

# **TerraNest**

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A project synopsis submitted for the partial fulfillment of  
Bachelor of Technology in the

**Department of Computer Science and Engineering**  
**St. Thomas' College of Engineering and Technology**

Affiliated to

**Maulana Abul Kalam Azad University of Technology, West Bengal**

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## **DECLARATION**

We declare that this written submission represents our ideas in our own words and we have adequately cited and referenced the original sources. We also declare that we have adhered to all the principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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# Table of Contents

Page No.

## I. Pre-amble

### I.I Vision and Mission

### I.II Program Outcome (PO) and Program Specific Outcome (PSO)

### I.III PO and PSO mapping with justification

## Abstract

## 1. Introduction

### 1.1 Problem Statement

### 1.2 Objective

### 1.3 Literature Survey

### 1.4 Brief Discussion on Problem

### 1.5 Organization/ Planning

## 2. Concepts and problem analysis

## 3. Conclusion

## 4. Reference

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# **I. PREAMBLE**

## **I.I Vision and Mission**

### **I.I.I Vision of the Institution**

To evolve as an industry-oriented, research-based institution dedicated to fostering innovation, creativity, and practical solutions across various domains. The vision aims to:

- Contribute meaningfully to societal development by addressing real-world challenges through advanced research and technological interventions.
- Establish a global presence as a hub of academic excellence and innovation, consistently delivering solutions that meet the dynamic needs of industry and society.
- Foster an inclusive and diverse environment where collaboration and knowledge-sharing drive transformative growth.

### **I.I.II Mission of the Institution**

1. To enhance the quality of education by implementing cutting-edge teaching methodologies and creating a state-of-the-art infrastructure that supports innovative learning experiences.
  2. To promote a culture of research and development by encouraging interdisciplinary collaborations and providing the necessary resources for groundbreaking studies and technological advancements.
  3. To prepare students and faculty to thrive in a rapidly evolving world by instilling professional knowledge, leadership qualities, and entrepreneurial skills combined with strong ethical and moral values.
  4. To actively engage with industries and communities to identify and address emerging challenges, ensuring that academic outputs align with real-world applications.
  5. To advocate for sustainable development by integrating environmentally conscious practices and technologies into education, research, and operational frameworks.
  6. To create lifelong learners who can adapt to global challenges and make meaningful contributions to building a knowledge-driven and sustainable society.
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## **I.II Program Outcome (PO)**

### **PO1: Critical Thinking and Problem Solving:**

College projects encourage students to approach challenges from different angles, enhancing their analytical skills. By identifying problems and brainstorming multiple solutions, students develop a deep understanding of how to assess situations logically. This ability to think critically and solve problems prepares students for complex scenarios they may encounter in their careers.

### **PO2: Research and Innovation:**

Projects push students to explore emerging trends, technologies, and methodologies through extensive research. This research-oriented approach nurtures creativity and enables students to generate unique solutions, fostering innovation. By thinking outside the box, students are motivated to discover new concepts that may contribute to advancements in their field of study.

### **PO3: Technical Proficiency:**

Hands-on projects allow students to apply the theoretical knowledge they have gained in the classroom to practical tasks, strengthening their technical skills. Whether it's coding, designing, or conducting experiments, students develop a mastery of the tools and techniques necessary for success in their discipline. This technical competence prepares them for real-world job roles that require specialized skills.

### **PO4: Teamwork and Collaboration:**

Many college projects involve working in teams, helping students develop interpersonal and collaborative skills. By engaging in discussions, delegating tasks, and working towards common goals, students learn how to communicate effectively and resolve conflicts. Teamwork also teaches students the value of diverse perspectives and how to combine strengths to achieve superior results.

### **PO5: Time Management and Planning:**

Successfully completing a project requires careful planning and time management. Students must break down tasks, allocate resources, and prioritize responsibilities to meet deadlines. This process teaches students how to balance multiple activities, a crucial skill in both academic and professional settings where deadlines are strict.

