

PG FINDER: A WEB-BASED ACCOMMODATION SEARCH AND MANAGEMENT SYSTEM FOR STUDENTS

Aayush Kumar(aayush022ai0004@rdec.in), Keshav Bhardwaj(keshav022ai0036@rdec.in),

Aashu Kumar(aashu022ai0003@rdec.in), Mayur Prajapati(mayur022ai0044@rdec.in).

Guide:Arvind Panwar(arvind.cs@rdec.in)

Computer Science Engineering (Artificial Intelligence and Machine Learning),

R D Engineering College ,Duhai,Ghaziabad,UP, India

Abstract

Finding suitable Paying Guest (PG) accommodation is a major concern for students relocating to new cities for higher education. Students often struggle to identify affordable and reliable housing options due to the lack of centralized and well-organized information sources. Traditional approaches such as local brokers, word-of-mouth recommendations, posters, and manual visits to multiple locations are time-consuming and often fail to provide complete or accurate information regarding rent, facilities, room availability, and location details.

These limitations make the accommodation search process inefficient and stressful for students who are already adjusting to a new academic environment. This research presents Smart PG Finder, a web-based accommodation search and management system designed specifically to address the housing challenges faced by students. The proposed system provides a centralized digital platform where users can search PG accommodations using various parameters such as location, price range, room type, and available facilities including Wi-Fi, food services, security, and parking. In addition to assisting students in searching for accommodations, the system also enables administrators or property owners to manage listings by adding, updating, and deleting accommodation records.

The system is based on a database-driven architecture that enables efficient storage, retrieval, and management of accommodation data. Through structured data representation and search filtering capabilities, the platform simplifies the decision-making process and significantly reduces the time required to identify suitable accommodation. The paper discusses the background of the problem, existing research in accommodation management systems, system methodology, architectural design, experimental evaluation, and future enhancements such as map-based navigation, online booking functionality, and review-based recommendation systems.

Keywords: Smart PG Finder, Student Housing, Accommodation Search System, Web Application, PG Management System.

1. Introduction

The growth of higher education institutions across various cities has led to an increasing number of students migrating from rural and semi-urban areas to urban centers for academic purposes. One of the most significant challenges faced by these students is securing safe, affordable, and convenient accommodation close to their

educational institutions. Since hostel facilities in many colleges are limited, a large number of students depend on private housing options such as Paying Guest (PG) accommodations.

PG accommodations are popular among students because they generally provide essential facilities such as furnished rooms, food services, and basic utilities at a relatively lower cost compared to independent apartment rentals. Despite their advantages, finding a suitable PG accommodation can be a difficult and time-consuming process. Traditionally, students rely on brokers, local contacts, or social media posts to search for accommodation. These approaches often involve physically visiting different neighbourhoods, negotiating with property owners, and collecting incomplete or outdated information about available rooms. As a result, the process requires significant effort and may still lead to unsuitable accommodation choices.

Although online rental platforms have emerged in recent years, most of these platforms are designed for a broad housing market and primarily focus on apartment rentals or independent housing. They rarely prioritize the specific requirements of students, such as shared rooms, budget limitations, proximity to educational institutions, or food availability. To address these limitations, this research proposes Smart PG Finder, a web-based accommodation search platform designed specifically for students. The system provides a centralized repository of PG listings and allows users to search accommodations using multiple criteria. The platform also includes an administrative interface that enables property owners to maintain updated records of available accommodations. The primary goal of this research is to demonstrate how a simple yet effective web-based information system can improve the efficiency, accessibility, and reliability of the student accommodation search process.

2. Literature Review

The development of web-based information systems has significantly transformed the way individuals access services and information in various domains. In the context of housing and accommodation management, several digital platforms have been developed to simplify the process of searching for rental properties. Previous studies have shown that centralized digital platforms are effective in improving information accessibility and reducing the time required for searching housing options. According to research in software engineering and information systems, database-driven web applications provide efficient mechanisms for storing and retrieving large volumes of structured data. These systems allow users to perform queries and apply filters to obtain relevant information quickly.

