# Bronco Renting – A Housing Solution Website for College Students

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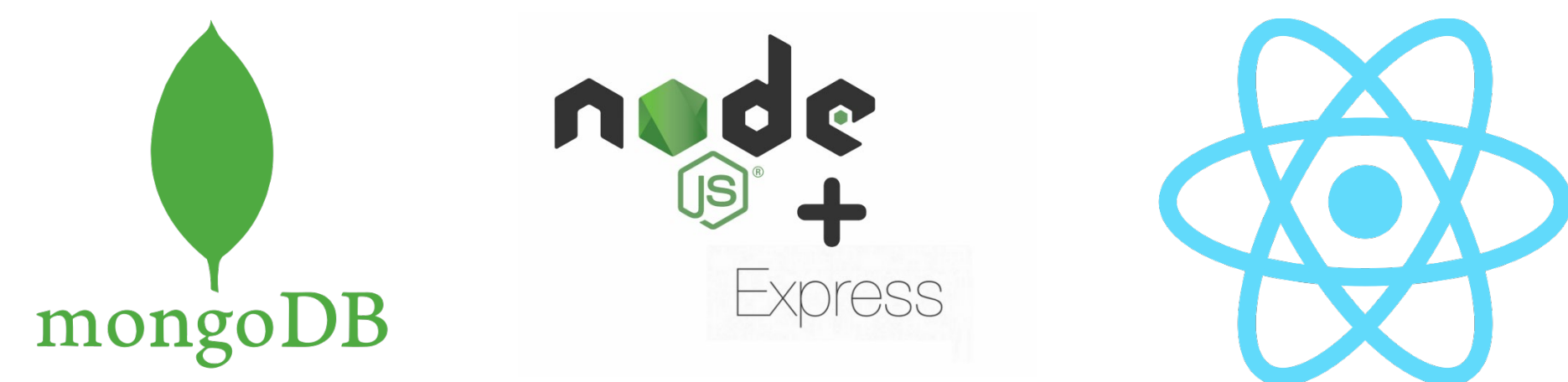Kellogg Honors College Capstone Project 2024

## INTRODUCTION

In the dynamic landscape of higher education, the persistent housing challenges faced by college students demand innovative and tailored solutions. Cal Poly Pomona stands as a prime example of a commuter school where students grapple with the intricate task of securing suitable and affordable off-campus housing. As on-campus options, such as dormitories, reach capacity swiftly, the need for local off-campus accommodations becomes imperative. One of the other issues exacerbating the housing situation is the high cost of living. According to a recent study conducted in 2019, most students at California's community colleges and in the California State University system pay more for housing than they do for tuition, presenting a financial burden for students and making affordability a critical concern (Johnson). Seeing this financial strain, Bronco Renting provided a targeted solution as students can list their spaces to look for other students to split the renting costs which offers a more economical alternative. Furthermore, there is a correlation between the quality of living conditions and students' mental health, retention rates, and academic success. There is a study that has shown that students who live in close proximity to campus, reported better mental wellbeing (Siddiqui). Recognizing this, Bronco Renting seeks to enhance the overall quality of student living by facilitating the search for compatible roommates and local living spaces.

Bronco Renting, designed using React for frontend development and leveraging MongoDB databases for rental property listings, enables students to find short-term, cost-effective accommodations near campus. With that, the platform directly addresses the aforementioned problems. The incorporation of roommate search features not only fosters a sense of community but also reduces the financial burden by allowing students to share living spaces, contributing to a more affordable and conducive living environment. By addressing the specific challenges faced by the Cal Poly Pomona student population, Bronco Renting emerges as a specialized solution, promising convenience and affordability for college students seeking off-campus housing options that can be further developed and tailored for other university campuses.