### **PO6: Adaptability and Flexibility:**

In the course of a project, unexpected obstacles and changes in requirements are common. Students learn how to remain flexible and adapt to these shifts, whether it's adjusting timelines, rethinking approaches, or altering scope. This adaptability is a vital skill in the workplace, where rapid changes and evolving challenges are frequent.

### **PO7: Application of Knowledge:**

College projects bridge the gap between theory and practice by allowing students to apply what they have learned in real-world scenarios. This helps solidify their understanding and makes abstract

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concepts more tangible. By working on relevant projects, students gain valuable insights into how their academic learning can be directly translated into industry applications.

**PO8: Ethical and Responsible Conduct:**

Students are often required to consider the ethical implications of their work, from respecting intellectual property to ensuring the sustainability of their solutions. This fosters a strong sense of responsibility, teaching students the importance of adhering to ethical standards and promoting fairness, transparency, and integrity in their professional lives.

**PO9: Communication Skills:**

Completing a project requires students to present their findings and ideas effectively. Whether through written reports, presentations, or discussions, students learn to communicate complex concepts in a clear and concise manner. This enhances their ability to articulate technical information to both technical and non-technical audiences, a valuable skill in any career.

**PO10: Project Management:**

Students gain hands-on experience in managing all aspects of a project, including defining goals, allocating resources, setting deadlines, and tracking progress. By taking ownership of the entire project lifecycle, they develop organizational skills and learn how to lead and motivate a team. These project management abilities are directly transferable to any professional role, especially in leadership positions.

**PO11: Self-Confidence and Independence:**

By taking responsibility for the planning and execution of a project, students build their self-confidence. They learn to trust their judgment and develop the ability to work independently, which increases their initiative and decision-making capabilities. This sense of autonomy fosters personal growth and prepares students for leadership roles in their careers.

**PO12: Professional Development:**

College projects provide a platform for students to develop skills that are highly valued by employers, such as problem-solving, collaboration, and technical expertise. Working on real-world problems enhances students' industry readiness, making them more attractive candidates in the job market. Additionally, completing projects adds value to their portfolios, showcasing their practical experience and commitment to professional development.

## **Program Specific Outcomes (PSO)**

**PSO1: User-Centric Design and Usability:**

Students will develop skills in creating user-friendly interfaces for online platforms, ensuring that the rental website is intuitive and easy to navigate. By conducting usability testing, students will refine the design to meet the needs of different user segments, such as property seekers and property owners. This outcome emphasizes the importance of delivering a seamless user experience.

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**PSO2: Integration of Machine Learning for Smart Suggestions:**

Students will gain hands-on experience in implementing machine learning algorithms, such as recommendation systems, to provide personalized property suggestions to users. This will enhance their understanding of how to integrate AI technologies into web applications, improving decision-making processes for users based on their preferences and behaviors.

**PSO3: Backend Development and Database Management:**

The project will provide experience in backend development using frameworks like Spring Boot and database management with technologies like MySQL. Students will work on designing efficient database schemas for storing user and property data, ensuring data integrity, security, and optimal performance for a smooth user experience.

**PSO4: Security and Data Privacy Management:**

As users will input sensitive data (e.g., contact details, preferences), students will learn the importance of data security measures. This includes implementing user authentication, password encryption, and secure data storage practices. Additionally, they will ensure compliance with data privacy regulations to protect user information and build trust.

**PSO5: Real-time Data Processing and Notifications:**

Students will develop skills in implementing real-time features such as notifications, live updates for property availability, and chat support. They will integrate technologies like WebSockets or polling mechanisms to provide users with instant information, enhancing the interactivity and responsiveness of the platform.

