



Greeting from Team Housing Magician!

Our product is a software that predicts housing price for the user after being fed with parameters of city, specific locality, total carpet area, number of bedrooms, and presence of additional requirements like Gym, 24X7 power backup, or clubhouse. Our application employs super-efficient Machine Learning models to deliver the most accurate results along with a dedicated heat map for the user.

The purpose of this manual is to familiarize the user with the set-up, features, processing, workflow and web interface of the product. No prior technical knowledge in ML is required to comprehend this document and deploy the product.

November 2021

Version 1.1

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housingmagician.github.io/housingmagician/



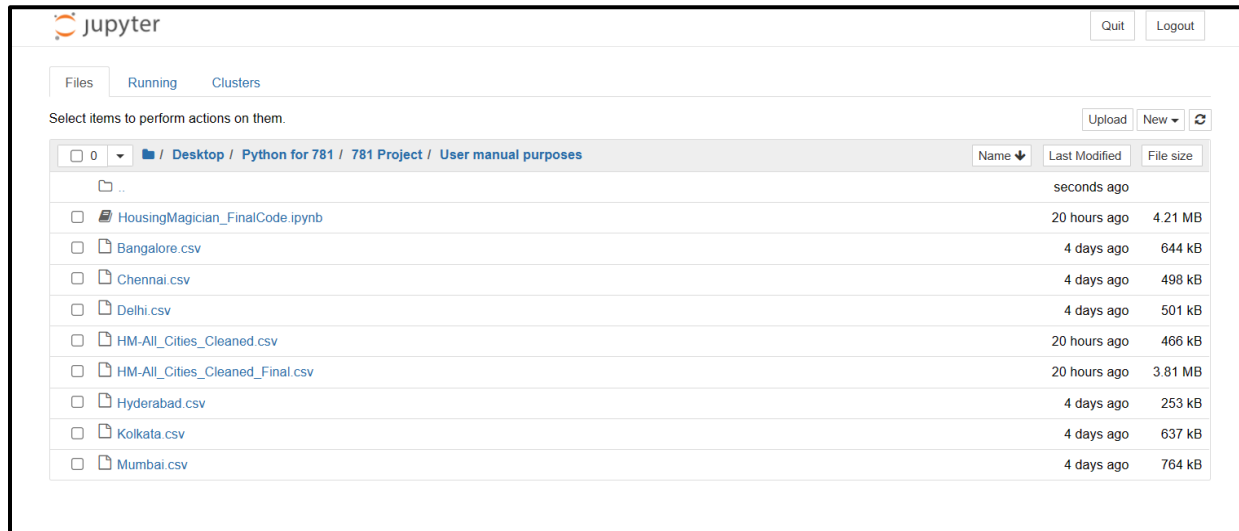
IIT Bombay

Mumbai, MH 400076



Step-wise setup and working procedure-

1. Download all csv files for all 6 cities and place them in the same folder as the source code *ipynb* file.



2. Open the *HousingMagician_FinalCode.ipynb* file using either Google Colab or Jupyter notebooks.