## METHOD

The methodology used to build the Bronco Renting Website:
1. Investigate the problem: through literature search and gathering experiences from CPP students
2. Build and Review the Wireframes of the Website: create the structure and layout for the website, generate features such as fetching properties and search bar function, consider the privacy of users
3. Build the Website using the MERN ((MongoDB, Express.js, React, and Node.js) technology stack



- MongoDB is noSQL database platform where flexible JSON data is stored. In this project, I used Mongoose to connect to MongoDB which is a library that provides a schema-based structure. Data in this project is created based on CRUD functions which stands for create, read, update, and delete.
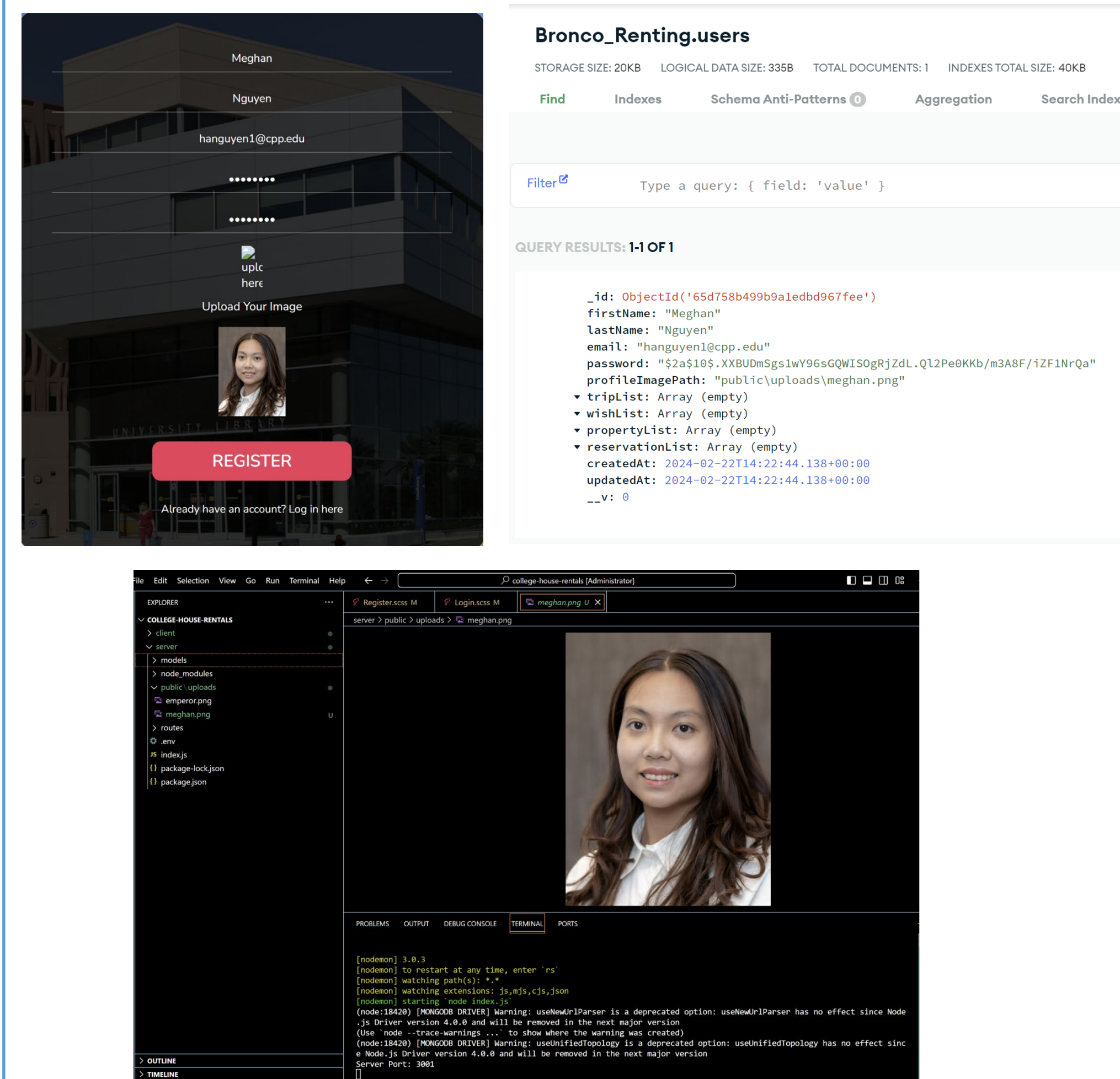- Express.js and Node.js work as middlewares as they interacts and sets foundation for both the frontend and the backend through database connection, routes handling, and API endpoints
- React uses the components to build the client side consisting features to interact with users

