Lease.ai

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THE OPPORTUNITY

With the ongoing Covid pandemic, a growing number of people wish to find and lease an apartment in a new city remotely.

With most large corporations having a work from home policy, there has been a rising trend of migration from the largest metropolitan hubs to other cities.

City and State governments want to make the best possible case to potential residents to make neighborhoods inside their cities their homes

CURRENT SOLUTIONS/ COMPETITORS

Most common workflows to find and lease apartments ***remotely***:

A) Traditional Listings such as above --> Virtual apartment tours (Video call) with the realtor and landlord

B) Apartment Complex Virtual Tours on Website --> Landlord Video Call

Lease.ai: Motivation and Overview

A

There are a large number of factors users may consider depending on personal preferences when finding an apartment in a new city, from apartment size and interior to neighborhood and proximity to work.

B

The goal of my product is to provide the most fluid experience possible for users to find the right apartment for them. This is achieved by:

1. Presenting to users the data and virtual experience required interactively to make a very well-informed decision remotely
2. Building automated tools that lets users to obtain information on demand about their specific concerns and considerations

USER APARTMENT SEARCH "DECISION TREE": KEY FEATURES USERS MIGHT CARE ABOUT

- Size (sq. footage), Number of bedrooms
- Apartment Interior
- Proximity to work
- Location/ Neighborhood
- Pet Policy
- Price/ Rent
- Amenities
- School District
- Proximity to public transportation

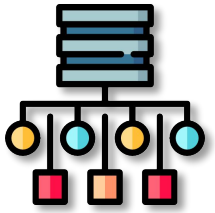
Lease.ai Features

START WITH NEIGHBORHOOD SEARCH (+ RECOMMENDATIONS BASED ON USER PROFILE)

City View with key landmarks highlighted and neighborhoods delineated and summarized (e.g. Seattle: Fremont, Green Lake, Capitol Hill)

NATURAL LANGUAGE POWERED PROFILE GENERATION AND APARTMENT FILTERING

Instead of filling out long, tedious surveys or choosing numerous filter boxes, users can just record a dozen or so sentences describing specifics of what they are looking for and apartment.ai will use classification models to classify and extract these user preferences, improving search results. Alternatively, users can directly filter apartments with queries such as “Show me two bedroom apartments that is within 8 miles of my office address, close to public transport and below two thousand dollars a month”

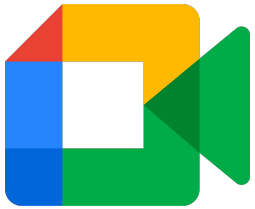


CONVERSATIONAL AI (Google Dialogflow, GPT-3)

Ask it questions such as “Tell me more about what the Fremont neighborhood in Seattle is known for” and get concise, condensed and accurate answers.

CUSTOMIZABLE VIRTUAL REALITY APARTMENT TOURS (Google VR Tour Creator)

Beyond experiencing a narrated VR tour of the apartment (recorded by the landlord/ realtor), users can also choose from an assortment of furniture options to position virtually inside the apartment for better visualization



VIDEO CONFERENCE WITH LANDLORD/REALTOR

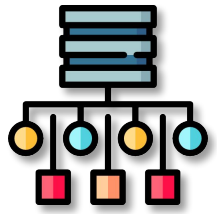
Request a live tour if offered/ discuss unanswered questions about the apartment and buying/leasing logistics

FEATURE PRIORITIZATION (based on importance and estimated engineering timeline)

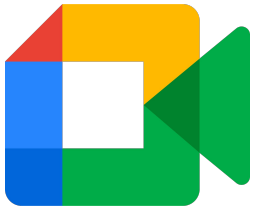
Version 1 (Rolling out MVP)

2 months

Version 2



Tour Creator



3 months

TARGET MARKETS AND GO TO MARKET STRATEGY

Leverage partnership with local governments to run joint ad campaign (furthers credibility)

Reach out and partner with large apartment complexes, realtors and major landlords

Integrate product as a popup inside Google Maps

Incorporate Google Apartment.ai into the flagship Google Trips, Flights, Hotels suite

Run an extensive ad campaign showcasing the product experience and different features

Launch Mobile app (iOS and Android both)

