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Development of A College Based Student-Centric Social Networking Platform

Srujana Inturi, Bharath Kotipalli, Sreekar Reddy Karnati

Abstract: ***Student-centric social networking platforms are playing an important role to engage students with one another. These platforms are becoming increasingly popular among students around the world, for the development of mutual cooperation, knowledge sharing, and development of opportunities. The aim of present research paper is to discuss about a new student-centric social networking platform created exclusively for colleges where students can learn more about the college, available clubs, seek help from peers or faculty, share common interests, and stay up to date with the happenings in and around the campus. A college based social networking website was developed where, the front end was built with ReactJS, and the Chatbot API is built with Python and Flask. The Chatbot was implemented using natural language processing. The database was built with PostgreSQL and accessed using Hasura and Graph QL. The developed application/website promotes teaching and learning in a more dynamic way without compromising the privacy of users. Admins can use this platform to specify which semesters, classes, (or teachers) should receive notices. The faculty are accessible directly through this platform without sharing their personal contact information. It has a section for events and clubs, where all clubs can showcase their accomplishments and so on. This allows students to meet other students with similar interests in the college (or alumni). This website also function as a digital identification card. Further, this platform is all about connecting with the right people and improving the college experience both academically and socially.***

Keywords: ***Student-Centric Social Networking Platform, PostgreSQL, Hasura and Graph QL.***

I. INTRODUCTION

Millions of people all over the world use social networking platforms like Facebook, Twitter, and Instagram to interact with friends and family for sharing information and opinions, consume news and entertainment. These platforms have become an omnipresent component of modern life. Although these platforms were primarily intended for the use by general public, students have been increasingly turning them as a means of communication and collaboration in recent years.

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On the other hand, the vast majority of currently available social networking platforms are not adapted to one-of-a-kind needs and preferences of students, resulting inadequate support to their learning and educational objectives. About 7 out of 10 students confirms the use of social media to discuss educational topics if they have access to the Internet. Half of the students informed their use for completing the school assignments with friends using these platforms.

The purpose of this research paper is to create a social networking platform keeping student population as its primary focus. This platform would be tailored to meet the needs of students during their studies in educational institutions. With the provision of a wide variety of features and functions as per the requirements and preferences of students, the developed platform works towards improving student interaction, engagement, and learning outcomes.

II. LITERATURE REVIEW

Based on the results from survey of research literature, many different institutions have looked at the impact of social media on student participation and teamwork. Students participation and communication can be benefited from social networking, as discovered by Kirschner and Karpinski [1]. Rui and Wang [2], reached a comparable result, that students ability to work together could be improved by using social networking sites like Facebook. Another study [3] in which the employment of social networking platforms have been investigated in educational institutions of higher learning. According to this study, platforms for social networking can function as a complement to more conventional forms of education by providing an environment feasible to knowledge acquisition. Further, student engagement and connection can be increased through the use of platforms for social networking, which also helps to foster a feeling of community among those who are learning.

Existing social networking sites, however, lack the functionality required to effectively support academic collaboration. For this reason, numerous developments are being happening in recent years for student-focused social networking platforms. Educators and students can work together towards assignments and other school-related tasks by joining Edmodo, a social networking site created keeping them in mind. Just like Facebook and Google Classroom, Schoology gives a common online space for students and teachers. Based on the demand of college specific social networking systems few researchers have developed different mode of college specific communication systems like incorporating--Chatbot for college website [4,5,6].

These Chatbot systems acts as a human at enquiry office but they can only share the information and does not fulfil all the requirements like improving student interaction, engagement, and learning outcomes.

III. PROBLEM STATEMENT

In the present world, where technology reigns, we are still using the traditional system, passing around notices using paper in the college, which is not exactly an efficient way of doing things and is not environment friendly too. There is no platform that is exclusively used for colleges, where every student can connect with their seniors, faculty and even alumni and resolve their queries, discuss ideas or share their experiences with each other. There is no system to notify students about unexpected events and emergencies (like bandhs etc.) immediately. There is no online system in college that shows the available clubs, their achievements and allow one to join the club. When students want to contact certain faculty, they must search their contact through internet or through people and then use their contact number to interact with them. The process is not exactly simple and exposes the faculty's contact number to everyone. There is no platform in the college, where students, staff etc can share their experiences.

IV. PROPOSED SYSTEM

The proposed system is a student-centric social networking platform, which contains a website and a chatbot-api, students can learn more about their college, find available clubs and students with common interests, connect with other members, and stay informed about happenings in and around campus. The core function of campus social networks is to facilitate and encourage knowledge sharing and knowledge creation on campus. In this platform, admins can select to which semester or classes, (or teachers) the notices should be sent to. All the students can contact faculty directly through this platform, which enables privacy for teachers to a certain extent since they do not need to share their personal contact details. It has a section for clubs, where all the clubs can showcase their activities and achievements etc. It also has a section for events, where all the events and their details are listed. Students or staff can even buy passes directly from the website, if needed. It has a blogs/articles section, where members can post articles/blogs after the approval of admin. Students can share their experiences in the activities they have participated and Staff can write articles about the research they have participated in and share their experience. A section for activities, where authorized faculty can post projects that the college needs or even random open-source projects where students can apply and work on them. This helps students to gain real world skills. Students who successfully complete their activity can receive rewards like vouchers etc. It has a resources section, where teachers can share notes, tutorials, links to resources etc. Students or staff can create tutorials on YouTube and can view those tutorials on the platform. It has a chatbot in the chat application which is used for general enquiries related to college or class work etc.

V. METHODOLOGY

A. Software requirements:

Any browser, HTML/CSS, JavaScript, ReactJS, Python, Flask, Material-UI, PostgreSQL, Hasura, GraphQL, GetStream and Netlify.