Jason Web Token (JWT) was utilized for authorization as secure and stateless user authentication was enforced.
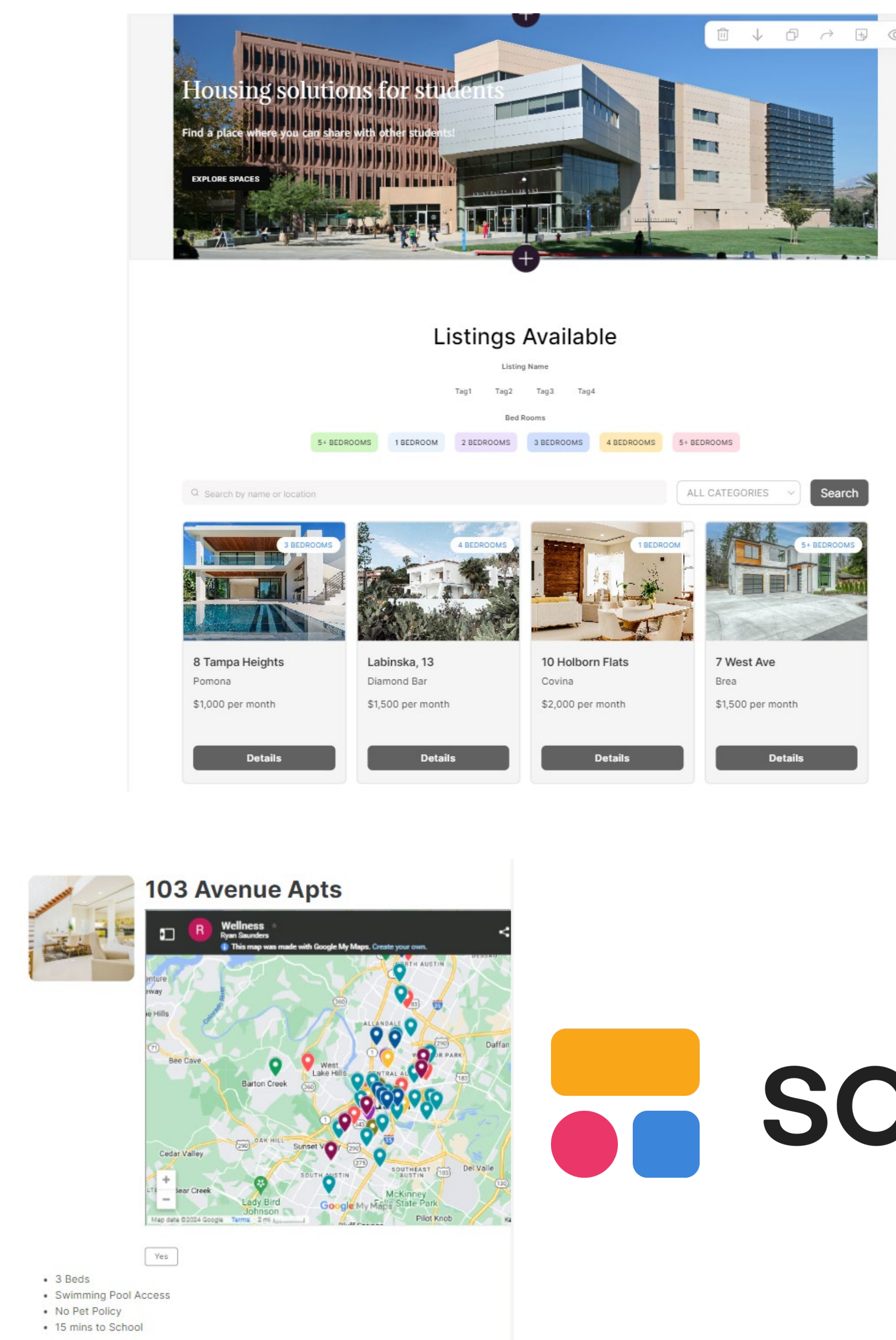
Images were collected from Unplash and Canva.

