

MUETHUB: A Web App for University Communication and Collaboration

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Effective communication and collaboration are vital aspects for facilitating academic activities at universities. However, at Mehran University of Engineering and Technology (MUET), the current means of communication are rather decentralized and include the use of WhatsApp groups, social media pages, manual announcements, and informal student interaction, which often results in disinformation, delays, and lack of structured collaboration. Hence, the purpose of the current research project is to develop a centralized platform for MUET-specific communication and collaboration. The main novelty of MUETHUB is that it includes an authenticated student-to-teacher communication system, departmental forums, a community management module, an academic resource sharing section, public forums, and AI chatbot. The platform was developed using the MERN stack (MongoDB, Express.js, React.js, Node.js), TypeScript, and the Tailwind CSS framework for application development. The official information about MUET was taken from the university sources. The information about the communities was checked through the approval system. Separate modules, including the authentication module, messaging module, resource-sharing module, community management module, and AI chatbot, were designed and implemented into one unified platform and tested through user testing and feedback. A test with the participation of 30 participants demonstrated a user satisfaction of 92%, while AI chatbot was rated positively by 88%. Performance tests done in a controlled environment gave the following results: average page loading time is 2.1 sec, average system reaction time is 1.8 sec, and the accuracy of response of the chatbot is 88%. Thus, students and teachers of MUET can use MUETHUB to communicate with each other through authenticated departmental and private messages, share academic resources, get involved in university communities, and access official information about MUET. The AI chatbot provides immediate responses to university-related questions based on verified information of the institution, thus assisting new students with onboarding. The administrative modules allow managing departments, communities, public forums, and chatbot training data.

Keywords: University Communication; Academic Collaboration; MERN Stack; Artificial Intelligence; Web Application



Introduction:

Communication and collaboration are key aspects of any higher educational institution, allowing effective interaction between students, faculty members, and university administration. Efficient communication contributes to successful discussions, sharing of knowledge and resources, and collaboration, which are crucial for the academic success of the students and the development of the university. Due to the fast development of Information and Communication Technology (ICT), universities have started using digital solutions to improve communication efficiency, provide timely access to academic information, and to create collaborative learning environments. Recent research has shown that digital collaborative learning environments are highly beneficial for students because they allow continuous communication, effective teamwork, sharing of knowledge and experience, and overall improvement in the learning process [1][2][3].

The fast development of artificial intelligence (AI) technologies has changed higher education, providing smart systems that can help in performing the tasks associated with teaching, learning, and administrative processes. For example, generative AI models and conversation agents like ChatGPT can be helpful in providing assistance to students in writing academic papers, finding necessary information, solving problems, and personalizing the learning process [4][5][6]. In addition to these solutions, academic advising and admission chatbots are used to help students receive timely and relevant advice about the academic policies, choice of courses, university admission, and other services provided by the institution [7][8].

Another way of implementing artificial intelligence into higher education is to integrate it with Learning Management Systems (LMS). The combination of AI chatbots and LMS allows for automated assistance, recommendations, personalized learning, and tutoring, while also improving the communication between students and instructors. Research shows that AI-assisted learning environments improve student satisfaction, encourages self-learning, and increases engagement through personalized educational experience. Intelligent educational assistants can also help in providing the curriculum-oriented guidance, answering questions related to the courses, providing the possibilities for self-paced learning, and decreasing the workload of instructors [9][10][11][12][13].

However, there are still several challenges associated with the communication system of universities. Most universities still use several independent platforms for communication that include social media applications, messaging apps, university portal, and LMS. Such fragmented approach leads to the gaps in communication, duplication of information, poor access to the resources, and problems in managing the academic communities in one single platform. Moreover, most AI applications that are now used in higher education concentrate on individual tasks like academic advising, intelligent tutoring, admissions support, or virtual learning but do not integrate communication, collaboration, community management, academic resource sharing, and AI-assisted services into one single university platform [14][15][16][17].

Some recent research has highlighted that there is increasing emphasis on the establishment of a unified digital ecosystem of communication, collaboration, mobility, and artificial intelligence in higher education. According to [18], mobile learning, information sharing, and personalized assistance using AI technology can help in improving students' participation and learning outcomes [19]. In addition, Jony and Hamim pointed out that AI-driven virtual collaboration could be helpful in making communications, collaborations, task management, and feedback more efficient in higher education institutions [20]. Likewise, it was found by Sergeeva et al. that university students have a realization of the importance of AI in academic communication and collaboration, yet concerns related to privacy, security, and academic integrity still remain relevant [21]. Furthermore, Sadat et al. found that AI-

powered cloud communication solutions can increase engagement through interactive, adaptive, and collaborative means of communication but the success of such solutions hinges on institutional capabilities and ethical guidelines [22].

