A Content-Based Hostel and Mess Recommendation System for Educational Institutions.

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***Abstract*— In today's rapidly evolving educational landscape, the well-being and satisfaction of students are paramount. One critical aspect of student life is finding suitable hostel accommodations and mess facilities. This research paper introduces a novel approach to address this challenge through the development of a content-based hostel and mess recommendation system. Leveraging advanced data analytics, machine learning techniques, and user profiling, this system aims to provide personalized, data-driven recommendations to students based on their unique preferences and requirements. The proposed content-based recommendation algorithm analyses rich datasets encompassing textual descriptions, amenities, location, pricing, meal options, dietary preferences, and user feedback. It then calculates relevance scores for hostels and mess facilities, offering tailored suggestions that enhance the overall student experience. The system also incorporates mechanisms for continuous learning and feedback integration to refine recommendations over time. Ultimately, this research contributes to the broader discourse on the intersection of technology, education, and student satisfaction. By enhancing the hostel and mess selection process, educational institutions can significantly improve student wellbeing, retention rates, and overall academic success**

***Keywords*—** Content-Based Filtering, Educational Technology, Hostel Recommendation, Mess Recommendation, Machine Learning, Personalization, Student Satisfaction, Scalability.

I. Introduction

The journey of higher education brings with it numerous challenges, experiences, and opportunities. Among the pivotal factors shaping this journey is the provision of suitable accommodations and dining facilities. For students embarking on their academic pursuits away from home, finding the right hostel and mess options can significantly impact their overall wellbeing, academic performance, and satisfaction during their educational tenure. However, this quest is often marred by complexity, uncertainty, and time-consuming efforts, underscoring the need for innovative solutions to streamline the process. This research paper addresses this critical aspect of the student experience by introducing a content-based hostel and mess recommendation system designed to cater to the diverse needs and preferences of students within educational institutions. In the era of advanced data analytics, machine learning, and personalized user experiences, such systems are poised to play a pivotal role in enhancing student satisfaction and academic success.

II. Objectives

I. To implement a novel approach that recommends food facility and PGs using Machine Learning algorithms.
II. To provide clear view and transparency on basis of user preferences.
III. To improve decision making on basis of ratings, reviews.

III. Literature Survey

Sr. No	Year	References	Title	Working
1	2020	1	A proposed model based on modern requirements to optimize hostel resources in Oman.	This system will be catering to the needs of owners, employees, students and parents, where they will be able to manage the activities of the hostel in more active way and fast.
2	2020	2	Implementation Of Hostel Management With Automation Using Design Thinking	"HOSTEL MANAGEMENT SYSTEM" is software developed for managing various activities in the hostel. This particular project deals with the problems on managing a hostel and avoid the problems which occur

				when carried manually.
3	2021	3	Modelling the relationship between perceived value , customer satisfaction and customer loyalty in youth hostels : an empirical study .	This study aims at investigating customer perceived value with a multi-dimensional structure of five dimensions and then further analyse relationship among youth hostels perceived value , youth hostels satisfaction and loyalty
4	2020	4	Study of Digitalized Hostel Management System	The paper describes the creation of an Android application aimed at reducing manual work in the management system and enhancing student satisfaction by managing their complaints.
5	2020	5	Hostel Management System (HMS)	In this paper they work on Hostel management system in that the details about Rent, Allotees, Hostel, Rooms, Payment are present in their website. For developing a website they use Software Development Life Cycle (SDLC).
6	2020	6	Mess Management System Implementation	The PTC mess manager software is designed in Marathi language to enhance simplicity and user-friendliness. This choice of language aims to prevent confusion and facilitate smooth operation.
7	2018	7	Design of Smart Mess Application using Ubiquitous Computing	This paper focuses on making a smart mess using ubiquitous computing which includes making an application to keep track of food storage, mess monitoring for maintaining the quality of food.
8	2021	8	A Web Platform for Mess Management System: An Overview	The main aim of the mess is to provide clean and fresh food to the students/employees of the organization. This software will be useful to any school/college hostel or in general to any institute maintaining a mess.

IV. Methodology

1) Initially, the project can start with a comprehensive requirement analysis phase where the features for PG owners, Mess owners, and Students are identified and documented. Once the requirements are clear, the development team can proceed with the design phase, creating wireframes and UI/UX designs for the web or mobile application.