B. Hardware Requirements:

A 64-bit processor (i3 or above) with minimum 2gb ram and minimum 1gb hard disk space.

C. Algorithms:

The ReactJS website is structured into different containers and components. The containers include Middle Section and Right Section. One of the main advantages of ReactJS is the ability to reuse components created. In this website, each section of website is created in the form of a component. Each component has all the files (javascript, css etc) that are required for proper functioning of the specific component. These components are sometimes reused in other components which reduces code redundancy. The codes need not be written again and can just use the same code to implement the same functionality in whichever component it is required.
In the present website, the components are activities, clubs, events, resources, MyAccount, Help, Utils, Messenger, Chatbox, Feed, Header and SideBar. The website uses serverless functions to implement the backend code. (To retrieve data, to use APIs, including our own chatbot API). These serverless functions are implemented using netlify where the ReactJS website is also hosted. The database used is PostgreSQL database hosted in Heroku connected to the website through Hasura GraphQL. Hasura GraphQL has been used to query (or subscribe) and modify (or mutate) the data. A chatbot API is also created using python and flask. The chatbot is implemented using nltk library, spacy etc.

D. Use case Diagram:

There are mainly three actors in this project. They are: student, staff and admin. The student is mainly able to chat, view content, apply etc. The staff has the additional capability of adding new events, activities and resources etc. The admin is capable of registering users and can do everything a staff actor can do (Fig.1).

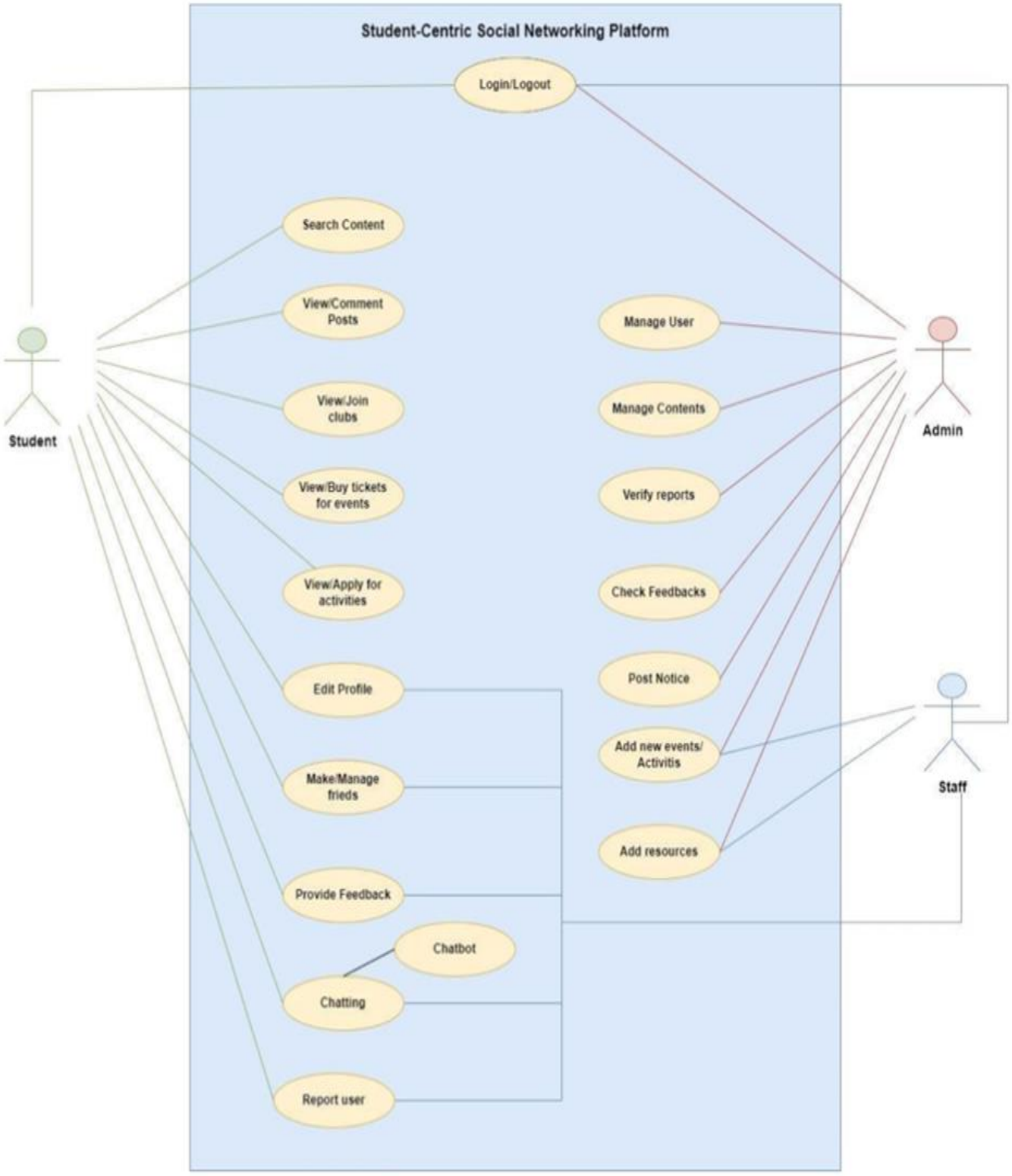

Fig. 1. Use case diagram

E. Design Flow Diagram for the application: After logging in, based on the role of the user, he/she will be able to do different things. Students can view and interact but are not capable of editing or adding resources, activities etc. Staff can add things but can't register new users. Admin can register new users and can read feedback etc. (Fig.2).