This problem also persists at Mehran University of Engineering and Technology (MUET), where most students use informal communication channels to discuss matters related to their studies, share the information, and communicate with departments. The absence of a single university platform could result in inconsistent dissemination of the information, delays in announcements, fragmented communication between departments, and inability to collaborate academically. New students could also face difficulties in getting accurate information, academic resources, community information, and general advice related to the university because of the absence of an integrated communication environment.

Therefore, this paper suggests developing a MUETHUB, an AI-assisted university communication and collaboration platform for higher education institutions. The platform would include authenticated access for the users, communication within the departments, academic community management, academic resource sharing, discussion forums, and AI chatbot integrated into the web-based platform.

Research Objectives:

The primary purpose of this study is to design and assess the MUETHUB as a comprehensive online portal for university communications and collaborations. The aims of the research are to:

Develop a centralized and role-based platform for communications between students, teachers, administration, community members, and visitors.

Integrate departmental and personal communications, public forums, academic resources sharing, community management, and AI chatbot into a single university platform.

Assess the functionalities, usability, performance of the system, and the level of user satisfaction with the proposed platform. Investigate the potential benefits of using MUETHUB in enhancing academic communications and collaborations, information availability, and student support at MUET.

Related Work:

Recently, advances in educational technology have led higher education organizations to use digital collaboration platforms for better communication, sharing of knowledge, and collaborative learning. [17] provided a systematic review of digital collaborative learning in higher education and revealed that digital collaborative environments contribute significantly to the improvement of student engagement, cooperation, communication, and learning. Likewise, [2] performed a review of 20 years of collaborative learning literature and stated that digital collaborative teaching environments encourage active participation, interaction of learners, and knowledge creation by implementing flexible learning practices. Moreover, [11] stated that digital collaborative platforms provide academic communication, information sharing, and cooperative learning and hence represent useful resources for modern higher education organizations.

The fast development of generative artificial intelligence technology brings new opportunities for the enhancement of teaching and learning. [7] have described the impact of ChatGPT on higher education and noted that it can be used for academic writing, information search, personalized learning, and productivity improvement of students. [16] has studied the ethical aspects of generative AI chatbots and stressed the need to address such issues as privacy, academic integrity, transparency, and responsible AI application in education.

A number of works are devoted to AI chatbots developed specifically for the services of universities. For example, [4] have proposed an AI academic advising chatbot to help students in receiving academic guidance and institutional services, while [14] have developed an AI chatbot for university admissions and career guidance that increased the efficiency of

responses and decreased the burden of manual work. [8] have introduced an AI chatbot platform providing personalized educational recommendations to the students.

Additionally, researchers are exploring the integration of AI technology into learning management systems and virtual learning environments. Thus, [13] have analyzed the integration of AI chatbot technology in learning management systems and have considered its advantages for the improvement of interaction between learners and educational platforms. Also, [3] have assessed the experience of students working with Moodle and have revealed positive results concerning usability, accessibility, and online learning. [6] has proposed an AI-based personalized learning platform adapting educational content to learners' needs. Finally, [12] have developed an intelligent educational assistant which is able to answer questions related to the curriculum and to assist in self-paced learning based on the large language model.

Also, comprehensive reviews by [9] and [10] revealed the potential of AI chatbots for the improvement of student support, educational accessibility, administrative efficiency, and personalized learning. Similarly, [1] and [15] have stressed the growing importance of AI-based virtual assistants in academic writing, research activities, and educational decision-making.

Although previous studies proved the effectiveness of digital collaboration platforms, AI chatbots, intelligent educational assistants, and learning management systems, most of existing solutions are oriented toward providing separate educational services or isolated application of AI technology. There is a shortage of studies dedicated to the development of the integrated university platform offering all of the above functions in one system. Hence, the proposed MUETHUB platform aims at filling this gap by integrating all of these functions into the unified web-based system.

Novelty of the Study:

The uniqueness of MUETHUB is the consolidation of university communication, academic collaboration, community management, resource sharing, and AI-based guidance in one role-based platform. Traditional university portals offer only administrative information related to academic results, announcements, and registration procedures, while Learning Management Systems concentrate only on educational material, tasks, and assessments. Informal communication platforms like WhatsApp or group pages in social networks allow immediate communication but do not include authentication, academic resource management, and role-based management features. On the contrary, MUETHUB includes authentic student-teacher communication, departmental and personal messaging, public academic discussion boards, resource sharing, community and event management, administration functions, and the AI chatbot based on university data. Thus, the proposed platform allows users to be less dependent on various unrelated platforms and offers a united digital environment for MUET.