2) Following the design phase, the development can commence with creating the basic infrastructure, including user registration, login functionality, and database setup. This would allow users (PG owners, Mess owners, and Students) to create accounts and log in.

3) Subsequently, the development can move on to implementing specific features for each user role. For PG owners, this would involve functionalities such as PG creation, waiting for approval from super admin, viewing bookings, payment lists, and ratings. Similarly, for Mess owners, the focus would be on functionalities like Mess creation, waiting for approval, viewing bookings, payment lists, and ratings.

4) For students, features such as registration, login, viewing PG and Mess details, booking, and making payments would be developed. Throughout the development process, regular testing and feedback sessions can be conducted to ensure that the system meets the requirements and is user-friendly.

5) Once the core functionalities are implemented, the project can enter a phase of continuous improvement and iteration. Additional features or enhancements can be 3 prioritized based on user feedback and business needs. This iterative approach allows for flexibility and adaptability, ensuring that the final product meets the evolving requirements of all stakeholders.

V System Architecture

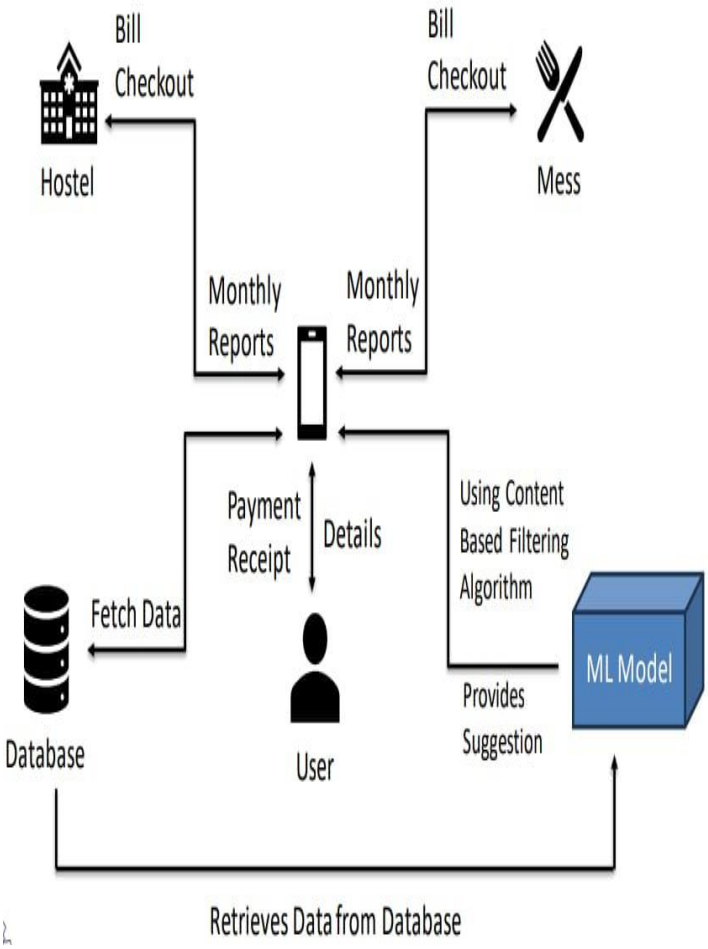

Fig -1 System Architecture Diagram

VI Strengths

1) Improved User Experience: The system will significantly enhance the experience for students searching for hostels and mess facilities. It simplifies the process, saving time and reducing frustration.

2) Personalization: By utilizing user preferences and data, the system can offer personalized recommendations, increasing the likelihood of a good match between students and hostels/mess facilities.

3) Efficiency: It streamlines administrative tasks for hostel and mess managers, potentially reducing their workload and improving resource allocation.

4) Scalability: It can be scaled to accommodate a growing number of students and hostels, making it suitable.

VII Scope

1) This system can be use in various institution, organization and industry for recommendation purpose.

2) Implement recommendation algorithms that analyze user preferences and hostel/mess data to provide personalized suggestions.