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### I.III PO and PSO Mapping with Justification

Program Specific Outcome (PSO)	Program Outcome (PO)	Justification
PSO1: Web Development & Backend Integration	PO3: Technical Proficiency	Developing a web-based platform requires proficiency in both front-end (HTML, CSS, JavaScript) and back-end (Spring Boot, MySQL) technologies.
	PO4: Teamwork and Collaboration	Collaboration is crucial for integrating the front-end and back-end, ensuring smooth data exchange and functionality.
	PO10: Modern Tool Usage	Using modern tools like React, Spring Boot, and MySQL ensures the application is scalable and performs well.
	PO11: Project Management	Managing the development process, testing, and deployment of both the front-end and back-end.
PSO2: Database Management & Optimization	PSO2: Database Management & Optimization	Designing efficient databases and queries involves critical thinking to ensure data integrity and optimization.
	PO3: Technical Proficiency	Proficiency in SQL databases and query optimization is vital for the system's performance.
	PO6: Environmental and Societal Impact	A well-optimized database reduces resource consumption, contributing to environmental sustainability.
	PO10: Modern Tool Usage	Integrating tools like MySQL or PostgreSQL for database management ensures reliability and scalability.
PSO3: Machine Learning Integration	PO1: Critical Thinking and Problem Solving	Integrating machine learning requires problem-solving skills for data preprocessing, model training, and evaluation.
	PO3: Technical Proficiency	Knowledge of machine learning algorithms and frameworks is essential for implementing property recommendation models.
	PO4: Teamwork and Collaboration	Collaborating with other developers to integrate the machine learning model into the application's back-end.
	PO7: Communication Skills	Communicating the functionality and benefits of the machine learning model to the team and stakeholders.



PSO4: Security Implementation & User Privacy	PO1: Critical Thinking and Problem Solving	Implementing security measures like encryption and authentication to protect user data requires careful planning.
	PO5: Time Management and Planning	Security features should be implemented within deadlines without affecting the overall project timeline.
	PO8: Ethical and Responsible Conduct	Ensuring user privacy and securing sensitive information like contact details in compliance with ethical standards.
	PO12: Leadership and Accountability	Leading the implementation of security features and ensuring that they align with the latest security protocols.
PSO5: Real-time Features & Interaction	PO1: Critical Thinking and Problem Solving	Implementing real-time features requires solving challenges related to data flow and synchronization.
	PO3: Technical Proficiency	Proficiency in integrating real-time features such as notifications using WebSockets or Firebase.
	PO4: Teamwork and Collaboration	Effective collaboration between front-end and back-end teams to ensure smooth interaction with real-time updates.
	PO11: Project Management	Coordinating the development of real-time features while ensuring the overall project stays on track and meets deadlines.

# ABSTRACT

The Smart PG Recommendation Website is a dynamic and innovative platform designed to transform the process of finding Paying Guest (PG) accommodations for students and working professionals. This project integrates advanced search and filtering mechanisms with machine learning algorithms to provide users with personalized property suggestions based on their preferences. The platform addresses the challenges associated with traditional PG search methods, such as lack of transparency, time inefficiency, and limited customization options. The core functionality of the website includes smart search and filtering, where users can filter properties based on parameters like location, budget, amenities, and room type. Personalized recommendations are generated by a machine learning model, using techniques like rule-based algorithms, which analyze user interactions to recommend PG options tailored to individual preferences. Verified listings and user feedback are incorporated to enhance trust; all listings are verified, and users can review and rate properties, helping others make informed decisions. The platform is designed with a responsive and scalable structure, ensuring it works seamlessly across devices, and is hosted on a cloud platform for scalability and reliability.

In addition to its user-focused features, the website ensures data privacy and security by adhering to standards such as GDPR. The database is optimized to manage large volumes of data efficiently, enabling smooth interactions even during peak usage. The project employs modern web development technologies, including Spring Boot and MySQL, to ensure a robust and responsive system. By bridging the gap between technology and real-world housing challenges, the Smart PG Recommendation Website sets a benchmark for convenience, transparency, and innovation in the property search domain. The project not only simplifies the PG hunting process but also fosters a secure and engaging user experience, making it a valuable resource for its target audience.