Material and Methods:

The development process of MUETHUB involved the use of software engineering methodologies aimed at fulfilling the communication needs of MUET. First, the requirements analysis phase was conducted to identify the problems encountered in communication between students, teachers, administration, and other university communities. Further, system architecture, database schema, user interface design, and system workflow were devised based on the identified requirements before the development phase was undertaken. The activities under each phase of the study are shown in Figure 1. It includes system design, data collection, web platform development, implementation, testing, deployment, and monitoring stages.

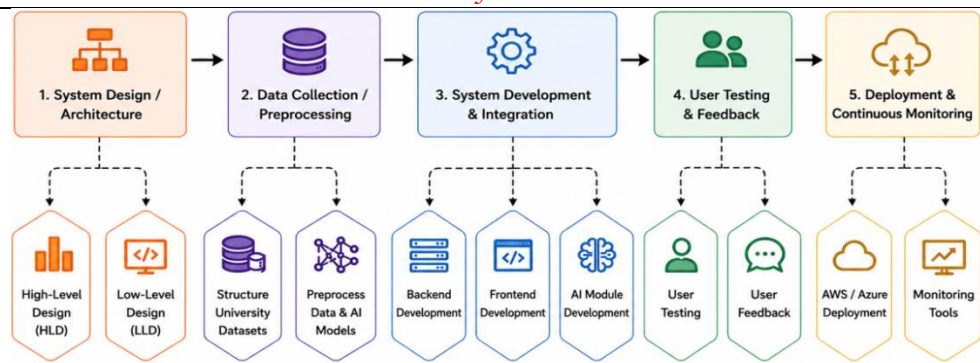


Figure 1. Proposed MUETHUB Development Framework

The system was developed using the MERN technology stack involving the use of MongoDB for database management, Express.js and Node.js for backend development of the project, and React.js for frontend development. TypeScript was used to improve the quality of the code while Tailwind CSS enabled the development of a consistent and responsive user interface. Visual Studio Code was used as the development environment whereas GitHub provided version control during the software development process. Table 1 shows the list of technologies used for the development of the MUETHUB web portal.

Table1. Technologies Used for MUETHUB Development

Tool/ Technology	Usage
React.js	To create interactive user interfaces and dashboards. Delivers speed and responsiveness of the site without having to reload it repeatedly.
TypeScript	The improved version of JavaScript helps to identify errors early on and write clean and structured code.
Node.js	Execute JavaScript on the server. connect the frontend to the database and service multiple users simultaneously.
Express.js	Node.js route manager to log in, sign up, share resources, etc. Streamlines the development of the backend.
MongoDB	Used to hold user information, chats, resources and events in document form rather than the table
Tailwind CSS	An ability to create an optimal clean, responsive, and mobile-first design using existing classes.
Visual Studio Code (VS Code)	Coded with the help of a code editor that was used to code, test code and debug with a variety of handy extensions.
GitHub	A code repository, versioning and teamwork and collaboration from a website.

System Architecture and Module Interaction:

MUETHUB is designed based on a web architecture which includes frontend, backend, database, authentication, and an AI chatbot layer. React.js and TypeScript are used to develop the frontend interface tailored to roles such as students, teachers, administrators, community leaders, and guests. Requests made by the users via these interfaces are sent to the Node.js and Express.js backed layer where the application logic and access control mechanisms are implemented. Backend interacts with MongoDB in order to perform operations including saving and retrieving of user profiles, departmental details, chat content, academic material, communities, events, forums discussion, and chatbot knowledge. Authentication is performed using users' institutional credentials and allows only authorized users to use specific features according to their roles. Whenever any question related to the university is asked by a user, it is received by the AI chatbot layer through frontend, processed

using the verified university knowledge base, and sent back to the user interface via the backend. Interaction between the above-mentioned components and user requests is shown in the following figure2.