VIII Result

The result of the project would be a comprehensive web or mobile application tailored to the needs of PG owners, Mess owners, and Students within the specified scope. PG owners would have a platform to easily register their properties, upload necessary details including photos and rental information, and await approval from super admins. Once approved, they can manage bookings, view payment lists, and monitor ratings from students. Similarly, Mess owners would be able to register their establishments, upload menu details and other information, and monitor bookings, payments, and ratings. For students, the platform would provide a user-friendly interface to register, login, browse through PG and Mess details, book accommodations or meals, and make payments securely. 6 The end result would streamline the process of finding accommodation and meals for students while providing PG and Mess owners with a centralized platform to manage their properties efficiently. Overall, the project's outcome aims to enhance the user experience for all stakeholders involved while ensuring transparency and ease of use throughout the process.

Fig-2 Login portal

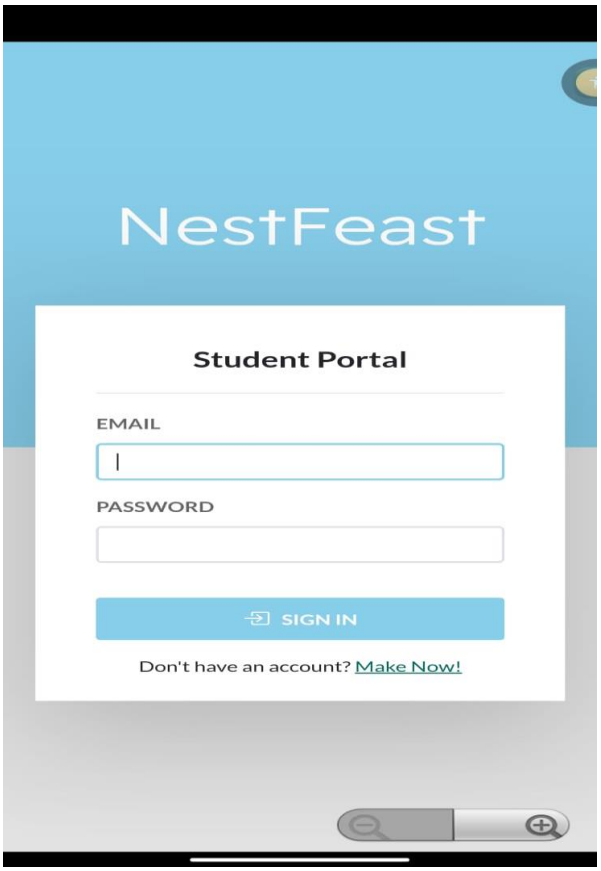

Fig-3 Student Login portal

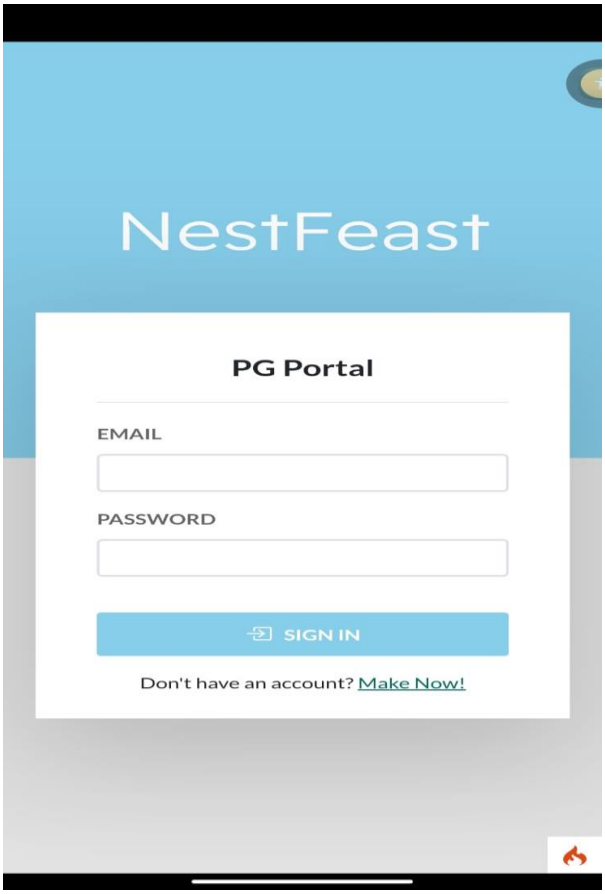

Fig-4 PG Login portal

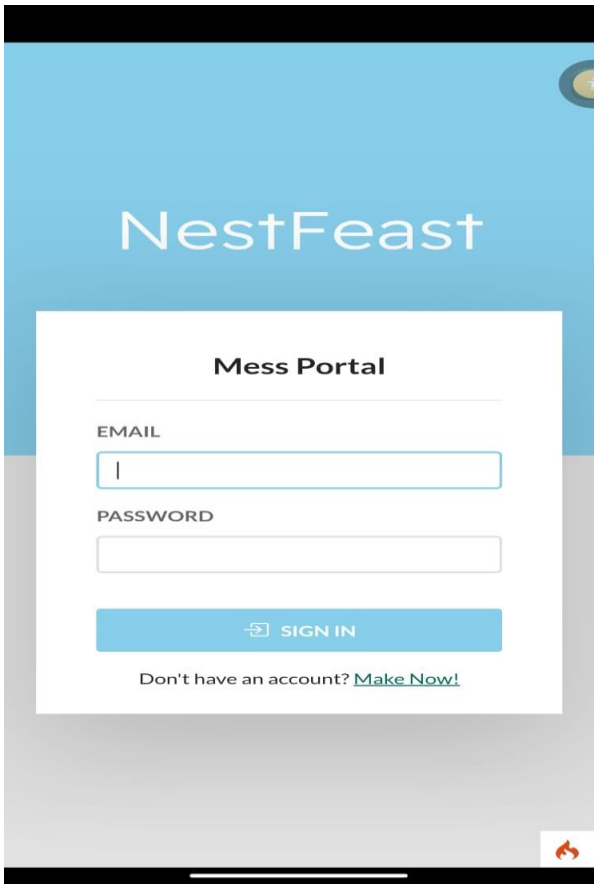

Fig-5 Mess Login portal

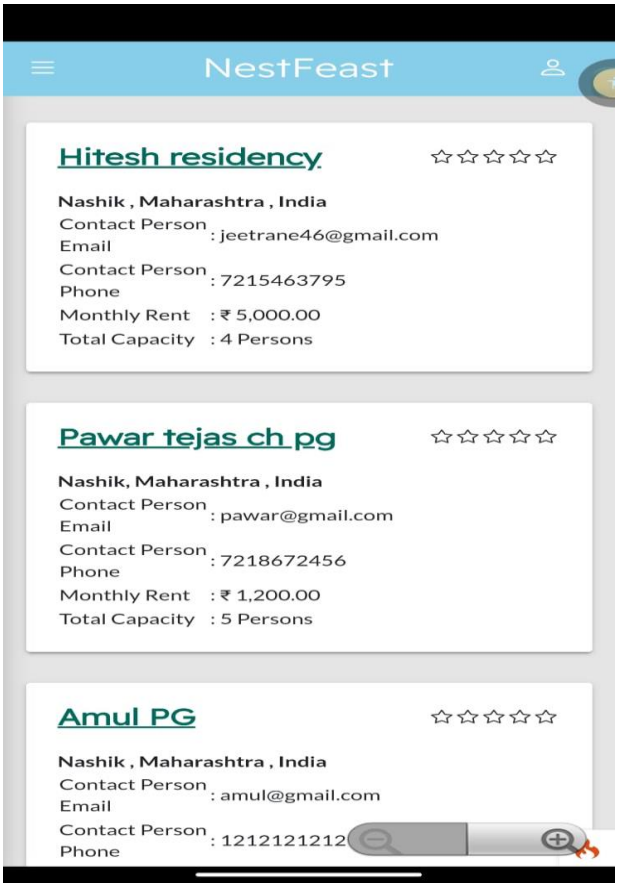

Fig-6 Listed PG Information

Fig-7 Listed Mess Information

IX Conclusion

The Hostel and Mess Recommendation System is a valuable tool for students and traveler's alike, simplifying the process of finding comfortable accommodation and dining options. By harnessing the power of data-driven recommendations and user feedback, this application ensures that users make informed choices and have a pleasant experience during their stay.

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