# BunkUP : A Content-based Filtering Mobile Application for Roommate Finding in UPLB

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**ABSTRACT**

The study addresses the challenge of finding compatible roommates among college students around University of the Philippines Los Baños, presenting a solution in the form of "BunkUP," a Flutter and Firebase-based mobile application for roommate-finding. Leveraging features adapted from existing matchmaking applications, the application aims to streamline the process of locating an ideal roommate based on individual preferences and lifestyle. The methodology involves content-based filtering to generate roommate suggestions. Evaluating the application on University of the Philippines Los Baños students using the System Usability Scale yielded a high score of 92.05, indicating strong usability and user-friendliness. Feedback further confirmed the application's effectiveness in simplifying roommate selection. The successful integration of Flutter and Firebase contributed to enhanced functionality and user experience, emphasizing the potential of this approach in addressing the roommate-finding challenges faced by college students.

## OBJECTIVES

- develop a mobile application using Flutter and Firebase technology stack for roommate-finding
- apply content-based filtering and features on the roommate-finding mobile application that are used by existing matchmaking applications for matching two individuals
- connect individuals with similar lifestyle preference regarding shared-housing using the roommate-finding mobile application
- conduct the testing of the roommate-finding mobile application on students of University of the Philippines - Los Baños
- utilize the System Usability Scale to assess the usability of the roommate-finding mobile application

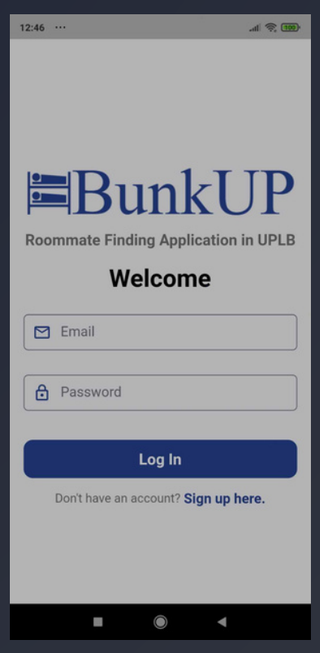
## TECHNOLOGIES USED

## CONTENT-BASED FILTERING

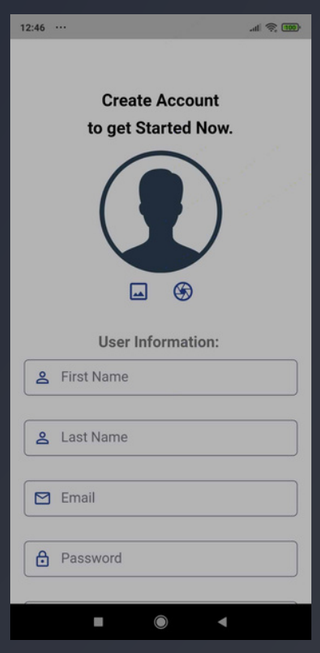
The application used content-based filtering. Unique attributes pertaining to the user's lifestyle preferences will be compared with other users. If they share a similar attribute, they will earn a point. The scores are computed based on the number of similarities across various lifestyle criteria.

Potential roommates will be ranked based on the points they accumulate, with those having the most similarities at the top of the list. Users who have accumulated 0 points will be removed from the list. This comprehensive approach ensures that users are matched with others who share the most common preferences, simplifying and increasing the likelihood of having a compatible roommate.

