

SR-DreamHome

['Aap Ka Soch – Aap Ka Sapna Ghar']

["SR-DreamHome" is a property recommendation application which helps in recommending right properties to buyers and aids in right mapping of sellers to buyers and vice versa. The recommendation uses unique algorithm and recommends the right properties to buyers along with recommendation buying score]

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Introduction

“SR-DreamHome” is a property recommendation application which helps in recommending right properties to buyers and aids in right mapping of sellers to buyers and vice versa. The recommendation system uses unique algorithm and recommends the right properties to buyers along with recommendation buying score on a scale of 10. The buyer can analyse the score, validate himself, shortlist the properties and can jump into property search. The algorithm is quite robust, and takes many inputs into consideration which aims at mimicking buyer analysis. The primary objective of this application is to help buyers to know right properties and supports in design making and finally reduce read time conversations.

We all know that, finding a right property for purchase is really complex job. The complexity is due to multiple reasons. Due to huge list of property options and multiple inputs to consider, finding right property is difficult and also time intensive process. In earlier days it requires for an individual to visit the agencies or directly approach the sellers for purchasing the property. This is a quite long process, and due to scattered information the process is difficult. In the recent days, the online property search websites made this process bit easy as they have brought the options into one place. So now users (Buyers) can get all the properties details in easier way. This way the property search websites are able to address the issue of scattered information. But the maturity is not enough when it comes to recommending right property for prosperity buyer. The search sites are able to provide all the possible options but fails in some listed aspects as mentioned below.

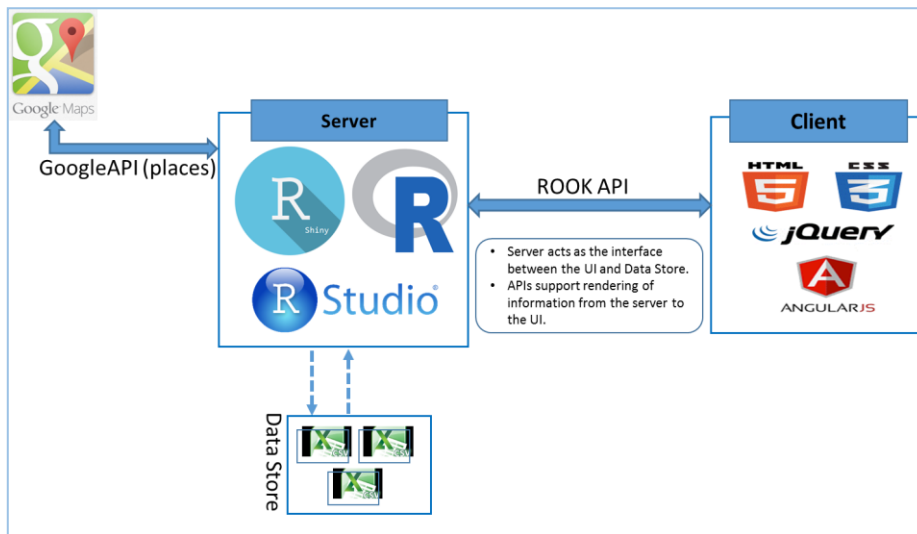
1. Giving buying score to a property for given buyer requirement
2. Supporting with right properties recommendations, and also considering new listed properties. (For Buyer)
3. Recommending/mapping prosperity buyers for Seller
4. Smart validation of property details.
5. Right inputs for property/property search activity.

“SR-DreamHome” application addresses these aspects and aims at providing right recommendations to buyers.

Application Details

This section explains the details of the Application covering the Architecture, work flow and the functionality

Architecture



“SR_DreamHome” is a web application and architecture diagram shown above mentions the tool stack used for the application development.

