



## **User Guide**

## Setup Environment:

1. Clone the repository:

```
>> git clone https://github.com/mag3141592/Zillowbnb.git
```

2. Create a new python environment using the command:

```
>> conda env create zillowbnb
```

3. Activate zillowbnb by using the command:

```
>> conda activate zillowbnb
```

4. Install the required python packages using:

```
>> pip install -r requirements.txt
```

## Seattle Market Visualization:

*About running the pretrained model and visualization for the Seattle.*

- 1) Move to directory:

```
>> cd Zillowbnb/zillowbnb
```

- 2) Run bash command:

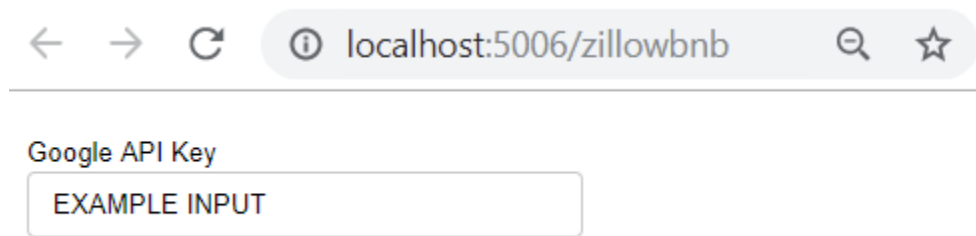
```
!bokeh serve --show zillowbnb.py
```

```
2019-06-11 00:44:55,971 Starting Bokeh server version 1.0.4 (running on Tornado 6.0.2)
2019-06-11 00:44:55,974 Bokeh app running at: http://localhost:5006/zillowbnb
2019-06-11 00:44:55,974 Starting Bokeh server with process id: 1633
2019-06-11 00:44:59,914 200 GET /zillowbnb (::1) 2021.70ms
2019-06-11 00:45:00,111 101 GET /zillowbnb/ws?bokeh-protocol-version=1.0&bokeh-session-id=825x98F7nRkgoixvZYlJuevuhHT7S507a8n5YKIFGKQ0 (::1) 0.93ms
2019-06-11 00:45:00,111 WebSocket connection opened
2019-06-11 00:45:00,111 ServerConnection created
```

- 3) Open server in browser (<http://localhost:5006/zillowbnb>)

#### 4) Input Google API Key

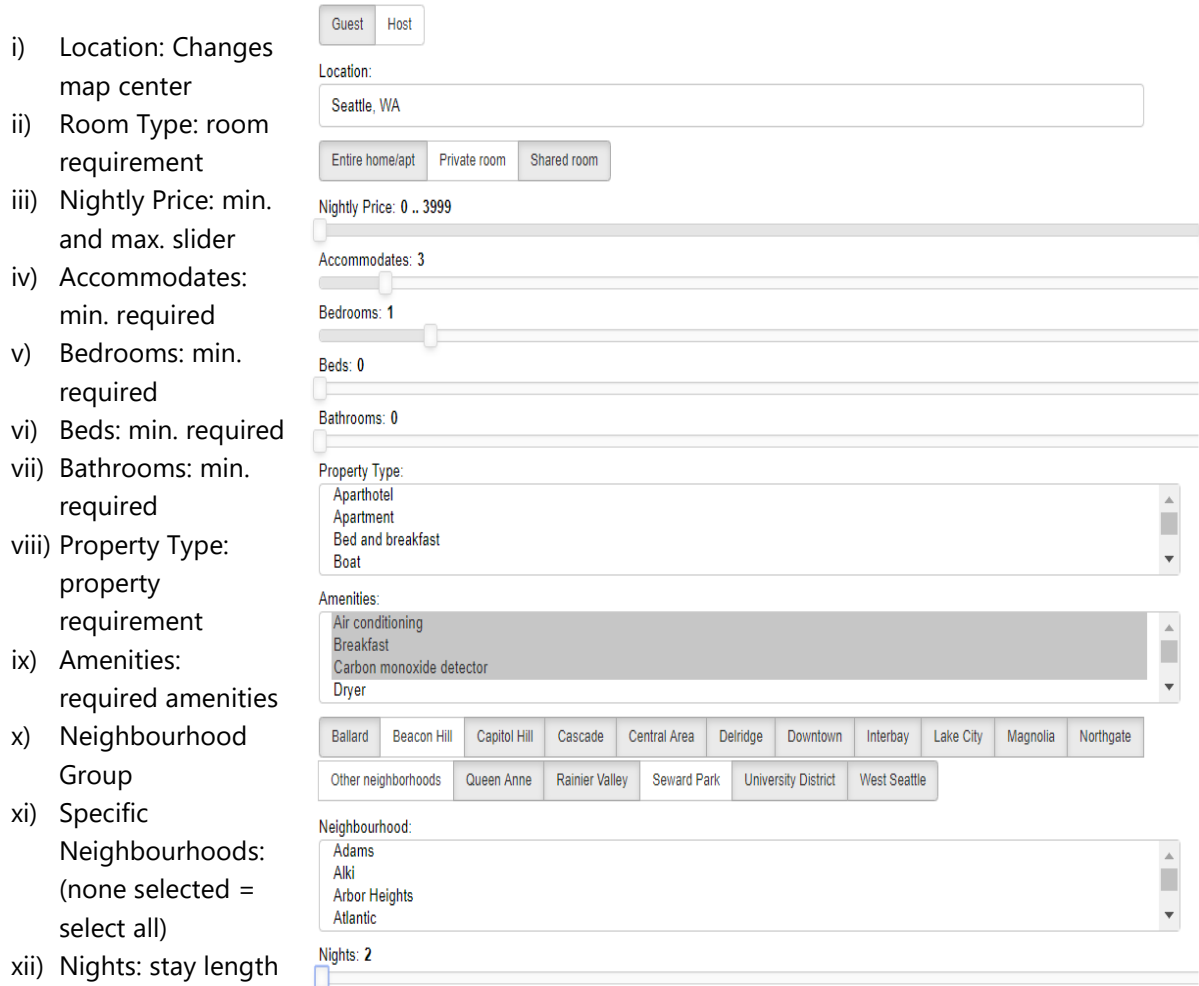
(<https://developers.google.com/maps/documentation/javascript/get-api-key>)



