enhanced user interactions.
- e) *Data Security and Privacy*: Continuous vigilance in ensuring the security and privacy of user data, especially as the platform handles sensitive information and AI-driven processes.
- f) *Sustainability Initiatives*: Integration of features or services that promote sustainability and environmentally responsible practices, aligning with the broader goals of the academic community.
- g) *Community Engagement*: Actively seeking and incorporating user suggestions and preferences into the platform's evolution to ensure it remains a valuable and relevant resource for MIT Academy of Engineering students.

These future developments and enhancements aim to keep the platform at the forefront of technology, further enhancing its utility and effectiveness in meeting the evolving needs of the student community while harnessing the power of AI and ML to provide intelligent and data-driven services.

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