



# Technology Review: Housing Recommendation

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# OUTLINE

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- Project overview
- Data Used
- Python Libraries
- Use case
- System Design
- Lesson Learned
- Future Work

# Project overview

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- Create a web-bases marketplace for people to list, discover and book unique accommodations around the world
- Travelers can find the all rooms in target area and get the recommendations
- Landlords could get the suggested prices of their new rooms

# Data Used

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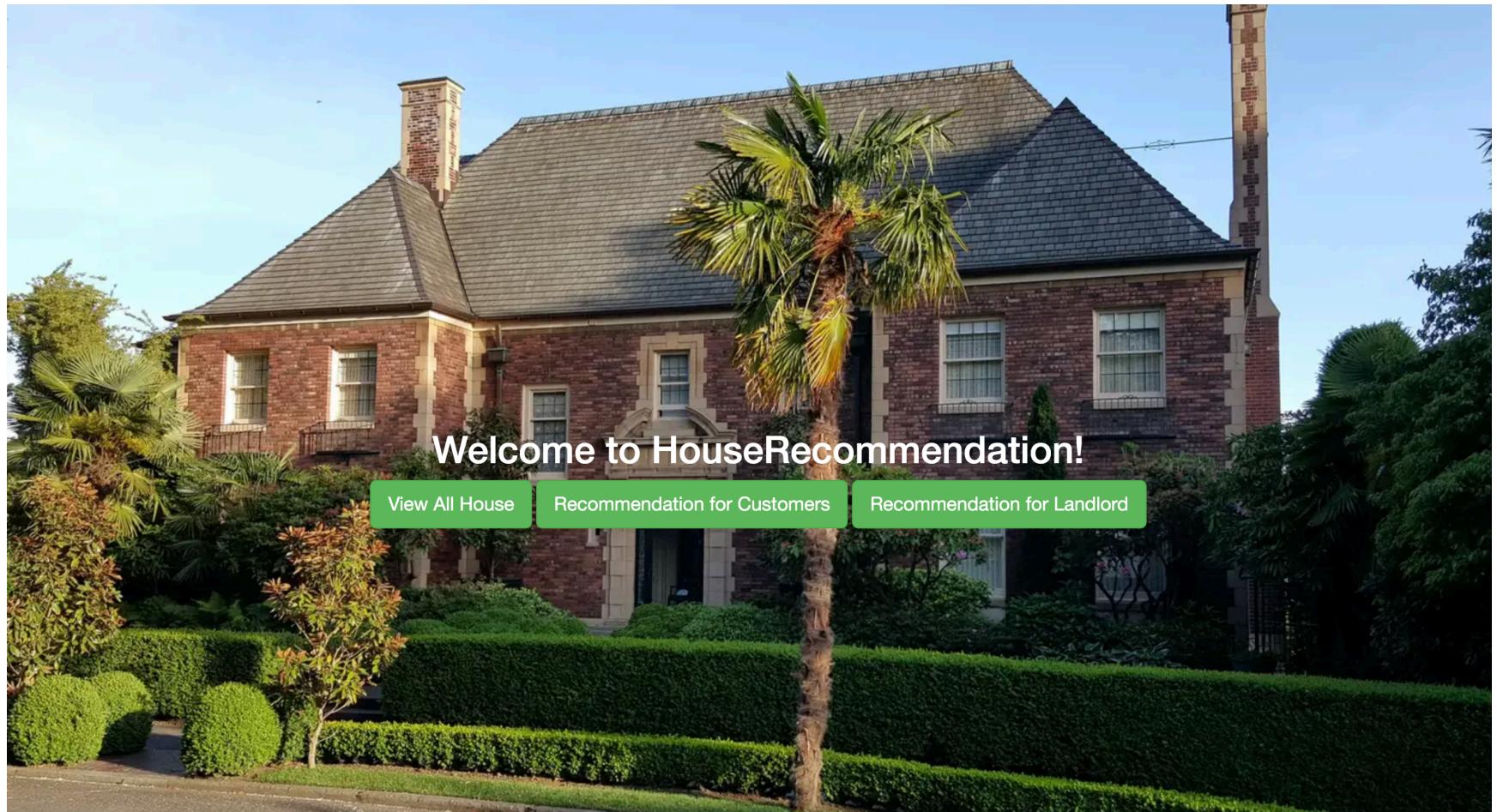
- Seattle Airbnb Open Data of listing
  - <https://www.kaggle.com/airbnb/seattle#listings.csv>
- Seattle Airbnb Data of review
  - <https://www.kaggle.com/airbnb/seattle#reviews.csv>
- Seattle Neighborhoods GeoJSON Data