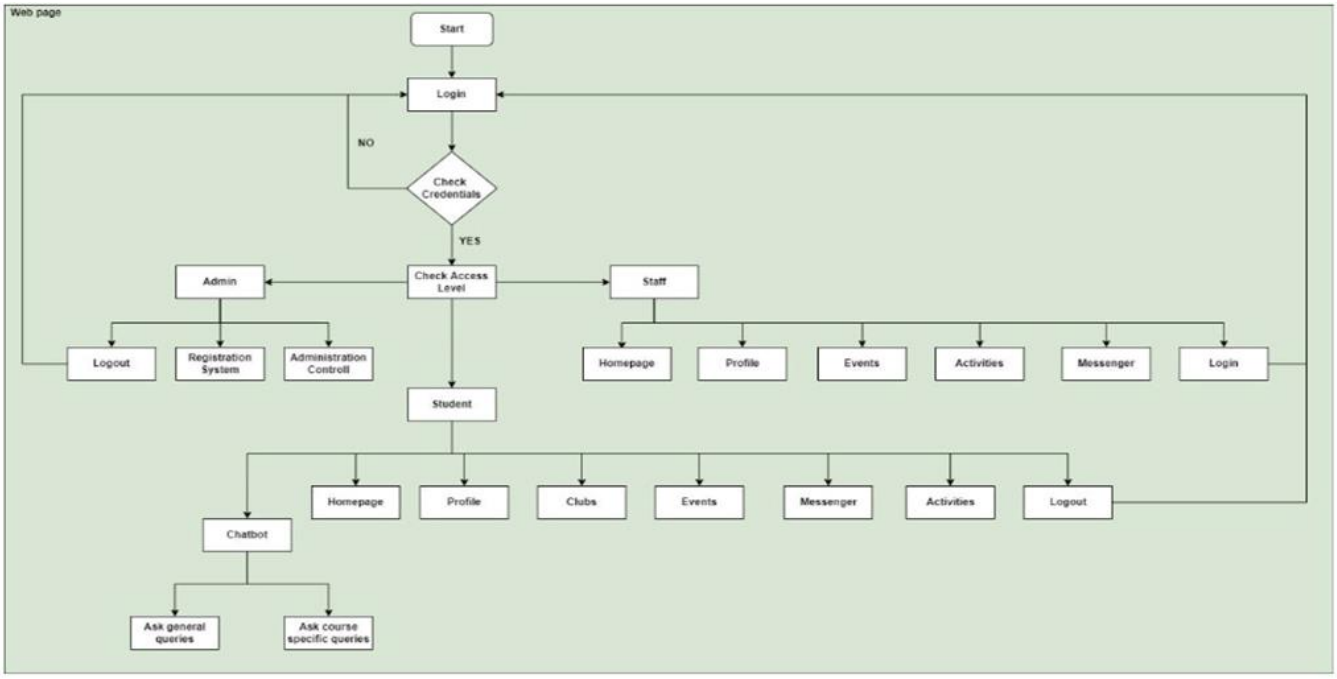

Fig. 2. Flow diagram

Design Flow Diagram for the Chatbot:

There are two levels in the DFD of Chatbot, where in level 0 the user can ask a query to the chatbot and gets a response in return. The admin can add new responses to make the chatbot better. And in level 1 DFD, the user asks a query to the chatbot. The query is processed for intents and entities. Responses are recorded and updated by the admin. The intents and the responses are checked for the similarity and the matching answers are retrieved (Fig.3).

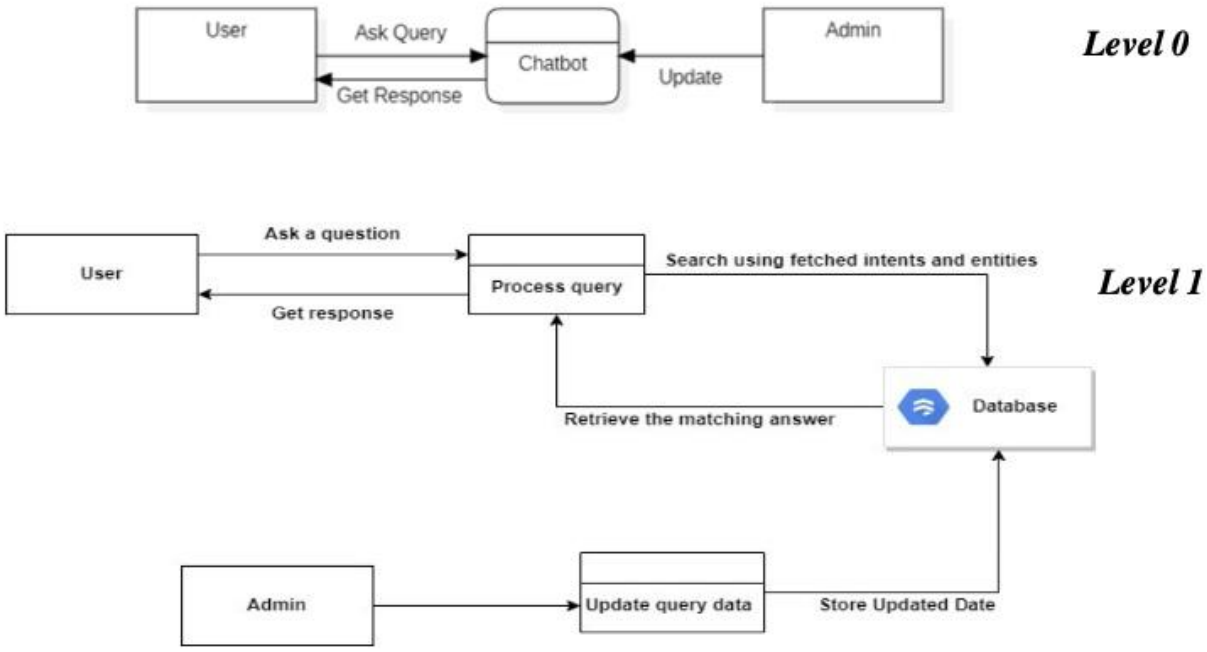

Fig. 3. Flow Diagram for Chatbot

VI. RESULTS AND DISCUSSION

A student specific social networking website for the college with chatbot had been successfully developed with different pages for specific action. The website contains a sign in, home, clubs, activities, resources, my account, help and Chatbot. It also has a separate messenger page where the information is transferred between the individual students or faculty. Sign-in page has an animated background where all the links as shown are moving around and are interconnecting or disconnecting to each other.

