

Requirements Analysis

Project Title: HomeHub AI – A Rental Marketplace with Intelligent Tenant Matching and Booking

I. Business Objectives

Streamline the rental process for efficiency.

- The goal of HomeHub AI is to simplify the searching for and booking of rental properties by providing a single platform for people to connect through an AI platform. This lessens the amount of time that tenants and landlords spend on manual searching, communicating, and scheduling, while also improving business efficiency and overall satisfaction of customers.

Improve Market Competitiveness through Intelligent Matching

- The system enhances rental property compatibility by incorporating AI-driven tenant-landlord matching and individualized recommendations for renters. This results in faster occupancy rates for landlords and more favorable experiences for tenants, highlighting the company as an innovator in the rental marketplace.

Build trust and transparency in rental transactions.

- By providing real-time availability, updating booking status, and sending notifications, the system minimizes disagreements and misunderstandings. This level of transparency increases the credibility of the users and encourages them to return and could lead to customer loyalty, helping to sustain the platform over time.

Increase revenue opportunities for both landlords and the platform.

- HomeHub AI allows landlords to more effectively manage property availability, lists and pricing to maximize their property potential. Not only helps landlords maximize their income, it gives the platform constant revenue sources in commissions and transaction fees.

Provide a personalized user experience for tenants.

- The system allows tenants to keep their profiles, save their favorite rentals, receive recommendations from an AI that is tailored to their own requirements. Tenants benefit from having personalized dashboards, tracking of engagement activity, and other features that make renting more engaging. A more engaging experience leads to greater customer retention.

Promote sustainable growth and long-term user engagement.

- HomeHub AI maintains regular user value and engagement by integrating AI features such as tracking history and notifications in real-time, ultimately maintaining tenant and landlord engagement over time, supporting long-term expansion and the expansion into new categories and property types.

II. User Requirements

User Management

- Tenants and landlords should be able to create their respective accounts by providing personal details such as Email, Password, Full Name, Contact Information and other necessary information.
- Landlords must share details about their property.
- Users must be able login securely and the system will direct to specific dashboards according to what their roles are, which is either tenants or landlords.
- Tenants should be able to control and manage personal details and preferences. The information gathered would be utilized for AI-based recommendations.
- Landlords should have access to control and manage personal details, property policies and contact details.

Property Management

- Landlords must be able to create, update, edit and remove property listings. Furthermore, they should also manage the availability of the property whether it is still available or taken.
- Tenants should have the ability to search for properties with the use of filters that have information about the properties such as size, location and features.
- Tenants can also view properties with descriptions and images. Furthermore, they can save any rentals that have caught their attention.

Booking and Scheduling

- Being able to reserve a property is one feature that tenants should be able to execute. They can also request and schedule visits in which landlords will confirm or reschedule visits.
- Users must be able to track the booking status which will be stated as “Pending”, “Approved” and “Cancelled”

Notifications and History

- Tenants should be able to receive notifications related bookings, visitations, preferences, recommendations and landlords responses. On the other hand, landlords will also receive notifications relating to tenant inquiries, bookings and cancellations.
- Tenants should have access to view booking history, cancellations and property views. While landlords will have the ability to view property availability and past booking transactions.

AI Features

Intelligent Tenant Matching

- The system must utilize AI algorithms to pair tenants with suitable properties which will help reduce mismatches from occurring.

Smart Property Recommendations

- The system must provide AI-driven recommendations to tenants and analyze tenant browsing history such as properties that were viewed and rentals saved.

Predictive Analytics for Landlords

- The system will provide AI-powered insights to landlords. Furthermore, predict the demand for property owned based on past rental activity
- Suggest rental pricing and provide reports on property performance.

III. Functional Requirements

1. User Registration (Tenant and Landlord)

This function allows new users to register an account in the system either as a tenant or landlord.

Tenant Registration – Required Information:

- First Name
- Last Name
- Email Address
- Password
- Confirm Password
- Contact Number
- Budget Range (optional)

- Preferred Location (optional)
- Lifestyle Preferences (optional)

Landlord Registration – Required Information:

- First Name
- Last Name
- Email Address
- Password
- Confirm Password
- Contact Number
- Business/Agency Name (if applicable)

2. Login for Users

This function allows authorized users (tenants and landlords) to log into the system.