3. Load the required libraries and raw data by running the first few cells.

```
In [1011]: import numpy as np
import pandas as pd

# For visualisation
import matplotlib.pyplot as plt

import seaborn as sns

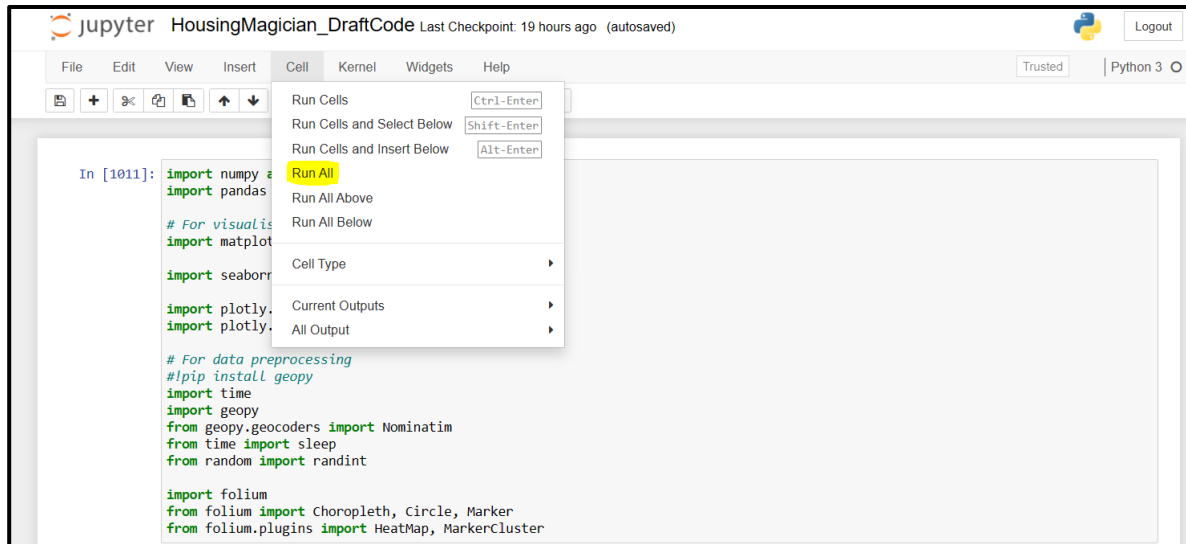
import plotly.express as px
import plotly.graph_objs as go

# For data preprocessing
# pip install geopy
import time
import geopy
from geopy.geocoders import Nominatim
from time import sleep
from random import randint

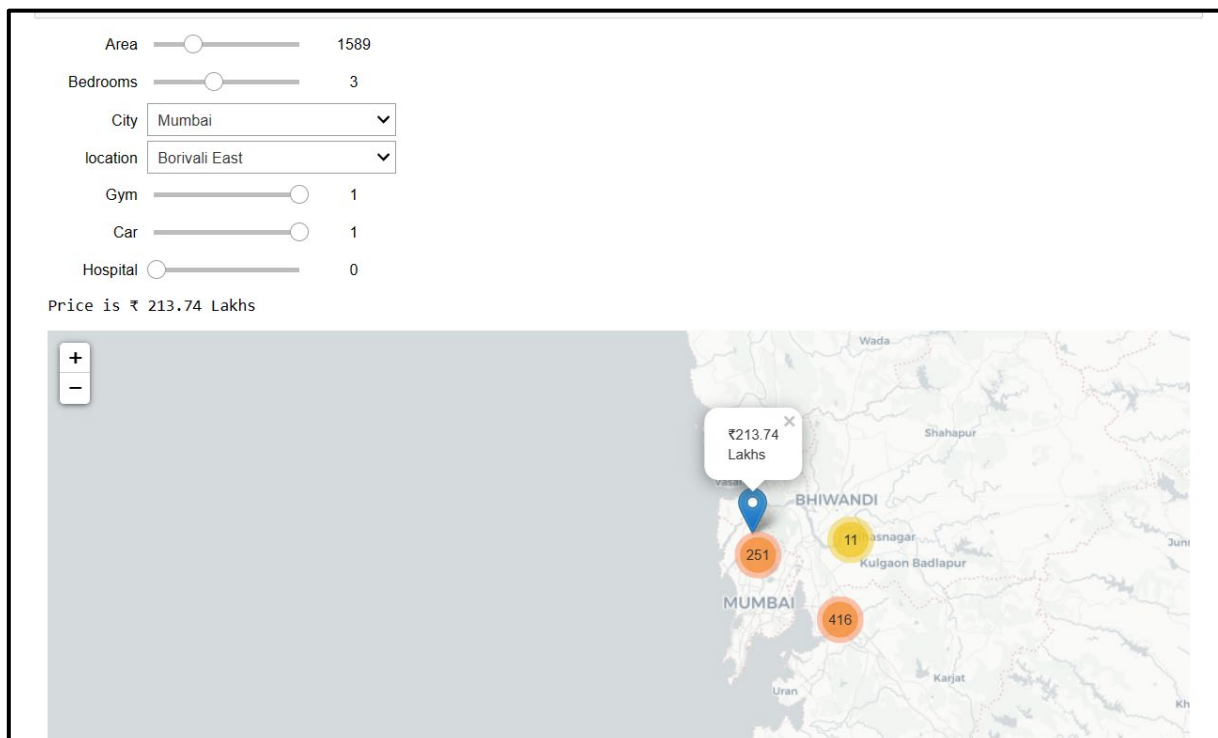
import folium
from folium import Choropleth, Circle, Marker
from folium.plugins import HeatMap, MarkerCluster

In [1012]: # Reading the files
df_bangalore = pd.read_csv('Bangalore.csv')
df_chennai = pd.read_csv('Chennai.csv')
df_delhi = pd.read_csv('Delhi.csv')
df_hyderabad = pd.read_csv('Hyderabad.csv')
df_kolkata = pd.read_csv('Kolkata.csv')
df_mumbai = pd.read_csv('Mumbai.csv')
```

- Remember to restart the kernel first to clear the any values held by the variables and dataframes. Now, run all cells to implement the models and scroll down to the very end for visualizing the results.