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Fig. 4. Sign-in page

Users can post different posts in Home page and they can also vote or downvote each post. It uses Cloudinary to store the images and it's upload widget to upload them to cloudinary.

A. Quality Check

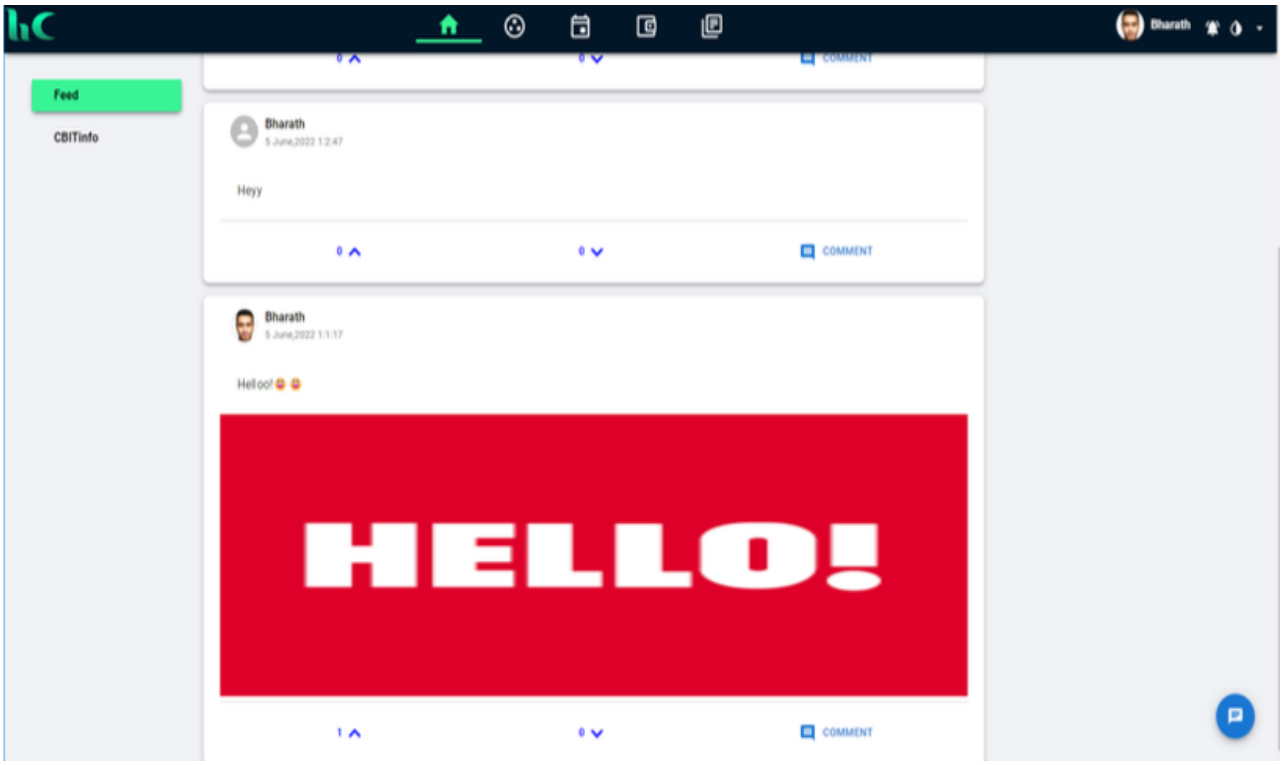

Fig. 5. Dash board

The Club page is the landing page of the club section and every club available will be showcased here. Each club will have its own page where the club's introduction, achievements, hall of fame, club related meetings etc. are posted.