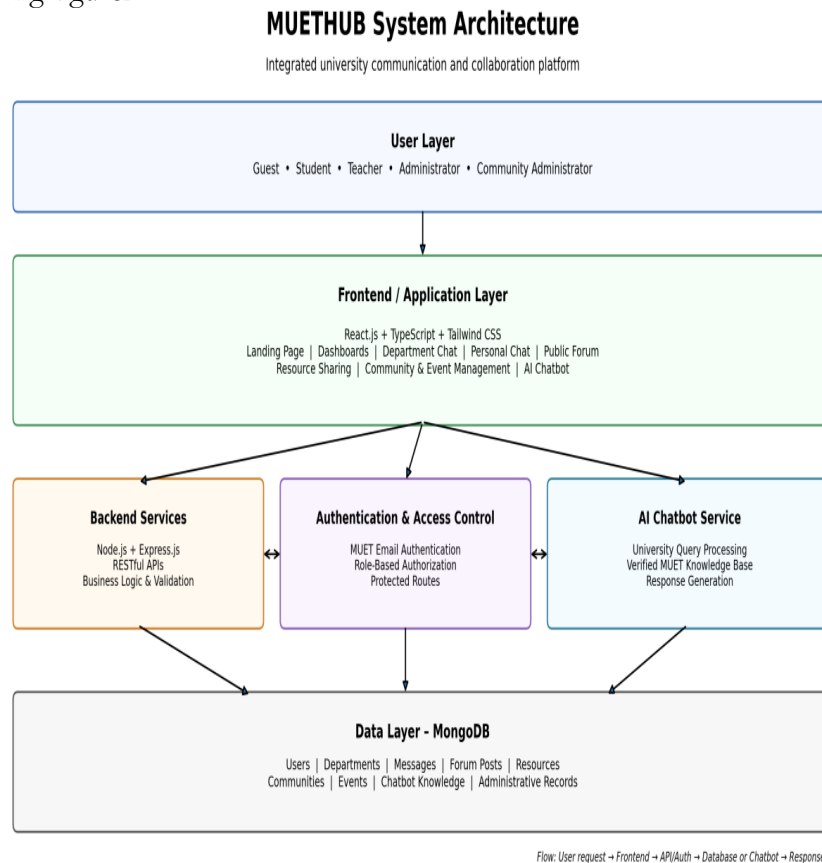


Figure 2. System architecture of MUETHUB

The software has a role-based architectural structure providing access to administrators, teachers, students, community leaders, and guests depending on the access rights assigned to each person according to his/her role. This application includes user authentication, discussion forums in departments, community management capabilities, private messaging functionality, academic resource exchange, public discussion features, event management, and an AI chatbot, all implemented in one central web application. System workflow and user interaction are shown in the use case diagram provided in Figure 3.

The database was designed for handling user profiles, departments' information, discussion threads, uploaded files, communities, events, chatbot knowledge base, and administration data. Relationships among database entities were created to ensure data consistency and ease of information extraction. Authentication and access control were implemented in order to provide access to MUET resources only to authorized users according to their role.

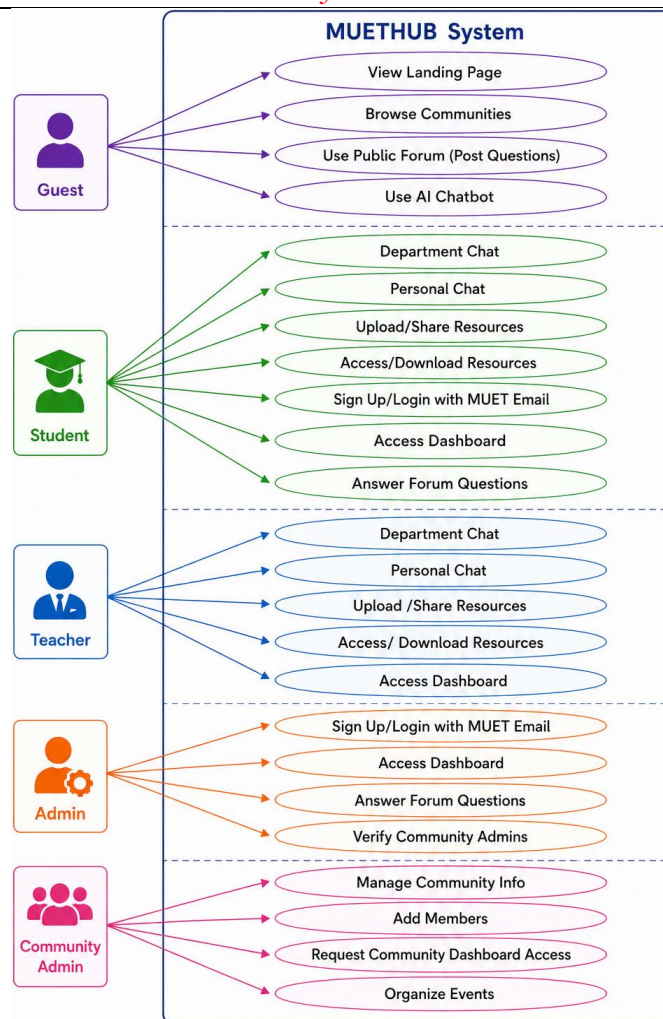


Figure 3. Use Case Diagram of MUETHUB system

Security, Privacy, and Data Protection:

MUETHUB utilizes authentication through MUET email accounts and role-based access control to enhance security and restrict system features of the system based on users' roles. Students, instructors, community leaders, and administrators have access to their respective modules only. The administrative settings facilitate community verification, forum moderation, and training of the chatbot by approving the training data. In addition, when deploying the system at the institutional level, certain additional practices such as HTTPS, password hashing, logging, and backups must also be ensured.