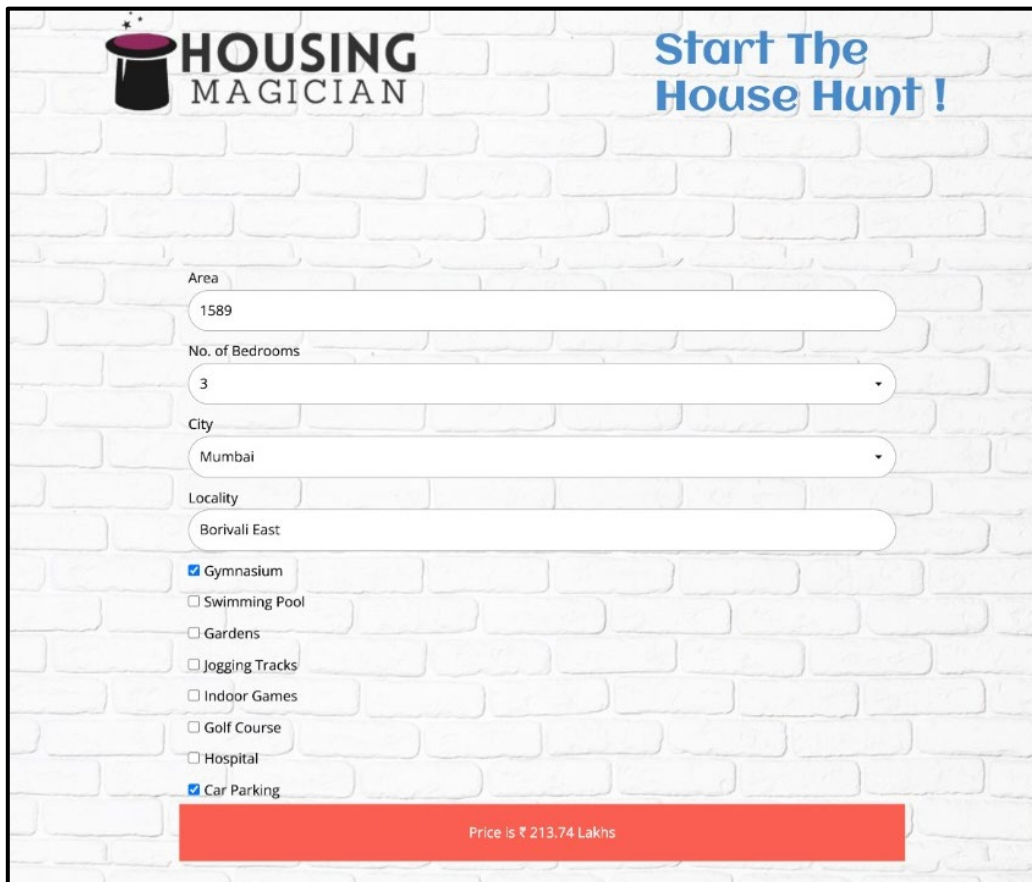


- The entire code will take 3-5 minutes to run as fetching geospatial data (latitudes and longitudes) takes time. *Be patient!*
- Interact with the slider and drop down widgets to choose your desired location, area and other parameters, and watch the map get updated in real time.



7. A web user/client can access our product by this link-
<https://housingmagician.github.io/housingmagician/>

Although the web application's front end doesn't implement our model in real life, the UI is the one our team aspires to build. The following snapshots are of our aspired web-app which is currently non-deployable-