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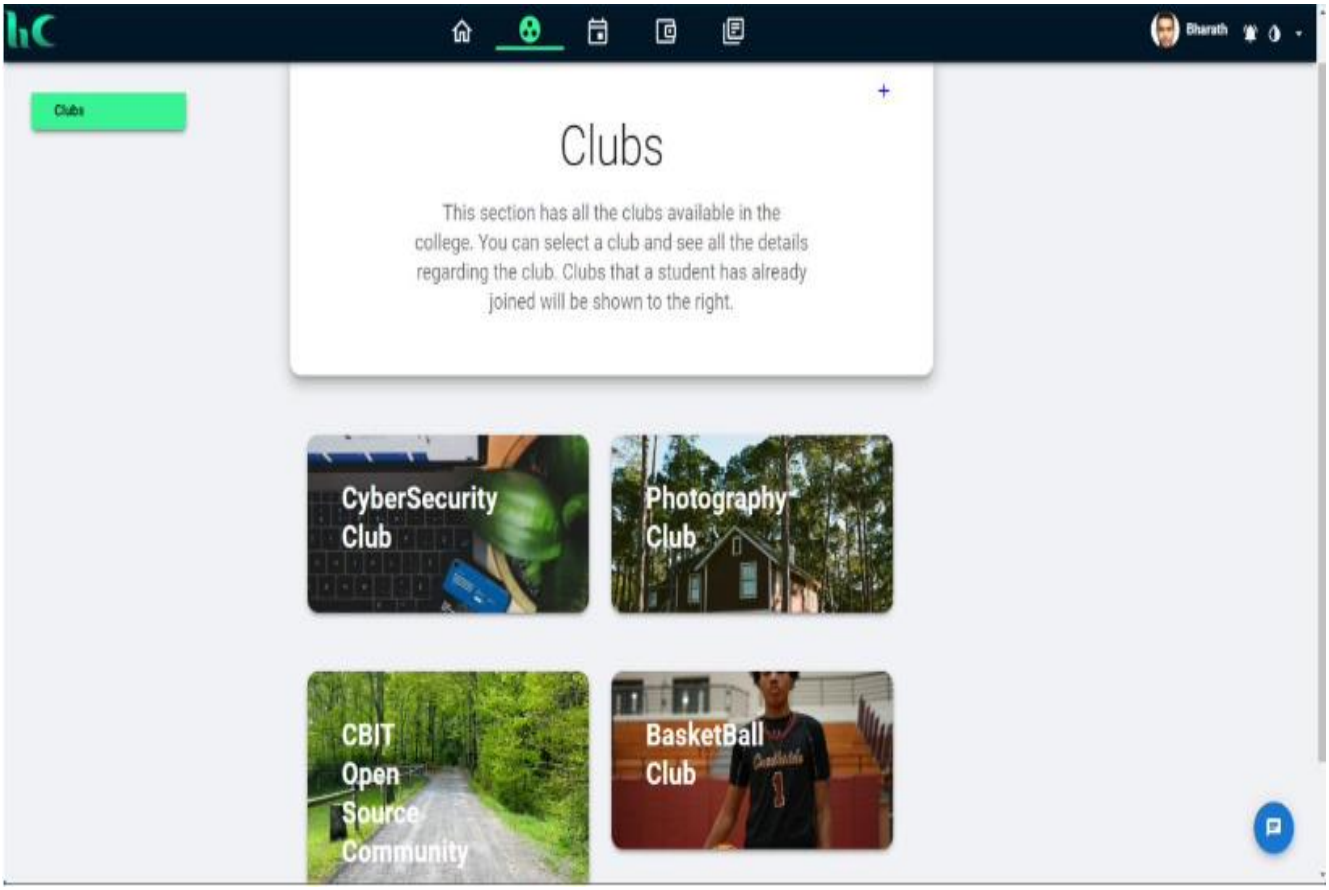

Fig. 6. Clubs page

The Events section provides the details of all the upcoming events in the college. The following image showcases the calendar part of the events section.

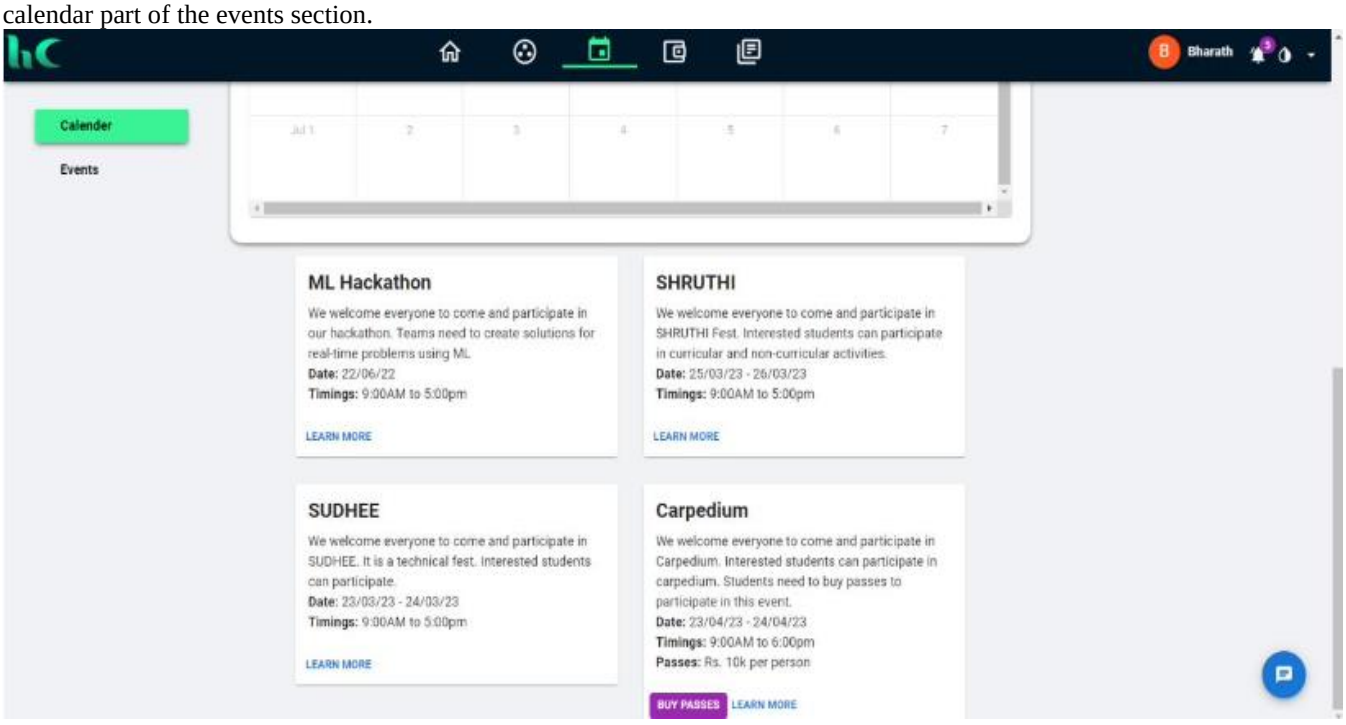

Fig. 7. Events page

The Activities page showcases all the available activities in the campus and the resources page displays different resource categories. New resource categories and its description can be added. The lectures can add lectures and related materials in resource section. New videos can be added to this section using YouTube URL. New references can also be added in the references section.