# Python Library

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- Python library we used:
  - Dataframe: pandas, numpy
  - Machine Learning : sklearn
  - Visualization: matplotlib, folium
- API we used:
  - Mapbox

# Interface



# Use case 1

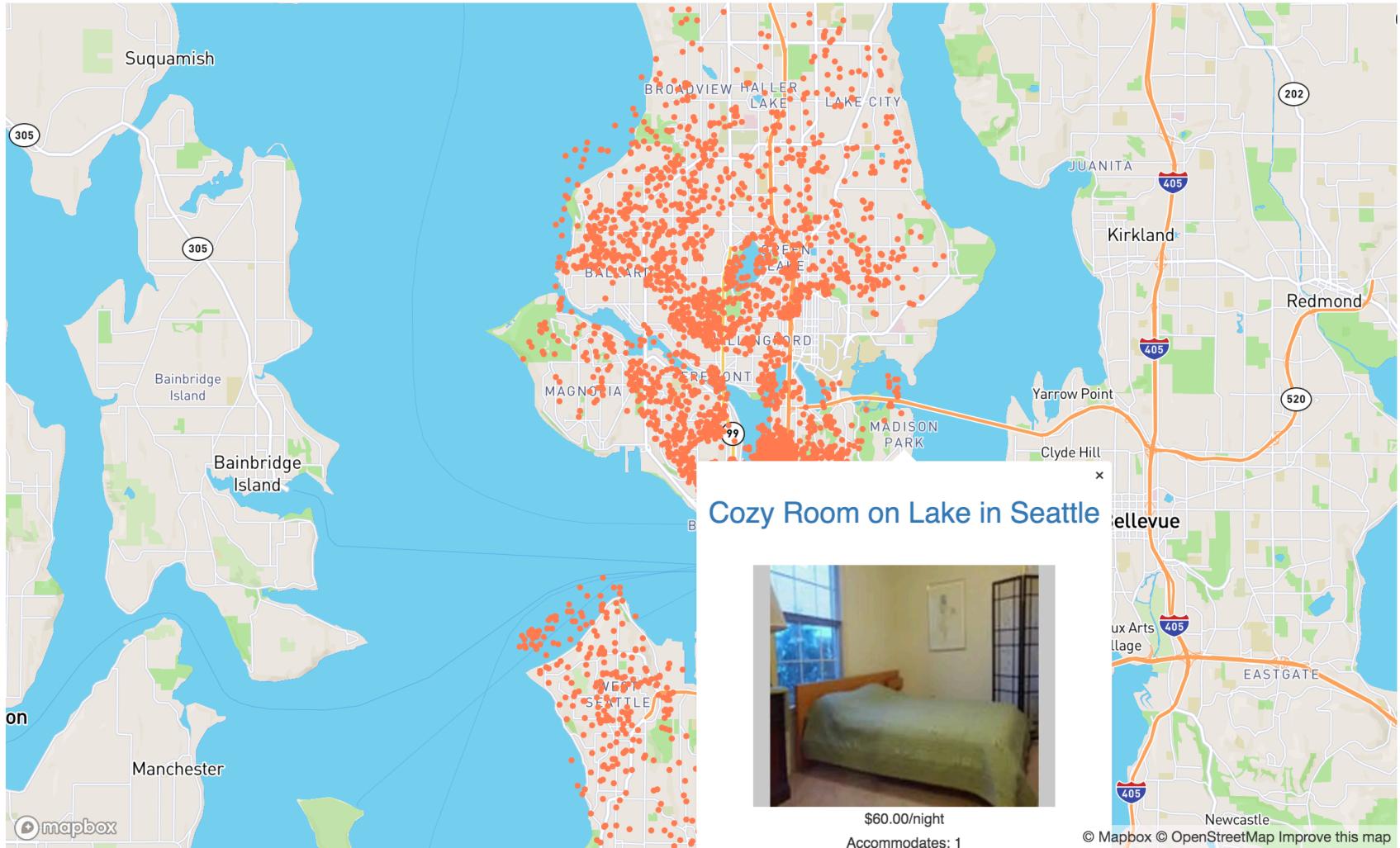
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## Detailed listing information on map view