Server Programme

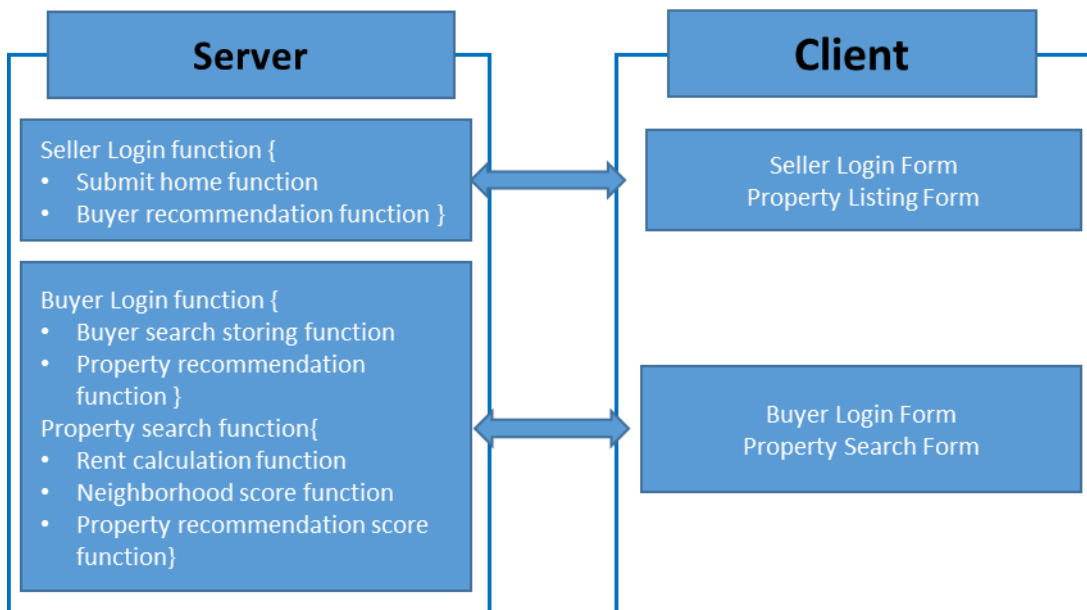
The server programme is developed using R programme and Application runs on Shiny server.

RStudio IDE is used for creating and executing the programmes

Client development

The client side is developed entirely on HTML5 with responsive bootstrap classes. Various libraries like jQuery and Angular.js are also used to give user the best possible experience on our website.

Work flow architecture



The workflow architecture mentions the top level functions, and Client to Server interactions.

Functionality

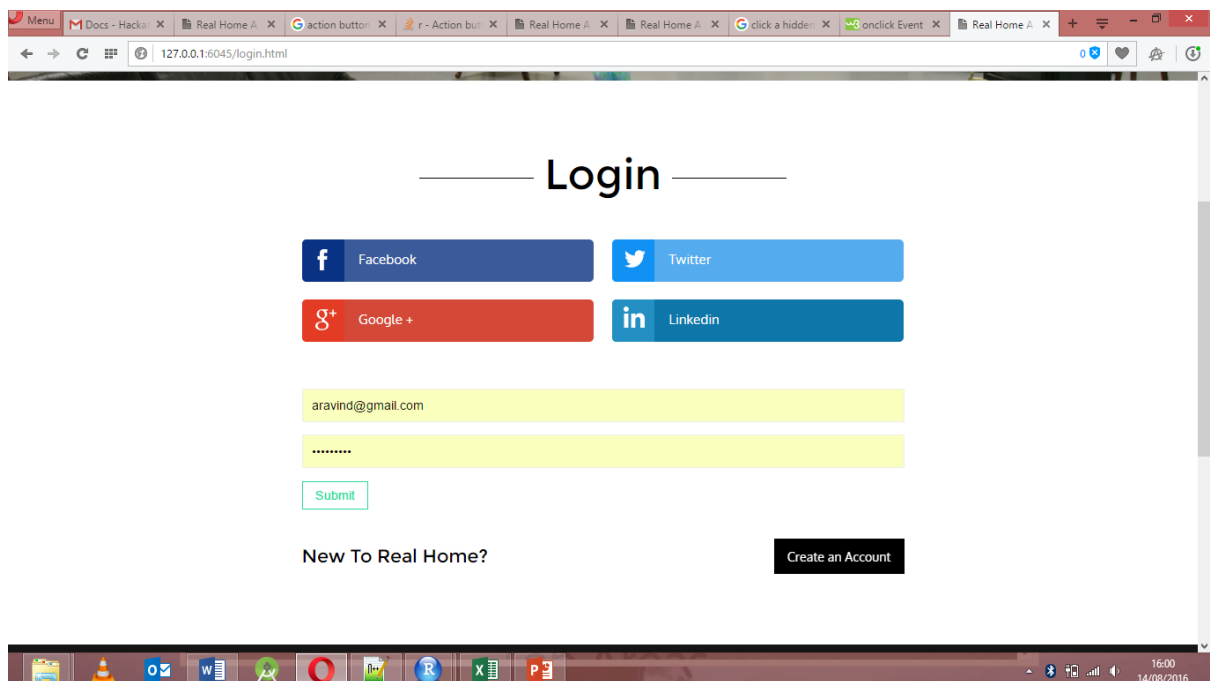
This section provides details of all the components of the application like individual forms from Client side and processing functions from Server side.