System Testing Procedure:

Testing of the MUETHUB platform was carried out to confirm its functionality, usability, performance, and role-based access control. Initially, testing was done on individual modules and then on the integrated system, where interactions among the frontend, backend, database, authentication, and AI chatbot were confirmed. Testing cases involved the following: user registration and login, accessing the dashboard, departmental and private messaging, participating in public forums, uploading and downloading academic resources, community management, events management, performing administrative tasks, and asking questions from the AI chatbot. Performance metrics included page load time, response time, successful task completion, AI chatbot response accuracy, and system behavior under repeated user requests. Successful testing involved generating the expected output, restricting users to

role-based functions, ensuring the absence of critical errors, and successfully completing tasks within the predefined response time.

User Evaluation Methodology:

User evaluation of MUETHUB was conducted on 30 users, out of which 24 were students while six were teachers at Mehran University of Engineering and Technology. Convenience sampling technique was used to select these participants since they were the target audience of the proposed platform, and they could perform testing of the key functionalities of MUETHUB. Before filling out the questionnaire, the participants interacted with the major modules of MUETHUB such as login, navigation of dashboard, communication between departments and within the university, forums, resource sharing, community management, and chatbot.

A questionnaire comprising ten questions was developed to assess the usability, interface, navigability, communication facilities, resource sharing, usefulness of chatbot, community management, discussion forums, system responsiveness, and overall satisfaction. Five-point Likert scale was used for recording the responses from the respondents where 1 is strongly disagrees while 5 is strongly agrees. Prior to administration of the questionnaire, its validation was done for clarity, relevance, and convergence of all the features of the system. Frequencies and percentages were calculated from the collected data for analysis.

Result and Discussion:

MUETHUB is a web application that has been designed and deployed as a centralized platform for communicating and collaborating in MUET. Different types of users like students, faculty, administrators, community leaders, and guests are supported by the system in which role-based access control determines the access to system features. Communication, resource sharing, community management, and AI assisted support have been integrated within the application that **helps** users perform academic and collaborative tasks in an efficient manner.

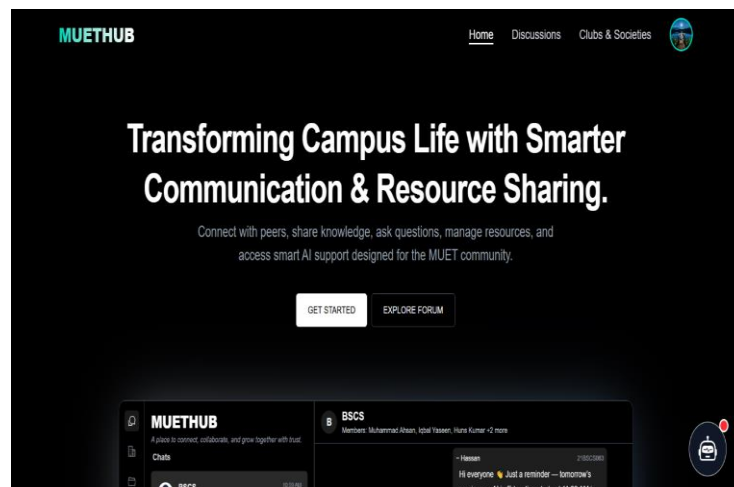


Figure 4. Home page of MUETHUB

The landing page, shown in Figure 3, provides access to the basic features of the platform and it acts as the entrance to the platform for both registered users and guests. Registered users can log into the system using the MUET official credentials in order to gain access to the dashboard whereas guests get access to the publicly available features of the platform. The authentication process verifies the credentials of the user before granting access to the system as per the role assigned to the user.

The AI chatbot feature was developed to answer university-related questions using information obtained from the official MUET website [23], as shown in Figure 4. Chatbots help students, especially newly admitted students, obtain information about departments,

procedures and services offered by the university without depending on unofficial channels of communication.