Many online housing platforms currently available provide features such as property listings, search filters, and communication channels between tenants and property owners. Some advanced platforms also incorporate features such as location mapping, review systems, and online booking facilities. However, most existing systems are designed for general property rental markets rather than focusing specifically on the needs of students seeking PG accommodations. As a result, these platforms may not provide relevant filters for factors such as room sharing options, food availability, or proximity to educational institutions.

Research in user interface design also highlights the importance of usability and accessibility in web applications. Systems that provide intuitive navigation, responsive interfaces, and efficient filtering capabilities tend to achieve higher user satisfaction and adoption rates. The Smart PG Finder system builds upon these concepts by developing a simplified accommodation search platform specifically targeted at students. By focusing on essential features such as structured listings, filtering mechanisms, and administrative listing management, the system aims to provide an efficient and practical solution for student housing discovery.

3. Problem Statement

Students who relocate to different cities for higher education often encounter significant difficulties while searching for suitable accommodation. The lack of centralized information sources forces students to rely on manual methods such as contacting brokers, asking local residents, or searching through social media groups. These methods present several challenges. First, they require a considerable amount of time and effort, as students must physically visit multiple locations before finding suitable housing. Second, the information obtained through these channels is often incomplete or outdated, which may lead to incorrect decisions regarding accommodation selection.

Another major challenge is the absence of structured information regarding rent, facilities, room availability, and safety conditions. Students may discover important details only after visiting the accommodation in person, which further increases the complexity of the search process. Although online rental platforms exist, they typically target a general housing audience and do not provide specialized filtering options for student accommodations. Consequently, students may find it difficult to locate PG accommodations that meet their specific requirements. Therefore, there is a clear need for a centralized digital platform that organizes PG accommodation information and allows students to search listings efficiently based on relevant criteria. The Smart PG Finder system is designed to address this issue by providing a structured and user-friendly accommodation search platform.

4. Objectives

The primary objective of the Smart PG Finder system is to develop a web-based platform that simplifies the process of searching for PG accommodations for students. One of the key objectives of the system is to create a centralized database that stores comprehensive information about PG accommodations, including rent, location, facilities, and room availability. By organizing this information in a structured format, the system ensures that users can easily access relevant details about different accommodation options.

Another objective is to provide advanced search and filtering capabilities that allow users to refine search results based on their specific preferences. Students should be able to search accommodations according to parameters such as location, budget range, room type, and availability of facilities such as food, Wi-Fi, or parking. The system also aims to provide an administrative interface that allows PG owners or system administrators to manage accommodation listings efficiently. This interface enables administrators to add new PG listings, update existing records, and remove outdated information from the database. Overall, the project seeks to improve the efficiency, transparency, and accessibility of the PG accommodation search process while reducing the reliance on traditional manual methods.

5. Methodology

The development of the Smart PG Finder system follows a structured software development process that includes several stages such as requirement analysis, system design, implementation, testing, and deployment. The requirement analysis phase involves identifying the key challenges faced by students during the accommodation search process. Information regarding user requirements was collected by analyzing common problems experienced by students who relocate to new cities for education.

Once the requirements were identified, the system design phase focused on defining the overall architecture of the application. This includes designing the user interface layout, database structure, and communication mechanisms between system components. The database design stage involves creating structured tables that store information related to users, PG listings, facilities, rent details, and availability status. Proper relationships between tables ensure efficient data storage and retrieval.

The implementation stage includes both frontend and backend development. The frontend interface is designed using web technologies to provide an intuitive and user-friendly experience. The backend logic handles user authentication, search operations, filtering mechanisms, and interaction with the database. After implementation, the system undergoes testing to verify that all modules function correctly. Various test cases are executed to ensure that features such as login, search, filtering, and listing management operate as expected. Finally, the system is deployed in a working environment where it can be evaluated based on performance, usability, and reliability.