Client

This section provides details of forms created at client side along with field information

Login form

It is mandatory for a new user to create an account in order to use the services. User has to provide certain details like Name, Email, and password to create an account.



The screenshot displays a web browser window with multiple tabs open, including 'Menu', 'Docs - Hack...', 'Real Home A', 'G action button', 'r - Action but', 'Real Home A', 'Real Home A', 'click a hidden', 'onclick Event', and 'Real Home A'. The address bar shows the URL '127.0.0.1:6045/login.html'. The login form is centered on the page and features the title 'Login' in a large, bold font. Below the title, there are four social media login buttons: Facebook (blue), Twitter (light blue), Google+ (red), and LinkedIn (dark blue). Underneath these buttons are two yellow input fields: the first contains the email address 'aravind@gmail.com' and the second contains a masked password '*****'. A green 'Submit' button is positioned below the password field. At the bottom of the form, there is a link 'New To Real Home?' and a black button labeled 'Create an Account'. The browser's taskbar at the bottom shows various application icons and the system clock indicating 16:00 on 14/08/2016.

Property submit form

This form is used to submit the properties to the data store. All the Key requirements for a property submission are given in the form.

SUBMIT HOME DETAILS

City:

Property type:

Zone:

Area:

Latitude:

Longitude:

Please use the Gmaps to get the Lat Long of your place

Map: Silk Board, 20 min drive - home

Property search form

This form is used by the user to submit his search query based on which the properties are shown.

BUY HOME

City: ☐ Bangalore

Property Type: ☐ Apartment ☐ Independent House

Zone: ☐ East ☐ West ☐ North ☐ South

Area: ☐ Jayanagar ☐ Indira Nagar ☐ Kormangala ☐ White field ☐ Marathalli ☐ BTM Layout ☐ JP Nagar ☐ HSR Layout ☐ Bellandur ☐ brookefield ☐ Sarjapur Road ☐ KR Puram ☐ Hebbal ☐ Ramamurthy Nagar ☐ Mahadevapura Road ☐ Kanakapura Road ☐ Horamavu ☐ Electronics City

Availability: ☐ ready_to_move ☐ under_construction

Parking: ☐ Covered ☐ Open

Transaction Type: ☐ Re-Sale ☐ New

Server

This section provides the details of all processing functions created at server side.