- Dataset with listing information and location
- User interface that allows users to select area
- Map view that allows users to visualize all rooms location in this area

# Interface

## House Information



# Use case 2

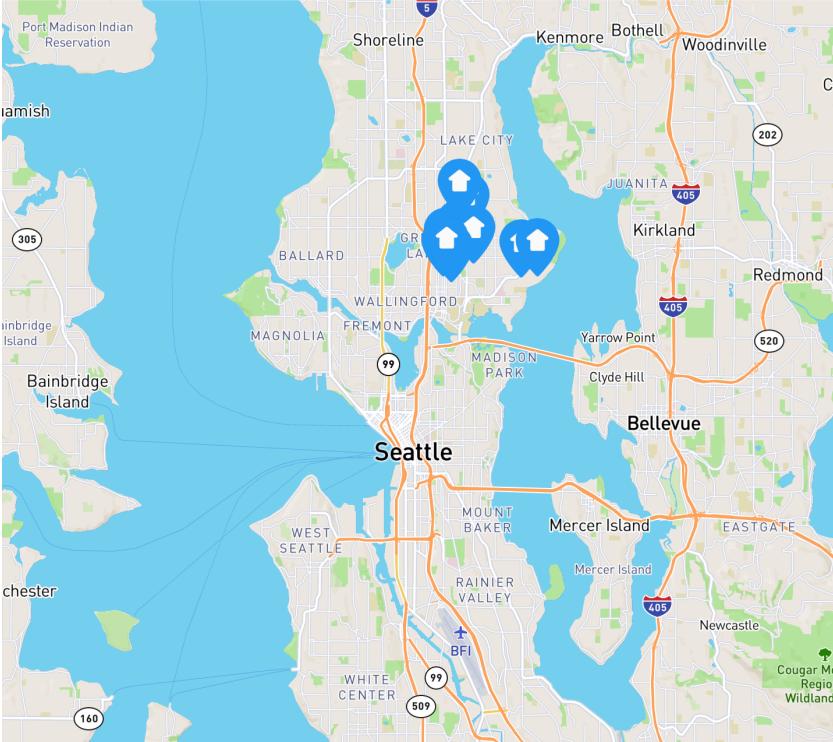
## Recommend top 10 rooms for customers

- Dataset with guests' review scores
- User interface that allows users to input the info about the room
- User interface that allows users to select the order of recommendations
- Map view that allows users to visualize the recommendations' location

# Interface

## House Recommendation

98115      3      4      Entire home/apt      3      Rating Score more than ...       Verified Host       Required license  
     



The map displays the Seattle metropolitan area, including Seattle, Bellevue, Kirkland, Redmond, and surrounding towns like Bothell, Woodinville, and Juanita. Five blue house icons with arrows point upwards are scattered across the map, indicating recommended properties. Major roads like I-5, I-405, and I-90 are visible.

The House we recommend for you:



A photograph showing a dark wooden door set in a wall, leading to a concrete step down into a garden area with plants and a fence.

Cute Basement Apartment

Price: \$1,000.00 per night, Accommodates: 4, Room Type: Entire home/apt, Rating Score: 100.0

[More Info](#)

# Use case 3

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## Recommend room price for landlord

- Database with price of houses around it
- User interface that allows users to input the info about the room to improve the accuracy of predicted price
- Map view that allows users to visualize all houses or the similar rooms around it