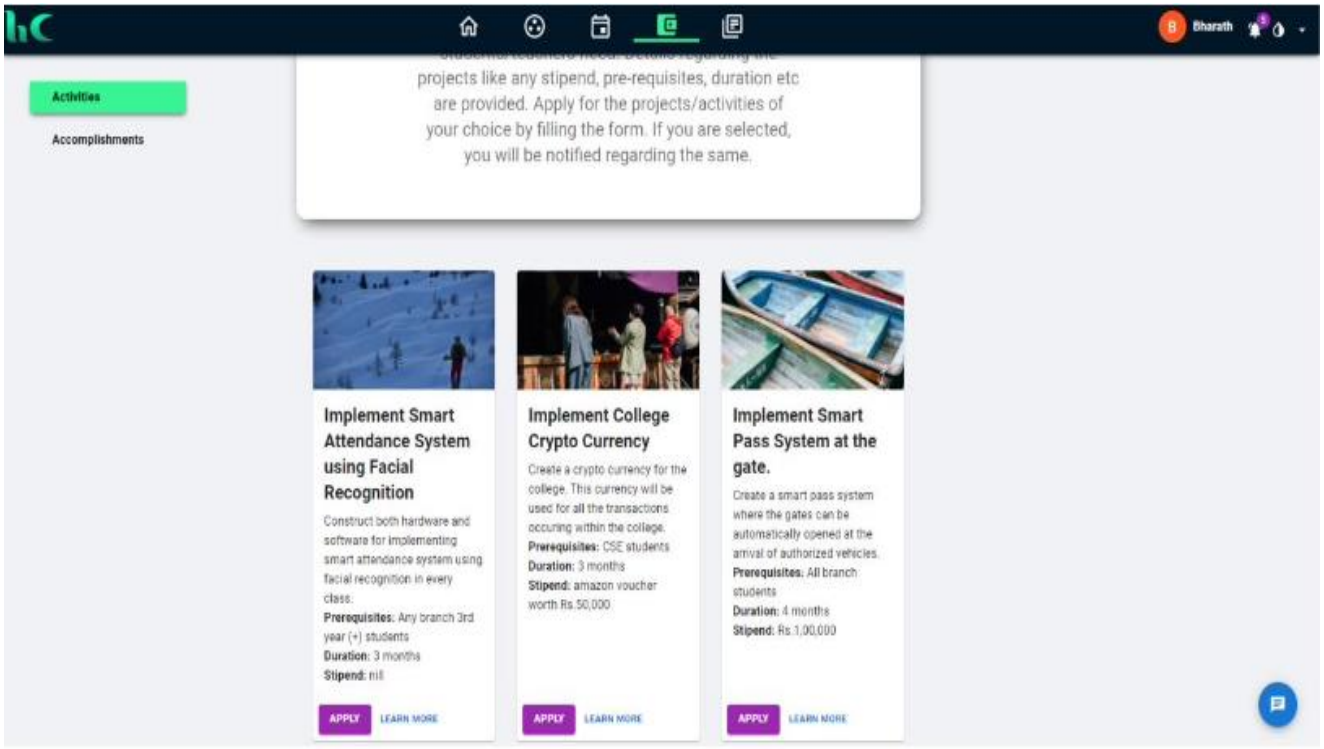

Fig. 8. Activities page

Further, my account page contains digital id card and complete information about the user.