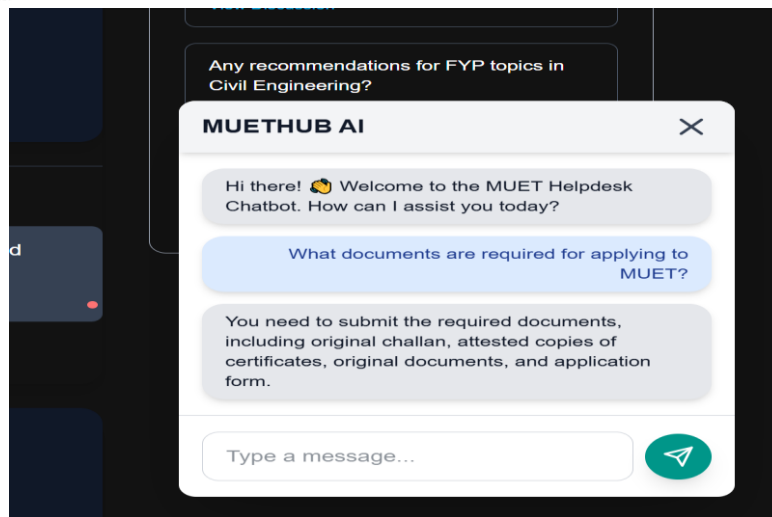


Figure 5. AI-powered chatbot interface

The community feature helps the users in exploring the communities, discussing within the department, communicating with the members of the community, organizing events and managing the community activities. The platform also supports private messaging between the students and faculty to perform academic communication as shown in Figure 5.

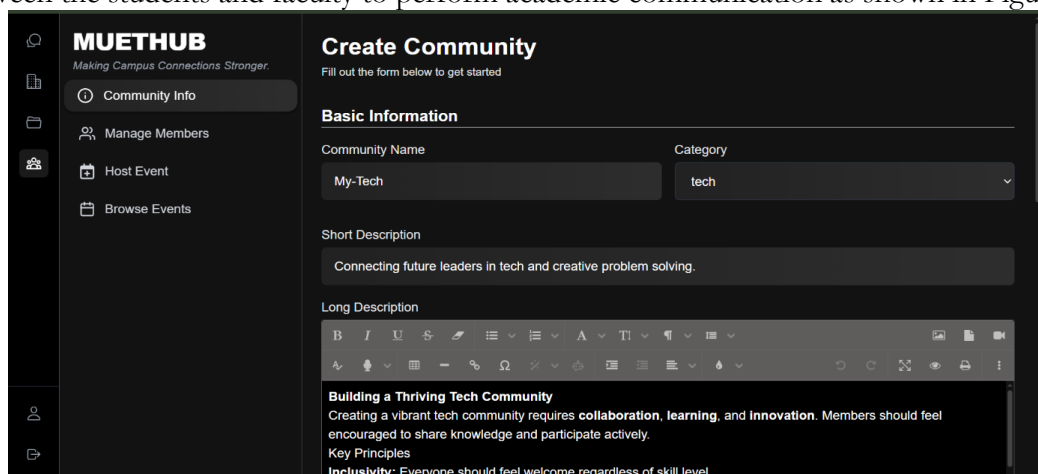


Figure 6. Community interface

The resource sharing feature of the system allows users to upload, manage, browse and download academic resources from the repository of the platform as shown in Figure 6. Administrative features have been implemented to manage the departments, verify the community leaders, moderate the public forums and train the chatbot.

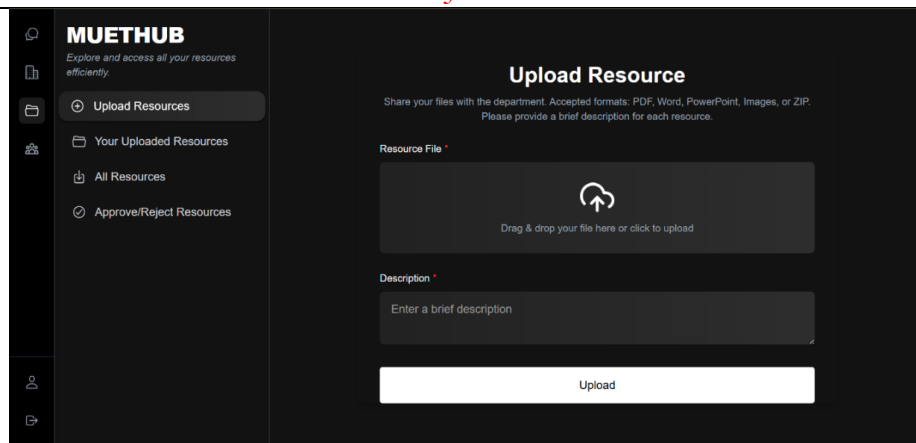


Figure 7. Academic resource sharing module

The Resource Sharing module allows both students and educators to upload and download academic resources from a centralized location as shown in Figure 7. This provides an improved way of sharing knowledge, eliminates reliance on other software, and ensures that resources are easily available to the concerned individuals.

User Testing and Feedback:

Once all the major modules had been implemented successfully, the usability and user satisfaction of the proposed MUETHUB system were assessed. Feedback from 30 users, including students and teachers, was collected through a questionnaire that addressed various aspects of the system. These aspects included usability, interface, communication facilities, resource sharing, AI-based chatbots, and overall user satisfaction. The collected feedback data is shown in Table 2.