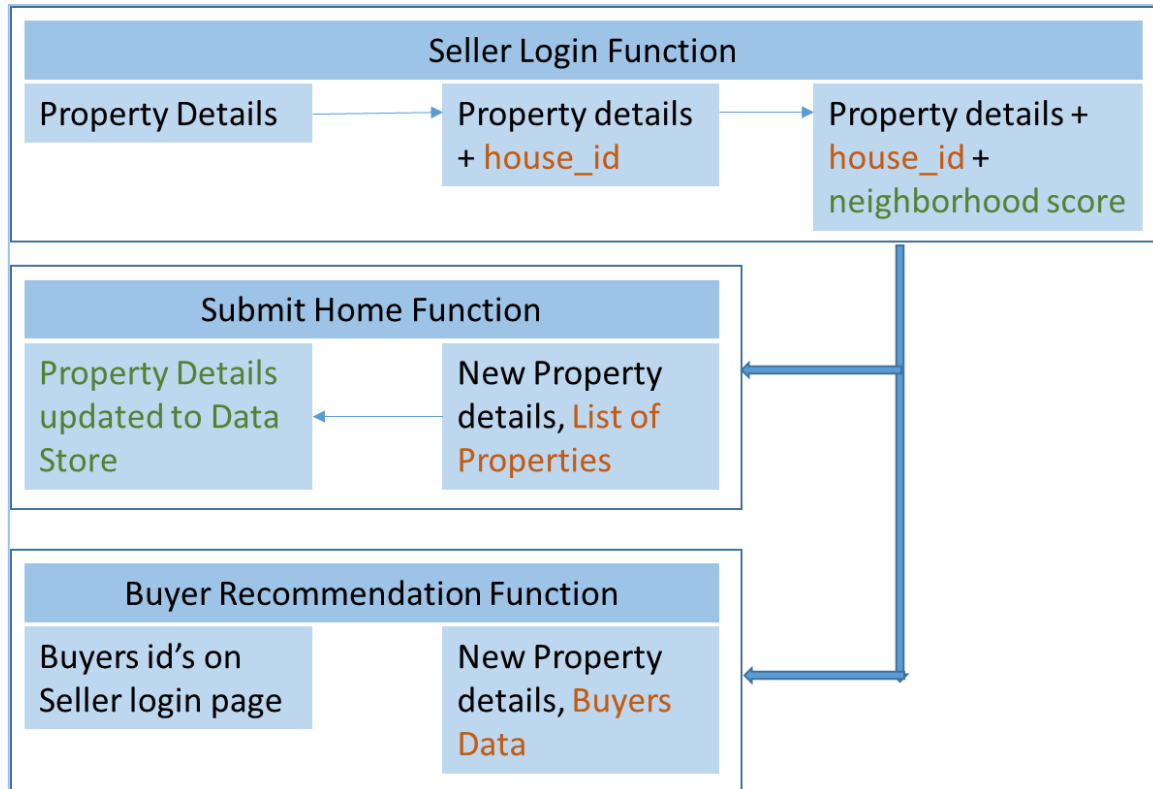
Seller login

Seller login functionality has the following features inbuilt.

1. Seller login creation

2. Submit home function
3. Recommending prosperity buyers

The below diagram explains the functionality of seller login and also highlights the data flow between the functions.



Seller login function

This function helps with the Seller login process. The features of this function

1. New seller login creation
2. House_id creation along with property details collection

Submit home function

This function helps in submitting the property to Data store. The features of this function

1. Receive the property details with the id created
2. Access the data store and submit the property details and update the store

Buyer recommendation function

This function helps in recommending the prosperity buyers on seller's page. The features of this function

1. Receive the activity of login
2. Retrieve the property details
3. Run a mapping function for buyers information from data store

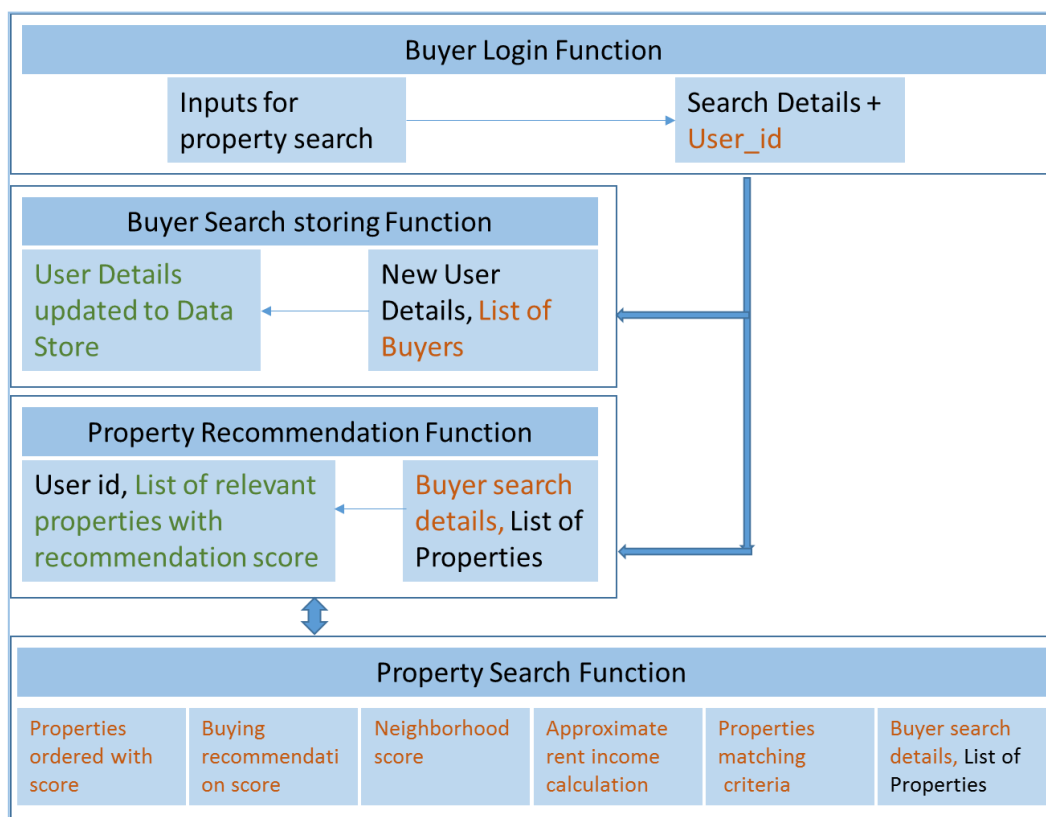
4. Create score for subset properties for relative to the buyer requirement
5. Look up and retrieve prosperity buyers for seller property