## METHOD (CONT)



### PROTOTYPE AND TESTING

A prototype site was constructed using Softr, a WYSIWYG application builder. The benefit of utilizing Softr was the swift implementation and review of the app, facilitating the generation of multiple improvements. Personalized feedback from Cal Poly Pomona students was provided to enhance the project and incorporate new features, thereby maximizing the overall user experience.
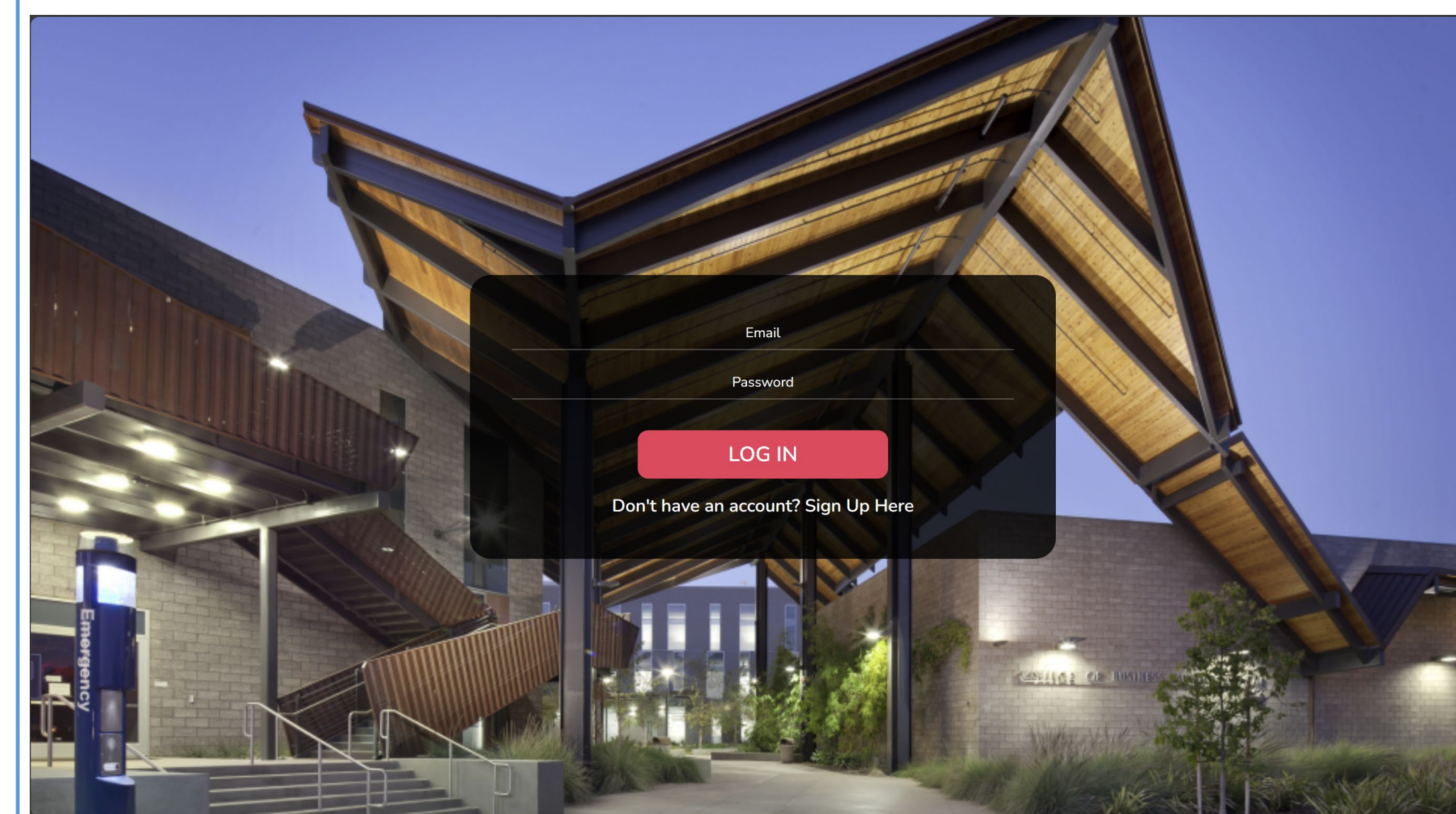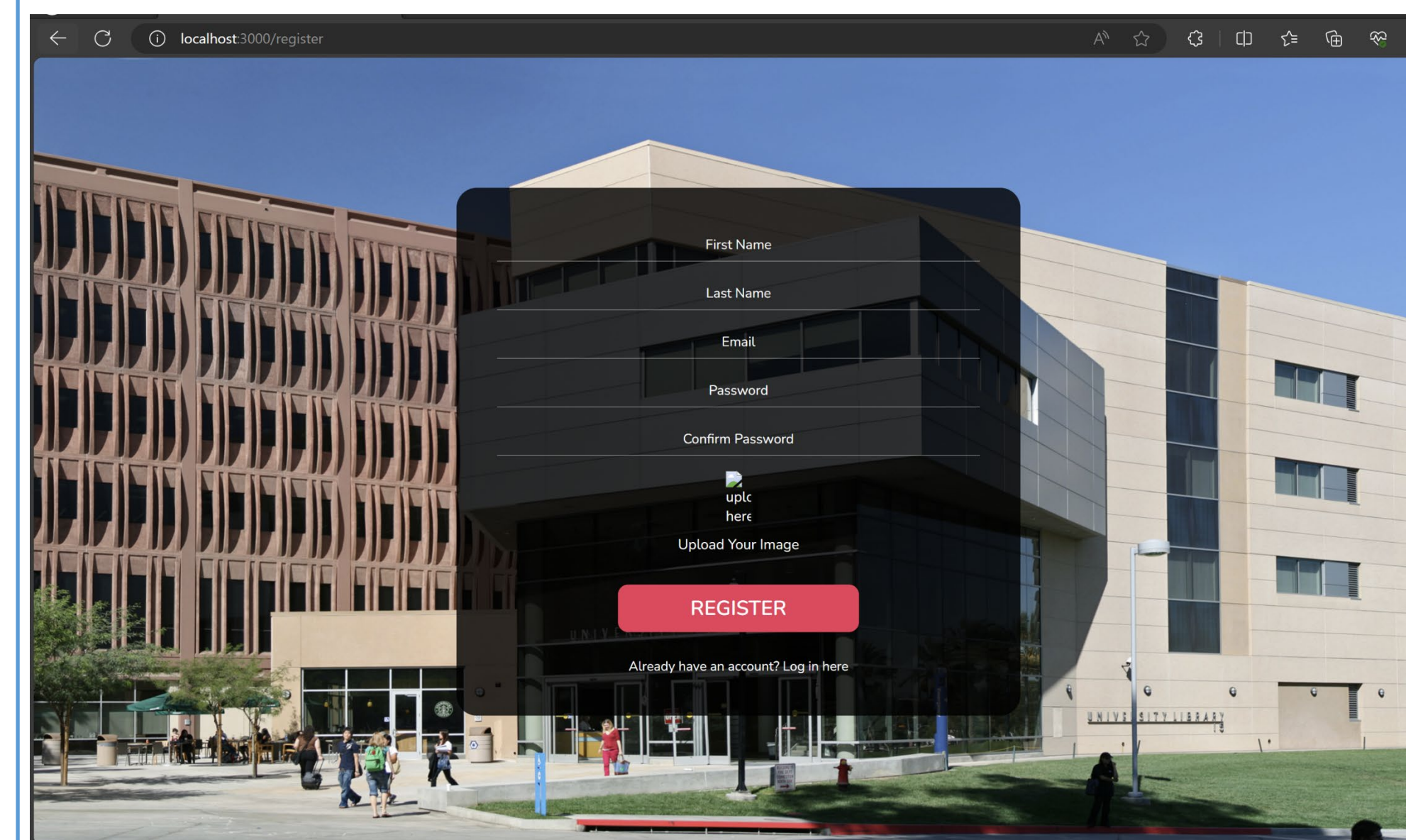