6. System Architecture

The Smart PG Finder system is built using a three-tier architecture consisting of the presentation layer, application layer, and database layer. This architecture helps separate the user interface, business logic, and data storage components of the system.

The presentation layer represents the user interface through which students and administrators interact with the platform. It includes web pages such as the login page, registration page, search interface, and PG details page. This layer is responsible for collecting user inputs and displaying system responses.

The application layer contains the core logic of the system. It processes user requests, performs validation checks, applies filtering algorithms, and communicates with the database to retrieve relevant information.

The database layer stores all data related to the system in structured tables. This includes user information, PG listing details, facilities, rent information, and availability status. The database ensures that information can be retrieved quickly and accurately when users perform search queries.

7. System Modules

The Smart PG Finder system is divided into several modules to ensure organized and efficient functionality.

- **User Authentication Module:** Handles user registration and login operations. It verifies user credentials and ensures secure access to the system.
- **PG Listing Module:** Stores accommodation information in the database and displays listings to users.
- **Search and Filtering Module:** Enables users to locate PG accommodations based on location and refine results according to specific preferences such as rent range or facilities.
- **PG Details Module:** Provides detailed information about a selected accommodation, helping users compare options before making decisions.
- **Admin Management Module:** Allows administrators or PG owners to maintain accurate and updated accommodation listings.

8. Experimental Evaluation

To evaluate the performance of the Smart PG Finder system, several functional tests were conducted to verify the reliability and efficiency of system operations. Different user scenarios were simulated to test the search functionality. When users entered location-based queries, the system successfully retrieved relevant PG listings from the database. Additional filtering options allowed users to narrow down search results according to their requirements.

The testing process also verified the functionality of the administrative interface. Administrators were able to add new PG listings, update existing records, and remove outdated entries. The updated information was

immediately reflected in the user search results. The experimental evaluation indicates that the system performs effectively in managing accommodation information and providing accurate search results.

9. Results and Analysis

The implementation of the Smart PG Finder system demonstrates significant improvements in the accommodation search process for students. Compared to traditional methods, the platform reduces the time required to identify suitable PG accommodations. Students can browse multiple listings online and compare options based on rent, facilities, and location without physically visiting each property. The filtering functionality further improves search efficiency by eliminating irrelevant listings and presenting only the accommodations that match the user's requirements. The administrative interface also simplifies listing management by allowing administrators to maintain accurate accommodation records.

10. Discussion

The findings of this research indicate that web-based accommodation platforms can play an important role in improving the accessibility and organization of housing information for students. By centralizing PG listings and providing efficient search mechanisms, the Smart PG Finder system addresses several limitations associated with traditional accommodation search methods. The platform provides structured information that helps users make informed decisions.

However, the system also has certain limitations. Since PG listings are entered manually by administrators, the accuracy of information depends on regular updates. Additionally, advanced features such as map-based navigation, booking systems, and payment integration are not included in the current implementation.

11. Conclusion

This research presented the design and development of the Smart PG Finder system, a web-based platform developed to simplify the process of searching for PG accommodations for students. The system provides a centralized database of PG listings and allows users to search and filter accommodations based on their preferences. The results demonstrate that the platform improves search efficiency and reduces the time required to locate suitable housing. Future work may include integrating map-based location services, online booking functionality, payment gateway support, review systems, and mobile application development.

12. Future Scope

The Smart PG Finder system can be further improved by incorporating several advanced features in future versions. One possible enhancement is the integration of map-based location services, which would allow users to view PG accommodations on a digital map and calculate the distance from their educational institutions.

Another improvement would be the addition of online booking functionality, enabling students to reserve rooms directly through the platform. Integrating a secure payment gateway would also allow users to make advance payments or booking deposits online. The platform could also include a review and rating system, allowing students to share their experiences and provide feedback about PG accommodations. This feature would help other users make better decisions based on real user reviews. Finally, the system could be expanded into a mobile application, making it easier for students to search for accommodations using their smartphones.

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