- The system shall validate email and password.
- The system shall detect if the user is a tenant or a landlord and redirect them to their respective dashboard.
- If incorrect credentials are provided, the system shall display an error message.

3. Tenant Profile Management

This function allows tenants to manage their personal profile and preferences.

- The tenant can update contact information (email, mobile number).
- The tenant can update rental preferences (budget, preferred location, lifestyle, amenities).
- The updated information is stored and used by the AI engine for improved recommendations.

4. Landlord Profile Management

This function allows landlords to manage their profile and business information.

- The landlord can update contact details.
- The landlord can update agency/business information.
- The landlord profile will be displayed to tenants during property viewing.

5. Property Management (Landlord)

This function allows landlords to create and manage property listings.

Required Details for Property Listing:

- Property Title
- Property Description
- Location
- Monthly Rent Amount

- Number of Bedrooms
- Number of Bathrooms
- Amenities (Wi-Fi, Parking, etc.)
- Photos of Property
- Availability Status (Available/Unavailable)

Actions:

- Create New Listing
- Edit Listing Information
- Delete Listing
- Mark as Available/Unavailable

6. Intelligent Tenant Matching (AI Feature)

This function matches tenants with the most suitable properties based on preferences and property attributes.

Process:

- The tenant's profile (budget, location, lifestyle, amenities) is converted into a vector.
- Each property listing is also converted into a vector.
- The AI applies cosine similarity to calculate the match score.
- The system displays the top recommended properties to the tenant.

7. Smart Property Recommendations

This function provides AI-driven recommendations to tenants.

Process:

- The system analyzes tenant browsing history (viewed properties, saved rentals).
- The system compares tenant behavior with similar tenants (collaborative filtering).
- The tenant receives recommended properties in their dashboard.

8. Search and Filter (Tenant)

This function allows tenants to browse properties using search filters.

Available Filters:

- Location
- Price Range
- Property Type (Apartment, Condo, House)
- Amenities (Wi-Fi, Parking, Pet-Friendly, etc.)

Outputs:

- List of properties matching search criteria.
- Ability to click and view property details.

9. Save Rentals (Tenant)

This function allows tenants to bookmark or save properties they are interested in.

- Saved properties are stored in the tenant's dashboard.
- The tenant can revisit these properties anytime.

10. Booking a Property

This function allows tenants to reserve or schedule a property visit.

Tenant Inputs:

- Select Property
- Choose Action: Reserve or Schedule Visit
- Desired Date/Time (for visits)

System Actions:

- If "Reserve Property" → The system locks the property for the tenant (pending landlord approval).
- If "Schedule Visit" → The system checks landlord availability and confirms appointments.

Landlord Actions:

- Approve or Reject reservation/visit request.
- Confirm booking status.

11. Booking Status Tracking

This function allows tenants to track the status of their bookings.

Possible Booking Statuses:

- Pending (awaiting landlord confirmation)
- Confirmed (reservation/visit approved)
- Cancelled (cancelled by tenant or landlord)
- Completed (visit or booking done)

Notifications:

- The system sends updates to both tenant and landlord whenever status changes.

12. Notifications System

This function sends real-time notifications to users.

For Tenants:

- New property matches
- Booking updates (confirmation, cancellation)
- Landlord messages

For Landlords:

- New inquiries from tenants
- Booking requests
- Tenant cancellations

13. Predictive Analytics for Landlords

This function allows landlords to access insights powered by AI.

Outputs:

- Forecast of property demand based on past rental activity.
- Suggested optimal rental pricing.
- Reports on property performance (views, saves, bookings).

14. History and Reports

This function provides both tenants and landlords with a history of their activities.

Tenant History:

- Saved rentals
- Booking history (confirmed, cancelled, completed)

Landlord Reports:

- Number of property views
- Bookings received vs. cancelled
- Occupancy trends