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# 1. INTRODUCTION

Finding suitable Paying Guest (PG) accommodations has always been a time-consuming and inefficient task for students and working professionals. Traditional methods are often hindered by a lack of transparency, limited customization, and manual searching. The Smart PG Recommendation Website addresses these issues by providing a user-friendly platform that simplifies the PG search process through advanced technologies like Spring Boot, MySQL, and machine learning algorithms. The core feature of this website is a machine learning-based recommendation system using the Rule based algorithms. By analyzing user behavior and preferences, the platform offers personalized PG suggestions based on factors like budget, location, and amenities. This approach enhances user satisfaction by saving time and delivering tailored results. Additionally, the website features dynamic search and filtering options, allowing users to refine their searches based on their specific needs, such as proximity to educational institutions, availability of facilities, and budget. Property listings are verified, and users can share reviews and ratings, adding a layer of transparency and trust.

Data privacy and security are top priorities for the project, which complies with GDPR guidelines to protect user information. The platform is hosted on Cloud Platform, ensuring scalability and reliability even during high traffic. The Smart PG Recommendation Website aims to revolutionize the PG accommodation search by providing a scalable, secure, and efficient platform. Its advanced features and focus on user personalization are designed to meet the growing demand for convenient and trustworthy housing solutions.

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## 1.1 Problem Statement

Finding suitable Paying Guest (PG) accommodations remains a significant challenge for students and working professionals, especially in large urban areas. Traditional methods, such as word-of-mouth referrals, local advertisements, or visiting multiple properties, are often inefficient and time-consuming, and may not always provide accurate or up-to-date information. Additionally, PG information is scattered across various platforms, and potential tenants may struggle to find properties that meet their specific preferences, such as budget, location, and amenities. This issue leads to frustration, as individuals often waste time on irrelevant listings, resulting in a delayed search process.

The **Smart PG Recommendation Website** aims to address this gap by providing a centralized platform that offers a streamlined, efficient way for users to search for PG accommodations. The platform will allow users to filter and search properties based on their preferences and provide personalized PG recommendations using machine learning algorithms like Rule based algorithms. This approach will not only save time but also offer more relevant options tailored to the user's needs.

## 1.2 Objective

The primary objective of the Smart PG Recommendation Website is to develop a user-friendly platform that helps users efficiently find suitable Paying Guest (PG) accommodations. This project aims to simplify the PG search process and improve user experience by leveraging modern technology and data-driven methods. One key objective is to provide personalized recommendations. Using rule-based algorithms, the platform will analyze user preferences such as budget, location, amenities, and user behavior to suggest PG accommodations tailored to each individual. By understanding user needs and refining suggestions over time, the platform will offer an intuitive and customized experience for every user. Another important objective is to enable advanced search and filtering capabilities. Users will have the ability to filter PG listings based on a variety of factors such as price, proximity to educational institutions or workplaces, room type, and specific amenities. This feature ensures that users can quickly find options that best meet their specific needs, eliminating the time-consuming process of manually browsing irrelevant listings. The platform also focuses on increasing transparency and trust. To achieve this, all PG listings will be verified to ensure their authenticity. Users will be able to leave reviews and ratings for the properties they have visited, which helps provide reliable feedback to others, enabling informed decision-making. This feature will build credibility within the platform and enhance the overall user experience. Ensuring data security and privacy is another crucial objective of the project. The platform will comply with data protection standards, such as GDPR, to safeguard user privacy and ensure a secure environment for transactions. By implementing industry-standard security measures, users can trust that their personal information and transaction data are kept safe.

Finally, the platform will be built on scalable infrastructure, hosted on a cloud platform. This will ensure that the website can efficiently handle large volumes of traffic and meet the data processing demands of an expanding user base. The cloud hosting solution will allow the platform to scale dynamically, providing a reliable and responsive service to users at all times. These objectives aim to create a comprehensive solution that streamlines the PG search and recommendation process,

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enhances transparency and trust, maintains user privacy and security, and ensures the platform can scale effectively to meet growing demands.

## 1.3 Literature Survey

The rise of digital platforms for property listings has revolutionized the real estate market, allowing property owners to list accommodations and potential renters to search for suitable places. Traditional platforms like Craigslist, Zillow, and Airbnb provide broad services, focusing on rentals, sales, and vacation bookings. The surge in digital transformation has prompted intelligent platforms leveraging artificial intelligence (AI) and machine learning (ML) to enhance user experience and optimize search results. Websites like MagicBricks, 99acres, and NestAway dominate India's rental market, while Zillow and Rightmove excel globally. These platforms use data-driven methods to filter and present results based on user preferences and property attributes.