## RESULTS

Bronco Renting provides features:
- User Authentication (login and signup)
- Create a new listing (create a new instance in the database with certain user roles)
- Search listings by keyword
- Filter listing by Category (number of bedrooms)
- Book a tour with Calendar
- Create a Profile to find roommates
- Upload photos from the local environment and store in database

Available Pages with Routes:
- Login and Register Page
- Home Page with available listing
- About Page with contact information
- My Profile Page (for registered users)
- My Listing Page (for registered users)
- Listing details Page with details about each Listing
- Profile details Page with details about each user (helpful for finding roommates)
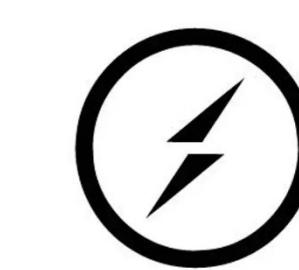


### INTERACTIVE DEMO



Please scan to get the feel of the Website

## FUTURE WORK

Bronco Renting still contains some limits and there are potential features and improvements could be added in the future:
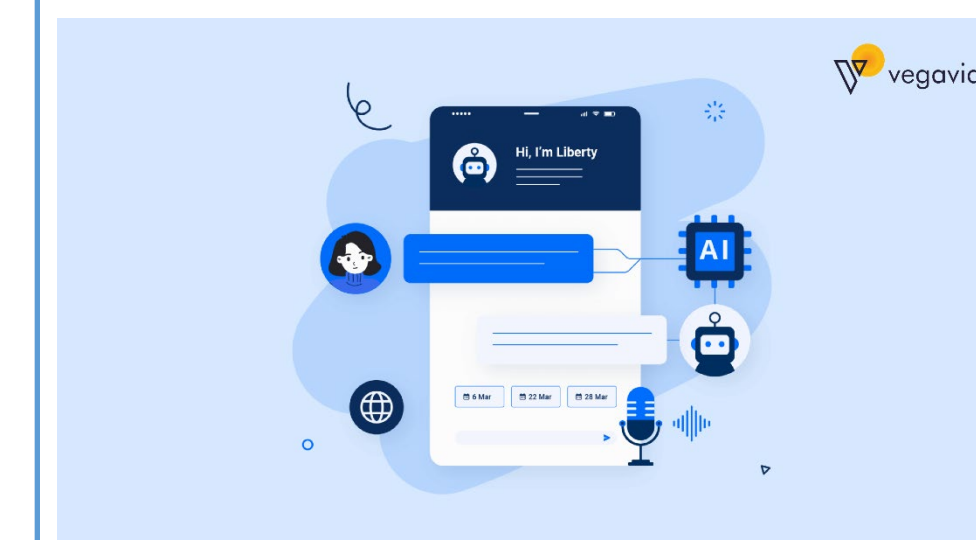
- Real-time messaging box -> allows students to directly chat with each other on the platform.
- Stripe integration -> Integrating digital wallet where students to directly pay the downpayment, bills, or tour fees from their cards
- Community page -> Students can post questions and answers other people's questions in a forum to facilitate community support and interactions
- GoogleOAuth or Authentication through CPP Institution credentials -> easier and faster authentication and ensuring the website is only accessible to the student body
- State management for smarter User Experience
- Broaden the target users to include other local colleges such as MtSac, Cal State Fullerton, Cal State LA
- AI Chatbot to provide 24/7 customer support
- Roommate Matching Algorithm
- Better system design for scalability
- Deployment



## CONCLUSION

The project explores the most common technology stack for website development and introduces fundamental principles in building a website. This includes creating and connecting a database schema, developing a user-friendly client-side, fetching data from API calls, and providing essential features to users. The concept of software engineering, from creating wireframes to testing, was incorporated. While the project proposes a curated solution for niche customers, it does raise concerns about privacy. It is imperative to ensure that users' personal information, such as their living address and contact details, is not exploited with malicious intent. Sharing information is a crucial element of Bronco Renting, but it also exposes one of its vulnerabilities. From a personal standpoint, the project taught me valuable lessons in time management and setting realistic goals. Additionally, I gained insights into the field of software engineering and its profound impacts on today's world through the utilization of various technologies and applications.

## REFERENCES

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