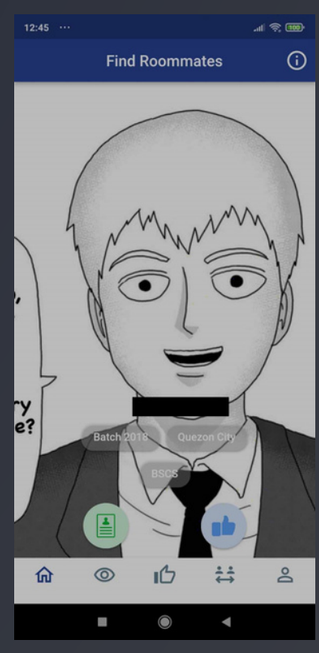
## SNAPSHOTS



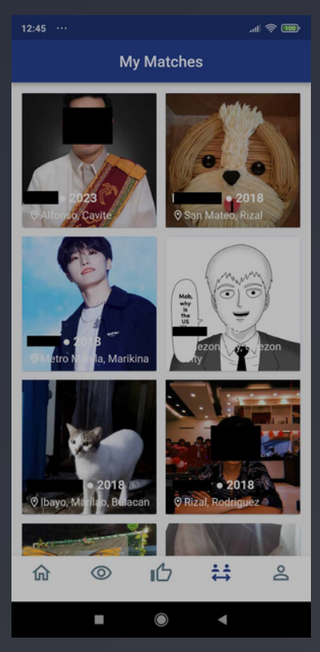

Log-in Screen



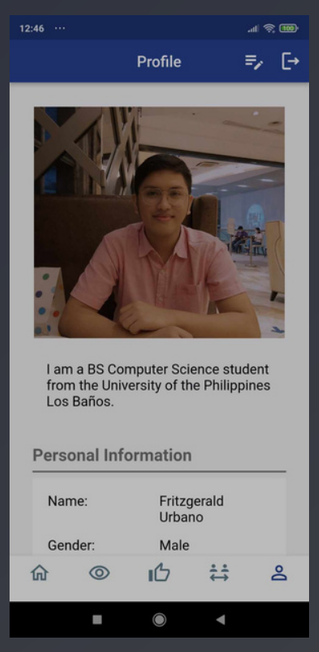

Registration Screen



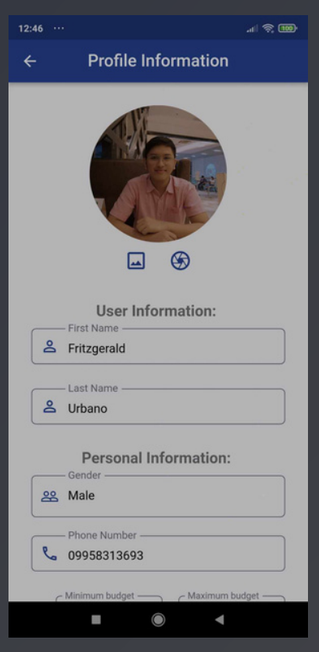

Swipe Screen




Matches Screen




User Profile Screen



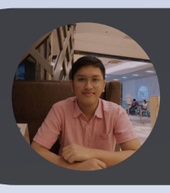

Edit Profile Screen

## RESULTS AND DISCUSSION

- Flutter accelerated development with pre-designed widgets and real-time code changes using the hot reload feature.
- Despite limitations in the free Spark plan, using Firebase and Cloud Firestore ensures security via access controls and user authentication. Cloud Firestore's rules restrict data access to intended users, minimizing unauthorized entry.
- WhatsApp streamlines real-time communication using familiar WhatsApp, reducing the burden on Cloud Firestore by outsourcing message storage and management.
- Content-Based Filtering Implementation: Simplified scoring enhances user experience in the roommate-finding app. However, challenges arise due to the scoring system's lack of granularity, potentially overlooking nuanced preferences and resulting in mismatches.
- A total of 11 UPLB students participated in the testing. The application achieved an SUS score of **92.05** out of 100.

## CONCLUSION

The mobile application, assessed through the System Usability Scale and a questionnaire with 11 UPLB students, earned a high score of 92.05 out of 100, indicating strong user-friendliness. Feedback highlights the app's success in streamlining roommate selection at UPLB, with content-based filtering effectively connecting individuals with similar preferences. The use of Flutter and Firebase contributed to a better overall functionality and user experience, demonstrating the app's efficacy in preventing unfavorable roommate pairings.



**ABOUT THE AUTHOR**

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