### Problem and TerraNest's Solution:

Many property websites cater broadly to rentals and sales but often neglect paying guest (PG) accommodations. TerraNest fills this gap with a focused platform designed exclusively for PG listings. Issues like outdated or inaccurate listings create inefficiencies and diminish user trust. TerraNest integrates real-time updates, ensuring accurate and current information for users [1]. Mainstream platforms often lack tailored features for PG seekers. TerraNest eliminates irrelevant clutter, offering a targeted and efficient search experience [2].

### TerraNest Features:

#### Personalized Filtering

TerraNest's advanced filtering enables tenants to narrow searches with preferences like room type, gender-specific accommodations, WiFi availability, and meal inclusion. This aligns with research emphasizing tailored recommendations through ML [1].

#### Smart Recommendations

Our ML model provides personalized property suggestions by analyzing behavioral data, such as clicks, filters, and browsing patterns [2]. It recognizes user preferences within a few interactions, saving time and improving decision-making [3].

#### Roommate Compatibility Survey

A roommate compatibility survey fosters harmonious living by aligning preferences of current and prospective renters. Topics include cleanliness, work habits, and social behaviors, enhancing compatibility and minimizing conflicts [1].

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## Local Landmark Information

The platform highlights proximity to landmarks like hospitals, malls, and transit hubs, aiding decision-making for first-time PG seekers. This feature enriches listings with practical context [3].

## Case Studies on Similar Platforms

- **NestAway:** Focuses on shared accommodations with AI-powered filters and recommendations [2].
- **Zolo Stays:** Offers managed shared accommodations with services like WiFi and meals, targeting community living [1].
- **Colive:** Leases buildings for tech-driven, fully serviced co-living spaces, integrating amenities via an app [3].

TerraNest disrupts the PG market with AI-driven personalization, real-time updates, and PG-specific features. By addressing gaps in traditional platforms, it delivers a tailored, efficient, and user-focused experience [1].

## 1.4 Brief Discussion on the Problem

Finding the right Paying Guest (PG) accommodation is often a challenging and tedious task for students and young professionals, particularly in large cities where the demand for rental properties is high. Traditional methods of searching for PGs—like word-of-mouth, physical visits, and local advertisements—are outdated and inefficient. Users often struggle to find up-to-date, accurate information about properties, leading to a significant amount of wasted time and frustration. Moreover, PG owners and property managers face difficulties in maintaining their listings on multiple platforms and ensuring the details remain accurate. The absence of a centralized system for PG accommodation often leads to users sifting through irrelevant options, making it hard for them to make quick and informed decisions.

The **Smart PG Recommendation Website** is designed to overcome these issues by creating a centralized platform for PG accommodations. The use of machine learning algorithms, such as Rule based algorithms, ensures that users receive personalized recommendations based on their preferences, and advanced search and filtering options help users quickly narrow down suitable listings. By automating the search and recommendation process, the platform saves users time and reduces the effort required to find a suitable PG.

## 1.5 Organization

The development of the TerraNest Smart PG Recommendation Website will be organized into distinct phases to ensure efficient execution and timely delivery of key features. The development plan is divided into five main phases: Requirement Analysis and Planning, where the team will gather project requirements through user surveys, interviews, and analysis of existing platforms to identify critical features; System Design and Development, which involves creating a responsive front end and

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utilizing Spring Boot for back-end processes, including user management, database interactions, and business logic, while a machine learning-powered recommendation engine and MySQL will handle data storage; Testing and Integration, which includes functional, integration, and performance testing to ensure the system meets user expectations, scalability testing on Cloud Platform to handle high traffic; Deployment and Maintenance, which involves deploying the platform to a live server, monitoring performance, and providing ongoing maintenance through system updates, bug fixes, and new features; and finally, Feedback and Iteration, where user feedback will be gathered after launch to refine and improve the system for better user experience.

