Capstone Project

SRS Document of AI-Powered Real Estate Investment Platform

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1. Introduction

1.1 Purpose of Document

The purpose of this **Software Requirements Specification (SRS)** document is to provide a clear and comprehensive description of the functional and non-functional requirements of the AI-Powered Real Estate Investment Platform.
This document will serve as a guide for all project stakeholders, including the development team, project manager, and prospective users, to gain a collective understanding of the system's purpose, functionalities, and limitations.

It defines the scope of the project, identifies the target users, and gives a detailed overview of the software's major functions and behavior. This SRS will be used throughout the project lifecycle to direct the design, implementation, testing, and maintenance of the proposed system.

1.2 Project Overview

The **AI-Powered Real Estate Investment Platform** aims to assist users in making smarter property investment decisions through artificial intelligence and data analytics. The system analyzes market data to predict property prices, monitor trends, and provide insights through an interactive web dashboard.

It will be used by investors, buyers, and real estate analysts to evaluate properties and forecast future values. The main goal is to improve accuracy, enhance transparency, and simplify real estate decision-making using intelligent, data-driven predictions.

1.3 Scope

The Platform will focus on providing data-driven insights and predictions to support real estate investment decisions. The system will collect property-related data, analyze market trends, and generate AI-based price predictions for users. It will also offer a user-friendly dashboard for visualization and comparison of property values.

The system will:

1. Allow users to input or browse property details (location, area, price, type, etc.).
2. Predict property values using machine-learning models trained on real market data.
3. Display market trend analysis through charts and graphs.
4. Provide an **AI Chabot** for property guidance and investment suggestions.
5. Enable admin access for managing property data and monitoring system activity.

The system will not:

1. Handle financial transactions or property purchases.
2. Include legal documentation or verification of property ownership.
3. Guarantee 100% accuracy of predictions, as results depend on the quality of available data.
4. Operate offline; it will require an active internet connection for AI services and data retrieval.

2. Overall System Description

The **AI-Powered Real Estate Investment Platform** will be developed as a web-based application. It will be accessible through standard web browsers such as Google Chrome, Microsoft Edge, or Firefox, and will not require any installation on the user's local system.

2.1 User characteristics

Users of the **AI-Powered Real Estate Investment Platform** are expected to have limited technical expertise. The system will be designed to ensure ease of use for individuals who are not technically skilled but can operate basic digital devices.

1. The user should be able to **Interact with the Graphical User Interface (GUI)** easily by clicking or tapping on suitable options.
2. Each user must be comfortable using a computer or mobile device with internet connectivity.
3. Users are expected to have basic knowledge of English to understand menus, Chabot responses, and data insights.
4. No advanced technical knowledge is required; the system will provide intuitive navigation and clear visual feedback for all actions.

2.2 Operating environment

The Platform will operate in a web-based environment and will be accessible through multiple devices. The software does not require installation and can run directly using an internet browser.

It includes:

1. Any desktop, laptop, or mobile device with an active internet connection.
2. Compatible with Android, Windows, and iOS operating systems.
3. Accessible via common web browsers such as Google Chrome, Mozilla Firefox, and Microsoft Edge.
4. Requires a stable internet connection to communicate with the backend server and AI model APIs.

2.3 System constraints

Constraints may include the following:

2.3.1 Software constraints

1. Stale Internet Connection
2. User ID and password are needed for login
3. Technical skills required to operate the system
4. No facility for guest users

2.3.2 Hardware Constraints

1. Device must have an updated browser
2. Device should be in working condition to run the platform smoothly

2.3.3 Cultural Constraints

1. **GUI** is only in English

2.3.4 Legal Constraints

1. Data privacy, security and copyright laws must be followed

2.3.5 Environmental Constraints

1. Stable internet environment required, user can easily open app and website, register yourself.

2.3.6 User Constraints

1. User should have basic knowledge of using web apps.
2. User must understand basic English.

3. External Interface Requirements

3.1 Hardware Interfaces

1. The system will operate on any **desktop, laptop, or mobile device** with internet access.
2. No additional hardware components are required.

3.2 Software Interfaces

Software Name	**Description**
Operating System	The system will run on Windows**,** Android**,** and iOS through common browsers like Chrome**,** Edge**,** and Firefox**.**
Programming Languages	The frontend will use **React.js**, and the backend will be developed with **Node.js & Express.js**. **Python (TensorFlow/Scikit-learn)** will handle AI-based predictions.
Database	All property data and user records will be stored securely in **PostgreSQL** or **MongoDB**.
Software Tools	**Visual Studio Code** and Jupyter Notebook or Google Colab will be used for development and testing. **Draw.io** for diagrams and **Microsoft 365** for documentation.
External APIs/Libraries	Integrates with Zameen.com**,** Graana.com**,** and OpenAI API. Data exchange between modules will use **REST APIs** with JSON format.

4. Functional Requirements

Functional requirements of this app are following:

1. Register a new user in the system.
2. Allow users to log in securely using email and password.
3. Enable users to add or browse property details (location, area, type, price, etc.).
4. Predict property prices using **AI-based models** trained on real market data.
5. Display market trends and price comparisons in graphical form.
6. Allow users to save and track their **investment portfolio**.
7. Provide an **AI Chabot** for real estate assistance and queries.
8. Allow admin to manage **property data and users**.
9. Generate analytical **reports** for market insights.
10. Maintain **user activity logs** for monitoring and analysis.

5. Non-functional Requirements

5.1 Performance Requirements

The application must be interactive and responsive, ensuring minimal delays during user interactions.
Each module should execute commands immediately after input from the user.
All system components, including the prediction engine, dashboard, and Chabot, must **be** well integrated and maintain a smooth workflow throughout the process.

5.2 Safety Requirements

1. **Fault Tolerance:** The system should continue functioning even if minor errors occur.
2. **Reliability**: The platform should perform consistently under different network conditions.
3. **Device Compatibility:** The software must work properly across all browsers and devices.
4. **Quick Response:** The system should process user requests with minimal lag.
5. **Strong Connection:** A stable internet connection is required for accurate predictions.
6. **Strong Passwords**: Users must create secure passwords to protect their accounts.

5.3 Security Requirements

1. Sensitive data will not be shared with any third party.
2. Passwords will remain hidden and not exposed through any interface.
3. Users will be educated about risks and prevention methods through system prompts or guidelines.
4. **User** privacy and data confidentiality will be properly managed.
5. The integrity and trustworthiness of the application will be maintained at all times.

5.4 User Documentation

1. **User Manual**: Describes how to use the system features and navigate through the platform.
2. **Tutorials**: Step-by-step instructions to help users understand major functions like property search and price prediction.
3. **FAQ Section**: Answers common questions and helps resolve basic issues.

6. References

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