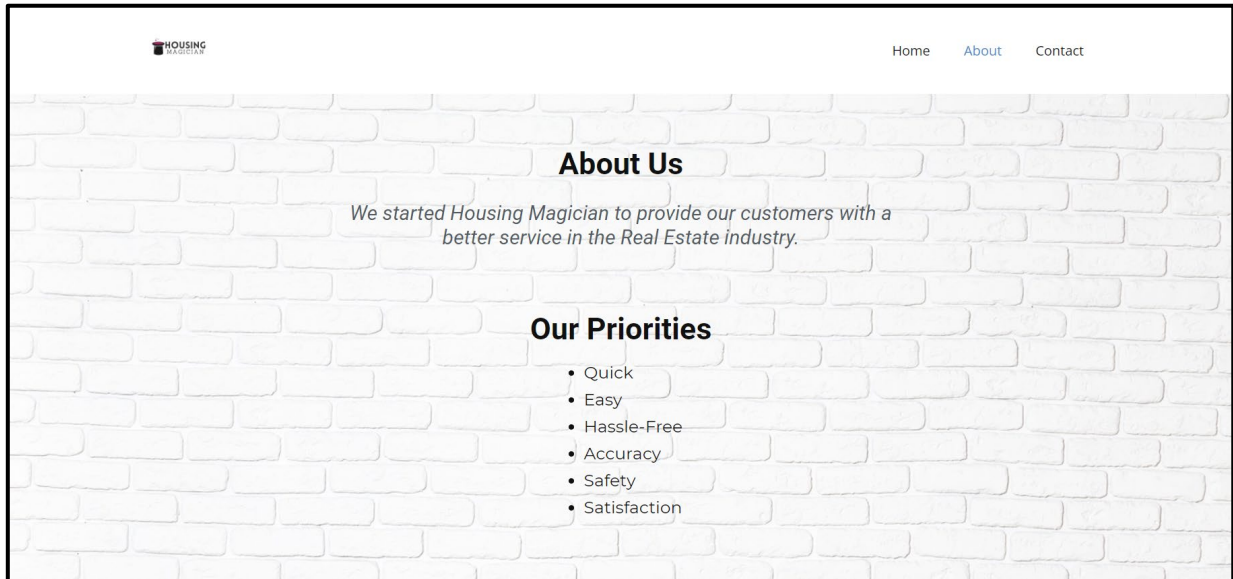


The screenshot displays the 'Housing Magician' web application interface. At the top left is the logo, which consists of a black magic hat with a red band and two stars above it, followed by the text 'HOUSING MAGICIAN'. To the right of the logo, the text 'Start The House Hunt!' is written in a blue, bold font. Below the header, there is a form with several input fields and checkboxes. The 'Area' field contains the value '1589'. The 'No. of Bedrooms' field is a dropdown menu showing '3'. The 'City' field is a dropdown menu showing 'Mumbai'. The 'Locality' field contains the value 'Borivali East'. Below these fields is a list of amenities with checkboxes: 'Gymnasium' (checked), 'Swimming Pool' (unchecked), 'Gardens' (unchecked), 'Jogging Tracks' (unchecked), 'Indoor Games' (unchecked), 'Golf Course' (unchecked), 'Hospital' (unchecked), and 'Car Parking' (checked). At the bottom of the form, a red rectangular box displays the predicted price: 'Price is ₹ 213.74 Lakhs'.

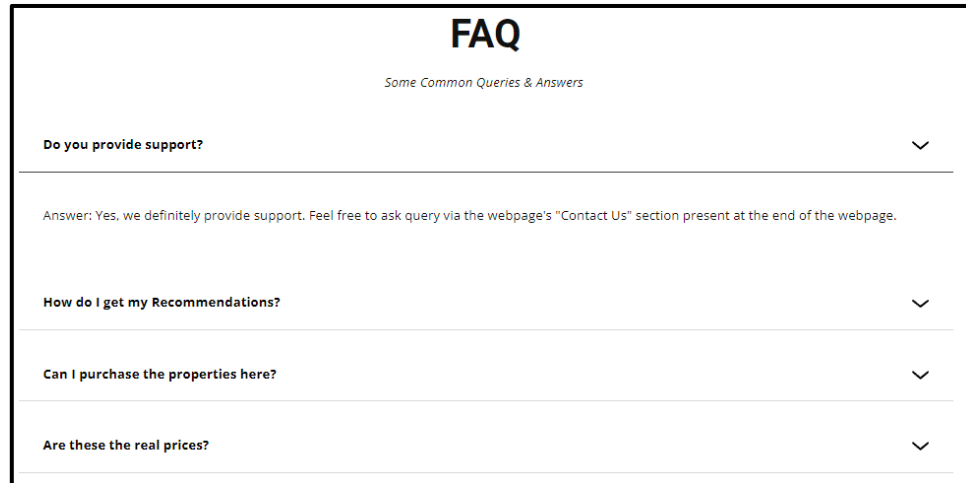
Area, Number of Bedrooms can be entered within permissible limits. The locality can be selected after specifying the metropolitan city the user is interested in buying a house.

Other different fields can be selected via checkboxes that range from Gyms to Gold course and Jogging tracks to Hospitals.

The final prediction is displayed as a price in lakhs of Indian rupees!



An 'About US' section for propagating our priorities and principles.



A Frequently Asked Questions (FAQ) section is also provided to help users get their general doubts and queries cleared.