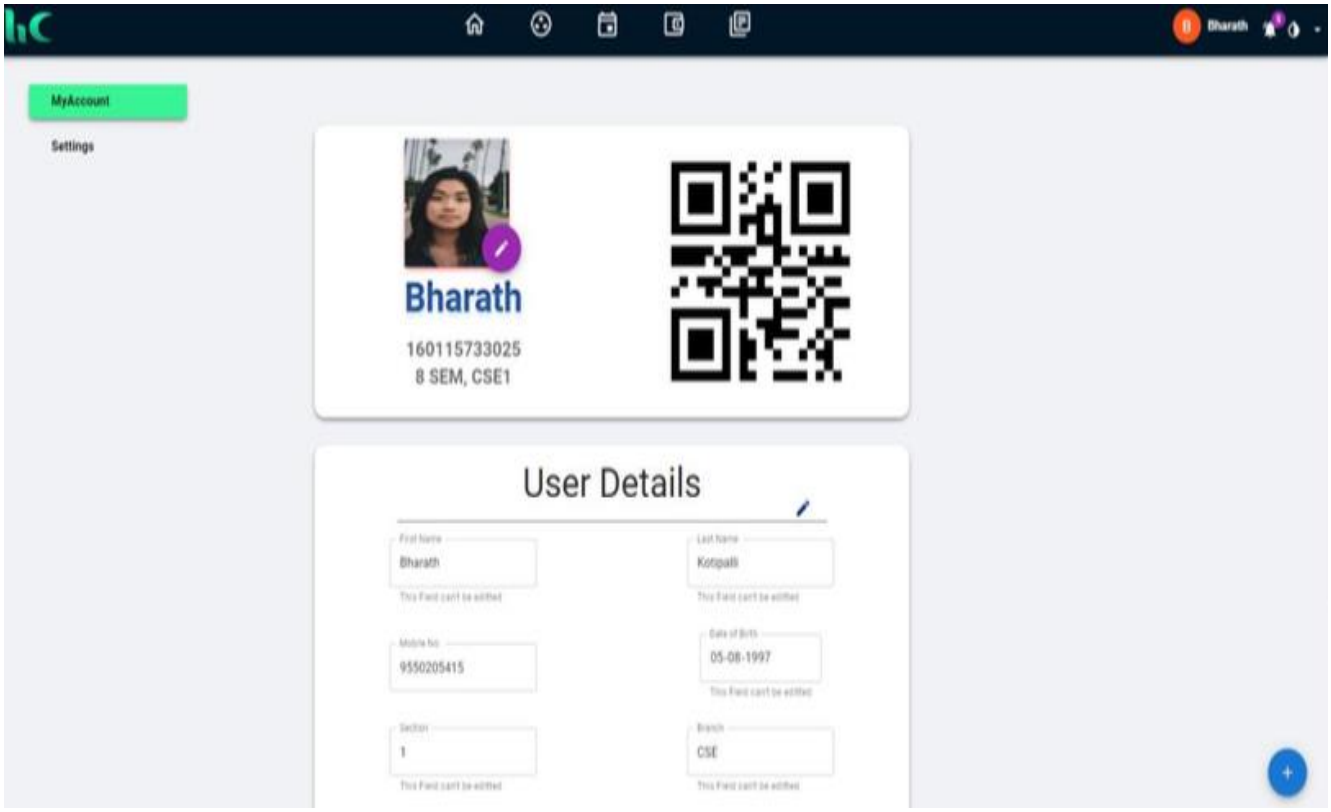

Fig. 9. Account page

The help page consists of all the necessary information in the form of frequently asked questions along with a feedback option.

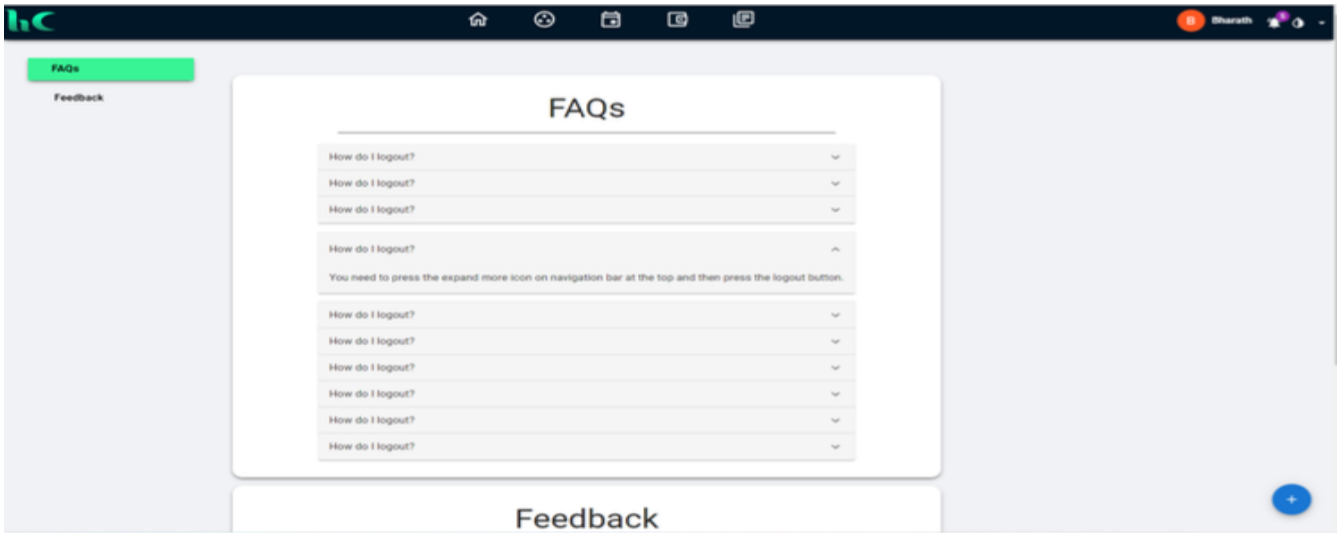

Fig. 10. Feedback page

In addition, AI powered Chatbot system for information and a messenger page is also available for one to one transfer of information.