Table2. User Testing and Feedback table

Feedback Category	Positive Response (%)	Negative Response (%)	Key Comments
Ease of Use	93%	7%	Most users found the interface simple and easy to navigate.
User Interface Design	90%	10%	Users appreciated the clean and organized interface.
Department Chat	92%	8%	Communication between students and teachers was effective.
Resource Sharing	90%	10%	Uploading and downloading academic resources was convenient.
AI Chatbot Assistance	88%	12%	The chatbot provided quick and relevant responses to academic queries.
Community Management	89%	11%	Community creation and member management were considered useful.
Discussion Forum	91%	9%	Users found the forum helpful for asking and answering academic questions.
Overall User Satisfaction	92%	8%	Participants expressed a positive overall experience using MUETHUB.

Statistical Analysis of User Feedback:

The results of the user feedback survey are discussed in Table 2, which has been evaluated using descriptive statistics. There was a positive reaction rate between 88% and 93% for the different evaluation criteria, indicating the overall positive attitude of the MUETHUB users towards the platform. Ease of use had the highest positive rating of 93%, followed by the department chat and overall user satisfaction, both with 92%. Discussion forum had 91%, user interface design and resource sharing modules each had 90%, community management had 89%, and the AI chatbot had the lowest rating of 88%. Despite the relatively low rating, many participants found the chatbot helpful in getting the university related information.

Behavior and Compatibility Testing:

Behavior testing was carried out in order to establish the consistency, response and usability of the MUETHUB across popular web browsers and platforms. The tests included page loading behavior, consistency of the interface, controls for navigation and presentation of all major platform components. Table 3 provides a summary of the test results.

Table 3. Behavior and Compatibility Testing

Browser/Device	Loading Time	UI Consistency	Control Functionality	Overall Usability
Google Chrome – Desktop	1.8 seconds	Consistent	Smooth	Excellent
Microsoft Edge – Desktop	2.0 seconds	Consistent	Smooth	Excellent
Mozilla Firefox – Desktop	2.2 seconds	Consistent	Responsive	Good
Google Chrome – Android	2.4 seconds	Consistent	Responsive	Good
Safari – iOS	2.6 seconds	Consistent	Responsive	Good

The findings indicate that MUETHUB had uniformity in its interface and controls throughout the browsers and devices tested. Loading times for the desktop browsers were relatively faster compared to those of mobile devices, while no major compatibility problems were experienced during the simulation testing exercise.

Functional Testing of Core Modules:

The functional testing was done through controlled simulation of test cases to determine whether the major MUETHUB modules yielded the required outputs for both valid and invalid user inputs. The following functionalities were tested: authentication, role-based authentication, communication, resource sharing, forum, community management, and administrative functionalities. The results are given in Table 4.

Table 4. Functional Testing of Core MUETHUB Modules

Test Case ID	Module/Description	Input Data	Expected Outcome	Actual Outcome	Status
FT-01	Valid user login	Correct MUET email and password	Correct dashboard should open	Dashboard opened successfully	Passed
FT-02	Invalid user login	Incorrect credentials	Error message should be displayed	Error message displayed	Passed
FT-03	Role-based dashboard access	Student, teacher, or admin account	Only authorized features should be visible	Correct role-based features displayed	Passed
FT-04	Send departmental message	Valid message and department	Message should appear in department chat	Message delivered successfully	Passed

FT-05	Send private message	Valid recipient and message	Message should reach the selected user	Message delivered successfully	Passed
FT-06	Upload academic resource	Supported file and description	Resources should upload successfully	Resource uploaded successfully	Passed
FT-07	Invalid resource upload	Unsupported file format	Validation messages should appear	Validation message displayed	Passed
FT-08	Post and answer forum question	Valid question or answer text	Content should be saved and displayed	Forum content saved correctly	Passed
FT-09	Create or update community event	Authorized community-admin data	Events should be created or updated	Event updated successfully	Passed
FT-10	Unauthorized administrative operation	Student account attempts admin task	Access should be denied	Access denied successfully	Passed

All the functional test cases yielded the desired outputs in the course of the controlled simulation test. The valid users managed to access their respective modules, whereas invalid users were prevented from performing their operations. Communication, resource sharing, forum, and community management functionalities yielded the required outputs.

Performance Evaluation:

An evaluation was done under controlled simulation to evaluate the performance of MUETHUB. During the evaluation, page loading time, system response time, throughput, accuracy of AI chatbot, and resource utilization were evaluated under controlled simulation of normal use cases. The results are shown in Table 5 below.