The Gantt chart below represents the progress timetable of our work, illustrating the timeline for each phase and the key deliverables for the Terranest Smart PG Recommendation Website project. The development process will adhere to the Agile methodology, which allows the team to remain flexible and responsive to changes, enabling faster delivery of features and efficient handling of unexpected challenges. This ensures that the project can be completed successfully while adapting to the evolving needs of users and stakeholders.

Month/Phase	1	2	3	4	5	6	7	8	9	10
Phase 1: Requirement Analysis and Planning										
Phase 2: System Design and Database development										
Phase 3: Backend API Development										
Phase 4: Frontend Development										
Phase 5: Testing and Integration										
Phase 6: Deployment and Maintenance										
Phase 7: Feedback and Iteration										

## 2.1 CONCEPT OF TERRANEST

Terranest is a sophisticated and user-friendly platform meticulously designed to address the challenges associated with finding paying guest (PG) accommodations. By leveraging cutting-edge technologies such as Machine Learning (ML) and location-based services, Terranest aims to provide highly personalized and efficient solutions to both tenants and PG owners. The platform's primary goal is to streamline the accommodation search process while fostering transparency and trust between users. It not only serves tenants searching for suitable accommodations but also acts as a powerful tool for PG owners, enabling them to showcase their offerings to a targeted audience effectively. This dual

functionality maximizes visibility for owners while helping tenants find accommodations tailored to their needs. The platform operates on an intelligent recommendation system that uses user preferences, search history, and location data to identify accommodations that align with specific requirements. By tailoring results to individual needs, Terranest simplifies the entire search process, making it efficient and user-centric. Machine learning algorithms analyze factors such as budget, preferred amenities, and location preferences to provide personalized recommendations, ensuring that users are presented with options best suited to their unique criteria. Whether a tenant is looking for a space near educational institutions or one that offers specific meal preferences, Terranest delivers relevant results quickly and efficiently. In addition to its recommendation system, Terranest emphasizes the importance of user feedback through its review and rating features. Tenants can leave detailed feedback about their stays, providing valuable insights for future users. These reviews are integrated into the recommendation engine, enhancing the quality and reliability of suggestions over time. This community-driven approach ensures that tenants can make informed decisions based on the experiences of others, fostering transparency and trust within the platform.

To further enhance the user experience, Terranest offers advanced filtering capabilities that allow tenants to refine their searches based on specific parameters such as price range, food options, and other amenities. This feature provides users with greater control over their search, enabling them to focus on accommodations that closely match their preferences. Additionally, the platform incorporates an interactive map interface that allows tenants to visually explore accommodations in their desired area. This map highlights not only nearby PGs but also essential local amenities such as grocery stores, hospitals, and public transport hubs, giving users a comprehensive understanding of their surroundings. Terranest redefines the process of finding PG accommodations by combining personalization, community-driven insights, and advanced technology. It ensures a seamless and trustworthy experience for all users, whether they are tenants searching for the perfect accommodation or PG owners looking to attract the right tenants. With its focus on efficiency, transparency, and user satisfaction, Terranest is a revolutionary platform that simplifies the complexities of the accommodation search process and sets a new standard in the industry.

## 2.2 PROBLEM ANALYSIS

### 2.2.1 Key Features and Concepts of the Project

The creation of **Terranest** is driven by the persistent challenges faced in the PG rental ecosystem. The platform aims to address these challenges by offering personalized and efficient features, such as tailored accommodation recommendations based on user preferences (budget, amenities, location), real-time search capabilities, and a transparent review and rating system. The key features also include a user-friendly dashboard for easy browsing, integrated communication channels between tenants and PG owners, and AI-driven recommendations to make the decision-making process smoother.

### 2.2.2 Problem Analysis

The PG rental market is highly fragmented, with information scattered across multiple platforms or

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shared through word-of-mouth, making the search process inefficient and cumbersome for tenants. This decentralized nature results in incomplete or outdated information, complicating the search for suitable accommodations. There is also a lack of consistent quality standards for evaluating accommodations, leaving tenants guessing about factors such as amenities, cleanliness, and safety. Without universal criteria, tenants often face dissatisfaction with their chosen accommodations. Moreover, tenants are required to manually compare options, resulting in a time-consuming and overwhelming experience. The lack of an efficient comparison mechanism further adds to the frustration. Trust issues between tenants and PG owners, stemming from a lack of transparency, complicate the process even further, leading to unreliable interactions.

