UniMate: move-in made hassle-free for students

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MOTIVATION:

As students, we have all gone through the dilemma of finding the right choice of accommodation when relocating across states or continents. While students from the same country could still go and have a look at the area and the nearby amenities before deciding on their apartment, it is a major cause of concern for international students who have to decide on a place to live months before they actually shift base. There are some websites like Zillow, Trulia, and Walk Score that dish out details about apartment communities. However, there is no website that caters specifically to the needs of university students e.g. proximity to the college, budget, etc. Another major concern is the roommate search. Students generally prefer to have preferences for roommates and resort to finding them through messaging apps or in-person meets. Having faced this problem ourselves, we decided to come up with a web solution that will cater solely to the student community for both, apartment search and roommate search.

While existing websites bombard users with hundreds of results and suggestions for apartments, we intend to simplify our web application by spontaneously returning only the apartments within a certain radius of the user's university selection considering the fact that students have to commute daily to the campus. We will allow the users to filter the results based on multiple parameters like proximity, rating, cost, etc. before registering their interest for certain apartments. Simultaneously, the web application will let users create profiles and will showcase roommate suggestions based on their profile details and apartments of interest. Thus we propose to integrate both modules into a single application with help of Google map APIs and other services.

GOALS:

The goals of our web application include features for searching apartments, as well as for finding roommates across universities.

1. **Apartment locator**: Apartments available for rent will be displayed using a Google Map interface, along with proximity indicators for the college campus and costs. Students can pick apartments of their choice and mark them as interested. Features include:

   - *Nearby amenities*
   The application will display restaurants, grocery stores and other amenities available near the apartment the student is interested in
   - *Proximity*
   Indicators will be provided which will depict the distance of apartments from the university, which will help them make an appropriate choice

● *Cost*

The rent for each available apartment will be displayed on-screen to enable students to choose one that fits their budget. There will also be a filter to narrow down this search.

2. **Roommate finder**: The application allows students to make user profiles according to their preference for roommates and allows them to view the profiles of students who are interested in the same apartment, for a more refined roommate-search experience. Additional features include:

   ● *Profile with preferences*

Students create a profile and enter their preferences for budget, food, age, socializing, nationality, hobbies and apartment sharing

   ● *Roommate suggestions*

Roommate suggestions are displayed according to students interested in the same apartments, which will localize the search for roommates

   ● *Communication medium*

Students can contact and communicate with potential roommates through the application

RELATED WORK:

● **RoomSurf**

RoomSurf is an independent resource for students looking for roommates at their particular university. Students can create profiles based on their preferences, and take surveys that help the application match them to potential roommates. The application then displays the matches, which students can review and decide on the best match.

● **Zillow**

Zillow is a popular resource for looking up houses for buying, selling or renting, and offers several features including aerial views of homes, and prices of comparable homes in the area. It also provides information like cost, the number of days for which the ad has been posted on their website, the square footage and the number of bedrooms and bathrooms in a home. Zillow provides an application programming interface (API) and developer support network.

● **Trulia**

Trulia provides price trend information by using listing and public data which shows how the price of a home has changed over a period of time as well as comparing that house price with other homes in the same ZIP code and the same city. Information on local schools and amenities is provided for each property listed on the company's website. The map shows the driving or commute times, and a visual representation of commute times is projected onto a geographical map.

- **Apartment Finder**

This application has features such as browsing through large selections of rentals, get actual availability and pricing, saving favorite apartments and direct inquiry with apartments. It also provides easy searching for students looking into areas near colleges or universities.

- **College Student Apartments**

College Student Apartments has search tools that help college students find apartments, houses, roommates, and sublets. With their Smarter Housing Search feature, students can find housing based on closest distance to campus, best price, and preferred amenities. College Student Apartments integrates directly with student property management companies to ensure students are presented with available apartments and houses.

AVAILABLE DATASETS:

There are countless apps out there that either offer a subset of our features or provide semi-similar services of what we would like to provide. We intend to use some of these related works' data since we want to incorporate the best of all available services to create the best possible experience.