Table 5. Performance Evaluation Results

Performance Metric	Test Condition	Result	Observation
Page-loading time	Major pages tested through repeated simulated sessions	2.1 seconds average	Pages loaded within an acceptable duration
System response time	Login, dashboard, messaging, and resource-access requests	1.8 seconds average	System remained responsive
Throughput	100 concurrent simulated requests	All requests were processed successfully	Stable request processing
Chatbot response accuracy	50 university-related queries	88% accuracy	44 queries were answered correctly
Resource utilization	Moderate simulated workload	48% CPU and 780 MB memory	No critical resource overload observed

It can be seen from the results that MUETHUB demonstrated acceptable performance under controlled simulation. There were no problems with page loading or system response time, which never exceeded three seconds. AI chatbot accuracy was 88%.

Discussion:

The design of MUETHUB solves the communication problems of Mehran University of Engineering and Technology (MUET) in form of an internet web application providing a

platform for communication among the academic members of the university community. The implementation of the system includes many university services in a single application through which the students, professors, administrators and leaders in the community can communicate and share academic resources within a secure environment. Unlike the informal channels used to communicate about university issues, the proposed platform offers a systematic way of organizing the information in the university together with role-based access to the different services offered by the university.

Several recent studies indicate the effectiveness of digital collaboration **environments** in terms of increasing students' engagement, communication, cooperation, and information exchange [14][17]. The usefulness of AI chatbot platforms in offering educational advice, assistance, and prompt replies to inquiries related to universities has been confirmed by relevant research as well [13][4]. Nevertheless, traditional learning management systems are primarily intended to deliver courses, whereas the informality of other platforms such as WhatsApp and social media do not provide components such as authentication, centralized academic resources, and role-based management. On the contrary, MUETHUB integrates communication with authentication, academic resource sharing, discussion boards, community management, and assistance through AI into one role-based platform for MUET. The user satisfaction rate of 92% and 88% for chatbot assistance proves potential applicability, although more tests in an institution are required.

Through the integration of the AI chatbot in MUETHUB, there is provision of automatic answers to university related inquiries using the institutional information available. It enables the students to gain information about the university departments, academic processes and university services without using the informal channel. Integration of the AI chatbot with other communication modules makes the process more efficient.

In addition, there are other communication modules including community management and resource sharing which help the members to engage in discussions of the departmental issues, sharing of scholarly materials, organizing of events and communication through both public and group chats. Implementation of role-based authentication enables the user to have access only to the services related to the roles assigned to them.

Practical Implications:

The platform MUETHUB could serve as an integrated means of communicating and collaborating for students, faculty, administration, and the university community. Through this platform, reliance on other modes of communication can be decreased because MUETHUB offers such services as authentic communication, academic content exchange, discussion boards, community management, and AI guidance through one single platform. Nevertheless, the integration of MUETHUB will demand some maintenance and administrative support from the university. In addition to that, MUETHUB framework could be modified according to individual institutions' needs to fit different higher education institutions.

Limitations:

MUETHUB consists of various university communication and collaboration tools; however, there are some disadvantages of the research. First of all, the platform was developed only for MUET students, and the software has not been tested in any other educational institution. Second, the data about users' satisfaction was collected from 30 respondents. Third, the tests of the platform's performance were performed in the simulated environment conditions instead of real situation when the platform works with a large number of users simultaneously. Fourth, the chatbot operates on the basis of limited institutional knowledge database and, therefore, does not provide correct answers to the complex and unexpected questions. Fifth, the platform works only with good internet connection. Scalability and security of the system in terms of large-scale institutional implementation was not tested and must be investigated in further research studies.

Conclusion:

MUETHUB was developed as a unified web platform for facilitating communication and academic collaboration at Mehran University of Engineering and Technology. The web application includes role-based authentication, authenticated communication, departmental and private messaging, academic resource sharing, discussion forums, community management, and AI-powered guidance in one place. As the result of the MUETHUB evaluation conducted with the participation of 30 users, 92% of the respondents were satisfied with the platform while chatbots got 88% satisfaction rate. From the results of the performance evaluation in the controlled conditions, it follows that the average page loading time is 2.1 seconds, system response time is 1.8 seconds, and chatbots' responses accuracy is 88%. Thus, the capabilities of MUETHUB for organizing university data and academic communication are evident from the above-mentioned results. Nonetheless, further research should involve testing MUETHUB in the real environment with **a larger number of users**.

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Author's Contribution:

All authors contributed to the conceptualization, system development, writing, and review of the manuscript. All authors have read and approved the final version of the manuscript

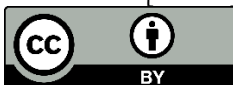
Conflict of interest:

The authors declare that there is no conflict of interest regarding the publication of this research.

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