### 2.2.3 Technical Implementation

To solve these issues, **Terranest** will leverage advanced technologies like **Machine Learning** and **Artificial Intelligence** to power its recommendation engine. The platform will employ data-driven algorithms to ensure that each user is provided with personalized and accurate results. The back-end will be powered by **Spring Boot**, which will handle all business logic, including user management, accommodation data storage, and AI functionalities. **MySQL** will be used for secure and efficient data storage. Furthermore, the platform will be hosted on **Google Cloud Platform (GCP)** to ensure scalability and reliability, even during high traffic periods.

### 2.2.4 Authentication

A secure authentication system is crucial to protect users' personal information and ensure only authorized users access the platform. **Terranest** will implement secure user authentication using **JWT** (JSON Web Tokens) for secure login sessions. The platform will support both user and PG owner accounts, with role-based access control to ensure different levels of permissions based on user roles. The system will also include an optional multi-factor authentication (MFA) layer to add an extra layer of security to users' accounts.

### 2.2.5 Comparison and Personalization

To tackle the problem of inefficient comparison and irrelevant recommendations, the platform will incorporate a **comparison engine** that allows users to compare multiple PG options side by side, based on selected criteria such as budget, location, amenities, and safety features. The AI-driven recommendation system will use user preferences and historical data to suggest the most relevant PG accommodations, ensuring a personalized experience for every user.

### 2.2.6 Trust and Transparency

**Terranest** will address the issue of trust through a transparent review and rating system, where both tenants and PG owners can leave honest feedback. This system will help build credibility and allow users to make informed decisions based on the experiences of others. Additionally, PG owners will be able to verify the authenticity of tenants through a user rating and review mechanism, ensuring both parties can engage with confidence.

### 2.2.7 User-Centric Approach

By providing tailored recommendations, personalized search filters, and a seamless user experience, **Terranest** aims to simplify the PG rental process. The platform's focus on user-centric features, such

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as easy-to-use navigation, real-time availability, and customizable search filters, will create an optimized and stress-free accommodation search process.

### **2.2.8 Solution Impact**

With its centralized platform, **Terranest** seeks to transform the PG rental market by ensuring transparency, consistency, and efficiency. It will address the challenges of the fragmented market, inconsistency in quality standards, lack of trust, and inefficient search mechanisms by providing a comprehensive, streamlined solution that benefits both tenants and PG owners. Through the implementation of cutting-edge technologies and user-centric features, **Terranest** will create a seamless and trustworthy experience for all stakeholders in the PG rental ecosystem.

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### 3. CONCLUSION

Terranest is a groundbreaking platform that redefines the PG rental market by addressing its most pressing challenges through advanced technology and intuitive design. It streamlines how tenants discover and evaluate accommodations, offering AI-driven recommendations tailored to user preferences such as budget, location, and desired amenities, saving time and effort. The integration of user reviews and ratings enhances transparency, enabling tenants to make informed decisions while helping PG owners build credibility. Terranest's interactive map-based interface further enriches the user experience, allowing tenants to explore accommodations near key amenities like public transport and grocery stores, ensuring comprehensive decision-making. By consolidating scattered market data into one centralized platform, Terranest eliminates inefficiencies and simplifies the rental process. Its scalable design adapts to diverse geographic and demographic needs, making it suitable for global expansion. The platform also sets new benchmarks for quality by encouraging PG owners to improve their facilities based on tenant feedback, benefiting both tenants and the broader rental ecosystem. Beyond a rental solution, Terranest represents a transformative step in bridging technology and user needs. It fosters a more connected, efficient, and transparent rental environment, positioning itself as a leader in digital innovation. With its emphasis on quality, scalability, and user satisfaction, Terranest is setting a precedent for how technology can revolutionize traditional markets and elevate industry standards.

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