1. Walk Score: https://www.walkscore.com/
2. Zillow: https://www.zillow.com/
3. Trulia: https://www.trulia.com/
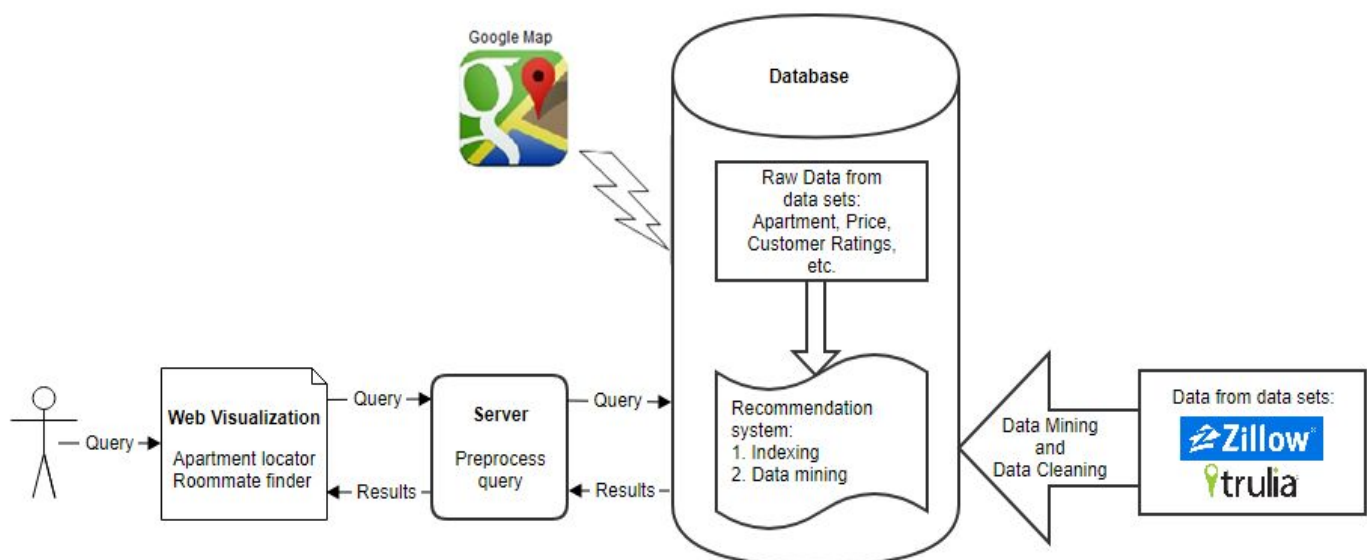
SYSTEM ARCHITECTURE:

Fig.: System architecture

The figure above depicts our system architecture. There are two main modules in our application:

1. Apartment locator

In this module, the user queries the application with input like university name and/or state in the apartment finder module. This query goes to the server which accesses the database that has real-time retrieved data from data sets like Zillow and Trulia. This data is cleaned in the database and integrated with the Google Map API and the result is sent to the server which displays the output via our application.

2. Roommate finder

In this module, the user registers his interest in apartments that he likes from the ones that our application displays. Then he goes on to create his profile that mentions his preferences for a roommate. After this, our roommate finder module matches this user with other users who are interested in the same apartments. There will also be a communication medium for such users to interact with each other, thus enabling them to find their best pick for a roommate.

DELIVERABLES:

● Source code of the application
● Presentation of implementation and statistical analysis
● Final report

WORK PLAN:

Nidhi:
● Requirement analysis and design
● Data retrieval of apartments available for rent, from websites such as Zillow or Trulia
● Interactive Map display of areas nearby universities, using Google Map APIs

Sneha:
● Display of available apartments on the map, along with nearby amenities
● User-Interface design with user profile development, retrieval and display
● Filtered roommate search according to choice of apartment, preferences in cost, proximity, etc.

TEST & EVALUATION:

The evaluation data is going to be collected through surveying. As the application is interactive as well as informative, we will reach out to friends and acquaintances to collect feedback of user experience and analyze the effectiveness of our application. The analysis will be performed on

the evaluation results to show the effectiveness of our application both quantitatively and qualitatively.

TIMELINE:

Milestone \ Time	Sep 24	Oct 1	Oct 8	Oct 15	Oct 22	Oct 29	Nov 5	Nov 12	Nov 19	Nov 26	Dec 3
Requirement Analysis and Design	██										
Technology Research and Familiarization		██									
Implementation of API for part A*			██	██							
Implementation of database for part B**					██						
Implementation of dashboard						██	██				
Testing and Evaluation							██	██			
Miscellaneous features									██		
Project Deliverables										██	

*Part A: Apartment locator
**Part B: Roommate finder

Figure: Time distribution for project *(Each unit represents 7 days)*

FUTURE SCOPE:

● We plan to integrate a heat map depicting safe and unsafe areas based on crime data in the areas around the universities
● Our map view could be extended to make travel to nearby places easier, by depicting nearby places that can be reached within a given time frame. Our UI will provide an option to select the time (ranging from minutes to a few hours) and mode of transport (walking, biking, driving) and the map view would accordingly show areas that can be visited within the specified timeframe and transport mode.
● We could also depict the availability and average arrival times of taxi cabs such as Uber and Lyft at the area of interest. This would however, require data from Uber and Lyft which is not openly available at present.