A screenshot of a web browser window. The address bar shows 'localhost:5006/zillowbnb'. Below the address bar, there is a label 'Google API Key' and a text input field containing the text 'EXAMPLE INPUT'.

### Guest View: (default view)

a) Use filters to adjust displayed listings:




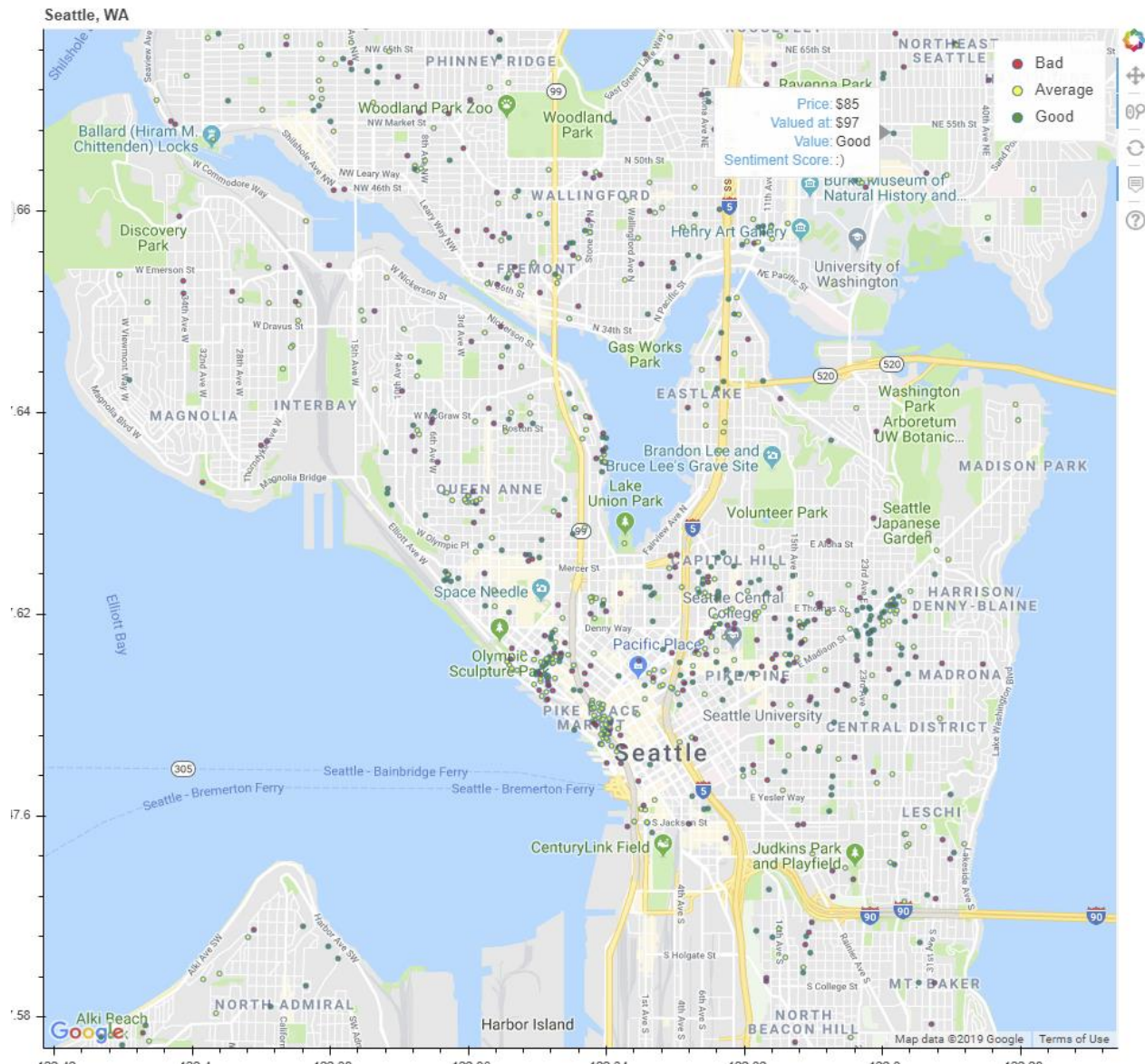
A screenshot of the Zillowbnb Guest View filter interface. The interface is divided into two main sections: 'Guest' and 'Host'. The 'Guest' section is active. The filters are organized as follows:

- Location:** A text input field with 'Seattle, WA' entered.
- Room Type:** Three buttons: 'Entire home/apt', 'Private room', and 'Shared room'.
- Nightly Price:** A range slider from '0' to '3999'.
- Accommodates:** A range slider from '1' to '3'.
- Bedrooms:** A range slider from '1' to '1'.
- Beds:** A range slider from '0' to '0'.
- Bathrooms:** A range slider from '0' to '0'.
- Property Type:** A dropdown menu with options: 'Aparthotel', 'Apartment', 'Bed and breakfast', and 'Boat'.
- Amenities:** A multi-select list with options: 'Air conditioning', 'Breakfast', 'Carbon monoxide detector', and 'Dryer'.
- Neighbourhood Group:** A horizontal scrollable list of buttons: 'Ballard', 'Beacon Hill', 'Capitol Hill', 'Cascade', 'Central Area', 'Delridge', 'Downtown', 'Interbay', 'Lake City', 'Magnolia', and 'Northgate'.
- Specific Neighbourhoods:** A multi-select list with options: 'Adams', 'Alki', 'Arbor Heights', and 'Atlantic'.
- Nights:** A range slider from '2' to '2'.

*Note: "Ctrl" + Click to select multiple Property Types, Amenities, and Neighbourhoods.*

b) Map Display:

- i)  Use menu to adjust map pan, zoom, reset, and hover respectively
- ii) Hover over listings to see listed price, predicted value, value quality, and reviews sentiment



## Host View:

- a) Select "Host":
- b) Select all listing attributes: all are required except amenities
- c) Press submit:

Guest

Host

Your listing is valued at: \$105 per night

Location:

Pend Oreille Road Northeast, Seattle, WA 98195

Room Type:

Entire home/apt

Neighbourhood Group:

University District

Neighbourhood:

University District

Accommodates: 3

Bedrooms: 2

Beds: 3

Bathrooms: 1

Property Type:

House

Amenities:

Air conditioning

Breakfast

Carbon monoxide detector

Dryer

Min. Nights:

2

Max. Nights:

10

Submit

## Reproduce Seattle Model:

1) Move to directory:

```
>> cd Zillowbnb/zillowbnb/submodule
```

2) Run example.py

## Other Cities:

1) Move to directory:

```
>> cd Zillowbnb/zillowbnb/submodule
```

2) Check [Inside Airbnb](#) and update DATASET\_PROPERTIES in constants.py

```
DATASET_PROPERTIES = {DATE:'2019-04-15',  
                      CITY:'Seattle',  
                      STATE:'WA',  
                      COUNTRY:'United-States'}
```

3) Follow commented steps in example.py

```
# Uncomment below if regenerating all datasets  
# from submodule import convert_to_matrix as ctm, get_calendar_summary as gcs  
# from submodule import get_cleaned_listings as gcl, sentiment as s, train_model as tml  
  
# Set data folder path  
DATA_FOLDER = os.path.abspath('../data') + '/'  
  
# Import the datafiles  
CALENDAR = gd.download_dataset(c.DATASET_PROPERTIES, c.CALENDAR_DATA)  
LISTINGS = gd.download_dataset(c.DATASET_PROPERTIES, c.LISTINGS_DATA)  
REVIEWS = gd.download_dataset(c.DATASET_PROPERTIES, c.REVIEWS_DATA)  
  
# Clean the calendar dataset  
# Run:  
# 1. CALENDAR_DF = gcs.create_calendar_price_averages(CALENDAR)  
CALENDAR_DF = 'calendar_price_averages.csv'  
  
# Run sentiment analysis on review datasets  
# Run: (Can take a few hours)  
# 1. SENTIMENT_SCORES = s.polarity(REVIEWS, 'comments')  
# 2. SENTIMENT_DF = s.summarize_sentiment(SENTIMENT_SCORES, ['listing_id'], 'compound')  
SENTIMENT_DF = 'reviews_sa_summarized.csv'  
  
# Clean the listings datasets  
# Run:  
# 1. CLEAN_LISTINGS_DF = gcl.get_listings_dataframe(LISTINGS, c.LISTING_COLUMNS)  
CLEAN_LISTINGS_DF = pd.read_csv(DATA_FOLDER + 'clean_listings.csv')
```

4) Follow steps for "Seattle Market Visualization" to produce final visual