Buyer login

Buyer login functionality has the following features inbuilt.

1. Buyer login creation
2. Property search activity
3. Recommending matching properties

The below diagram explains the functionality of buyer login and also highlights the data flow between the functions.



Buyer login function

This function helps with the Buyer login process. The features of this function

1. Buyer login creation
2. User_id creation for buyer along storing input details for property search

Buyer data append function

This function helps with updating the buyer data to the store. The features of this function

1. Receive buyer search details
2. Update the buyer details (id, search details) to the data store

Property search function

This is the key function of entire application. This function calls few more sub function to run the search functionality and to create recommend score

The features of this function

1. Receive the search requirements
2. Subset the properties based on key search inputs
3. Create few useful information
 - a) Calculate the approximate rental income for the properties
 - b) Analyse the neighbourhood and calculate the neighbourhood score
4. Run the recommendation score algorithm to calculate property buying recommend score
5. Order the properties and send the list to interface

Rental calculation

This function calculates the approximate rental income for a given property. The features of this function

1. Receive the property details
2. Run a mapping function to get details of rental statistics around the location
3. Using the neighbourhood statistics, calculating the expected rental income

Neighbourhood score function

This function helps in assigning the score based on neighbourhood. The features of this function

1. Receive property details
2. Based on geo-coordinates, retrieve useful information around the neighbourhood (like: schools, hospital, atm, super market, park, and restaurants)
3. Create score for neighbourhood based extracted information from maps

Recommendation score function

This is a key function which drives property search feature. This function helps in calculating the buying recommendation score for a given property. The features of the function

1. Receive property details along with rental value and neighbourhood score
2. Calculate scores for few other criteria's
 - a) Score for property type
 - b) Score for plot area
 - c) Score for plot price
 - d) Score for property (no of floors)
 - e) Score for property price

- f) Score for availability
 - g) Score for transaction
 - h) Score for On loan property
 - i) Score for property facing
 - j) Score for rental income
3. Calculating buying recommendation score considering all scores mentioned in point '2' along with score for rental income and neighbourhood

Property recommendation function

This helps in recommending the right properties on buyer login. The features of this function

1. Receive the buyer activity login and retrieve the last search details
2. Call property search function and receive recommendation scores
3. Send the recommended properties details to UI page on login

Date Source

The application is created using simulated data. All the fields are created using domain knowledge and considering certain realistic values. The data files of the data store are

1. Properties data – Details of properties posted by different sellers
2. Buyers data – details of buyers and their individual search details
3. Geographical information (City, Zone, Location)
4. Rental information at multiple levels (Zone, location name, property type, property level)
5. Location scores – simulated values

Right now the data only caters to Bangalore city and 20 listed localities inside Bangalore.

Future work

As it is advised to make a working app, we have restricted certain functionality and we have chosen optimum design. Considerable improvements can be introduced to the application. The below table provides the details

Function	Current feature/function in Application	Future development recommendation
Data store	Using file system	To be moved to Data base for scalability and robustness
Rental calculation	Using the static information	The rental should be calculated based on extracting statistics out of similar properties around the neighbourhood using geographical co-ordinates
Neighbourhood score	Using the selected places types for neighbourhood	The algorithm should be revisited, predictions has to be validated w.r.t reality.
Buying/Selling function	Currently the application covers only for selling or buying properties	Bringing rental option also into account
Predictive analytics	No predictive analytics is used other than complex lookup and averaging methods	The predictive analytics should be explored for the application (like recommender system, spatial models, conversion probability prediction).