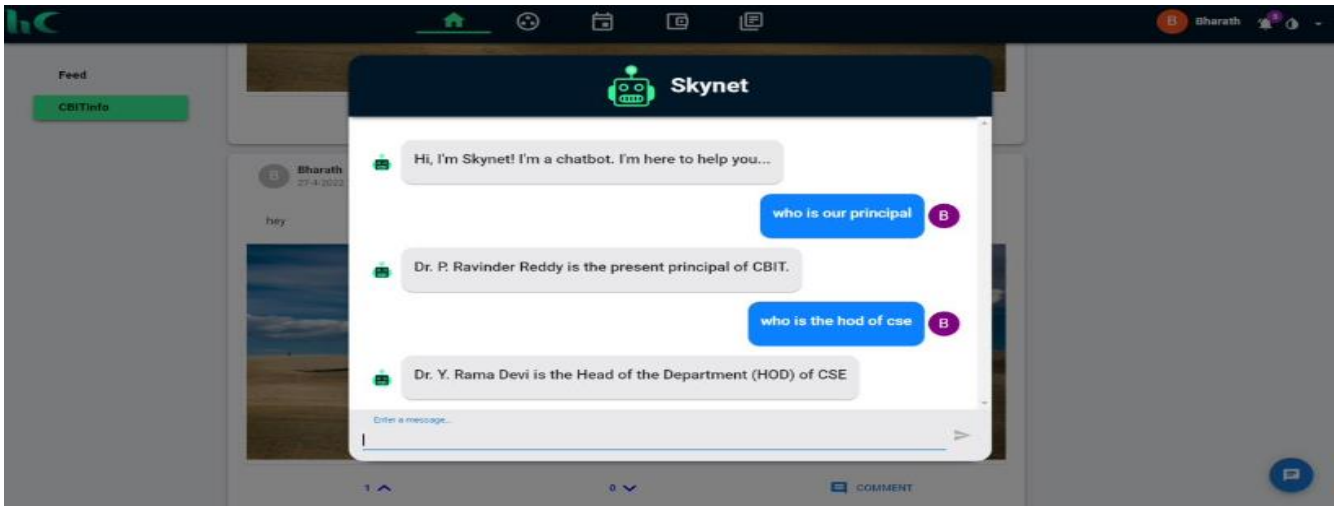

Fig. 11. Chatbot

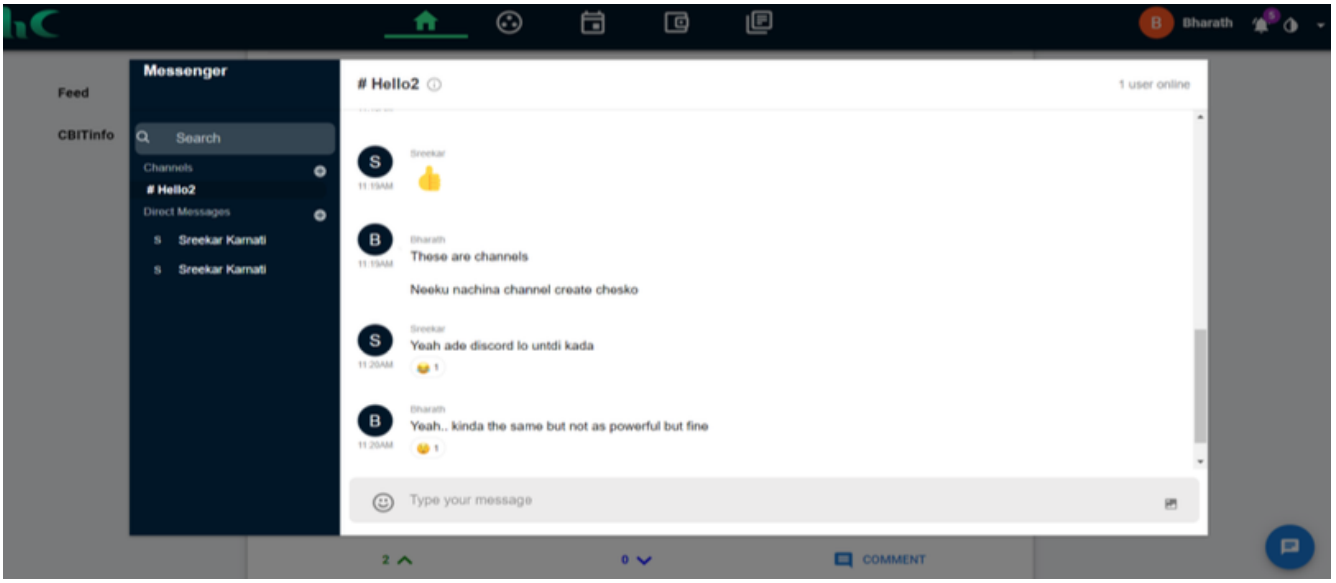

Fig. 12. Messenger Page

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VII. CONCLUSIONS

The proposed system resolves the problems that are arising due to lack of communication between students and college administration. The system not only provides a forum for the students but also provides a platform for the students to know alumni and their whereabouts. It helps students to explore more about their college, available clubs, seek out students with whom you share common interests with, share notes, connect to other members, and stay up to date with the happenings in the campus. Time constraints and issues during the creation of website did not allow some functionalities of the project to be implemented. There is no mobile application for the website. A blogs section can be added to the website and responsiveness of the website can be improved. The website can be made ready for actual deployment in the real world. Corresponding mobile apps can also be designed and developed.

DECLARATION

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Conflicts of Interest/ Competing Interests	No conflicts of interest to the best of our knowledge.
Ethical Approval and Consent to Participate	No, the article does not require ethical approval and consent to participate with evidence.
Availability of Data and Material/ Data Access Statement	Not relevant.
Authors Contributions	All authors have equal participation in this article.

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AUTHORS PROFILE

Ms. I Srujana, working as Assistant Professor in the department of CSE from 7th October 2004 and having an overall 15 years of experience. She is pursing Ph.D. from Osmania University and her area of interest is Natural Language Processing and Machine learning. As part of industry-institution interaction she has undergone training for 8 weeks at Pegasystems World Wide India Pvt. Ltd., Hyderabad and played SPOC role to train the final year students, to get certified as PEGA Certified System Architect 7.1 and she is also Oracle Certified Professional & Microsoft Technology Associate: Network Fundamentals by Microsoft. As a part of improving the teaching learning process she had attended 21 Workshops/FDPs/Pre-conference Talks/Lecture by Industry, organized 2 international workshop/ FDP/ Workshop and coordinated 2 weeks Infosys Campus Connect Programme in CBIT. In her Credit she is having 2 papers in international conference and 5 papers in international journals. She guided student project to automatically grade computer programs which is being actively used by first year faculty to evaluate lab internal exams. She has been invited to take guest lectures as part of Infosys Campus Connect Program in the Campus. She is also a life member of professional bodies like ISTE, CSI.

Mr. Bharath Kotipalli, has completed his B. Tech from Chaitanya Bharathi Institute of Technology in 2022. He was involved in various projects like " Wallet Application Development", "College enquiry Chatbot web application" including the present study. He is well versed in using NLP, REACT JS, NODE JS, PYTHON, FLASK, POSTGRESQL etc.,

Mr. Sreekar Reddy Karnati, has completed his B. Tech from Chaitanya Bharathi Institute of Technology in 2022. He was involved in various projects like "College enquiry Chatbot web application" including the present study and a technical seminar on "IOT Based Devices And Machine Learning Algorithms for Fall Detection in Elderly People". Further, he has expertise in Database Management Systems, Object Oriented Programming of Java, DevOps, Data Science and Big Data Analytics, Cloud computing, Computer networks.etc.,