# Interface

## Rent Price Prediction

Accommodates

Bath rooms

Bedrooms

Beds

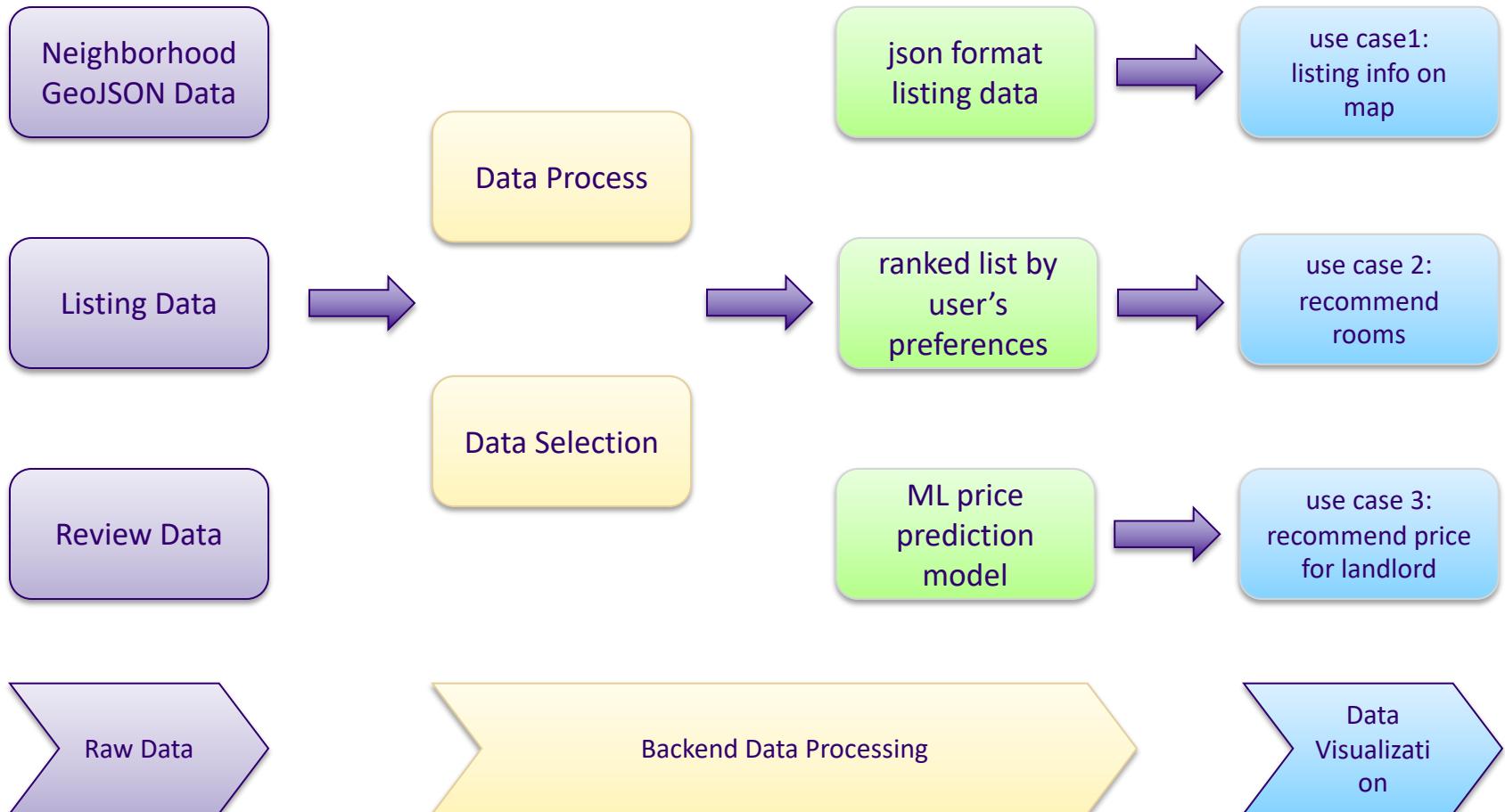
Review scores

PREDICT PRICE!

Your Suggested Price:

\$91

# System Design



# Project Structure

<https://github.com/adonis-wyc/housingrecommendation>

```
housingrecommendation
├── .gitignore
├── .travis.yml
└── LICENSE
├── README.md
└── docs
    ├── Component Specification.md
    ├── Functional Specification.md
    └── technology_review.pdf
├── example
    ├── House-Prices.ipynb
    └── folium_demo.ipynb
└── house_rec
    ├── __init__.py
    ├── code
    │   ├── __init__.py
    │   ├── htmlserver
    │   ├── ml
    │   └── views
    ├── data
    │   ├── calendar.csv
    │   ├── listings.csv
    │   └── reviews.csv
    └── tests
        ├── __init__.py
        ├── test_cleaned_data.py
        └── test_datahandle.py
└── requirement.txt
└── setup.py
```



**DEMO**

# Lesson Learned

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- Python and Python package
- Git/GitHub
- Software programming (backend, frontend)
- Collaborative programming
- Data visualization

# Future Work

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- Make better combination of the different part of our program (Frontend & Backend)
- Better data handle processing, faster recommendation
- Adjust ML model for better price prediction/recommendation for landlord



THANK YOU  
QUESTIONS?