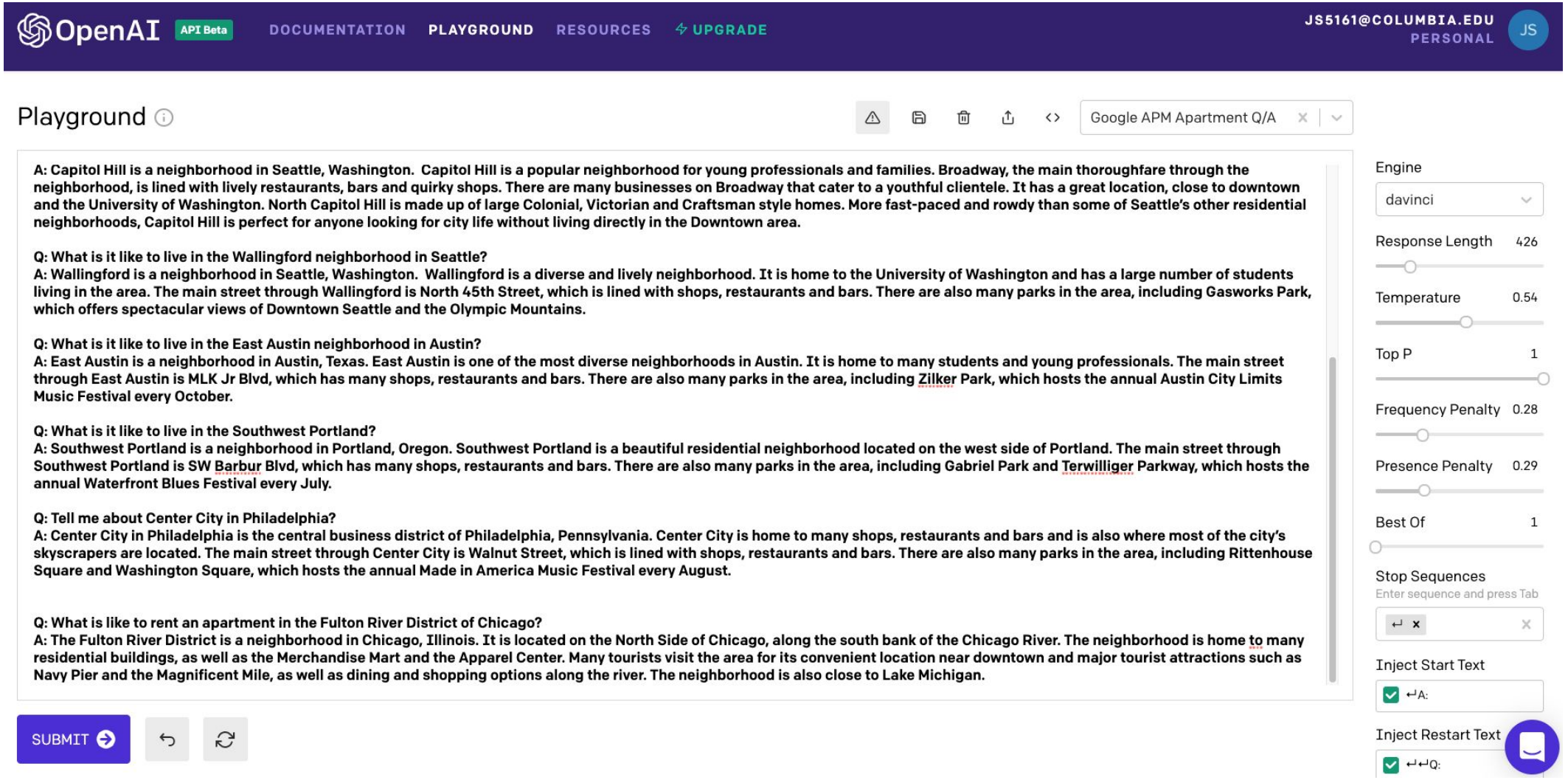
i) Launch a beta in a large flagship city (SF or NYC) and iterate on the product based on customer feedback

ii) Start expanding to large cities across the US

iii) Expand to the international market, starting with large cities in Canada and Europe

THE TECHNOLOGY: GPT-3

Neighborhood summaries (completely model-generated)



THE TECHNOLOGY: Intent Recognition

Classifies Intent of Questions like:
“How far is this apartment address from the nearest airport?” (Distance_Intent)
“What is the weather generally like in this neighborhood?” (Weather_Intent)
…. and so on

Knowing the intent class of a user question makes it very easy to extract named entities and use external APIs to source the information (e.g. Google Maps API for distance) and quickly provide an accurate answer to the user

Models/ Services:

Google DialogFlow

OR

Google BERT for Intent Recognition

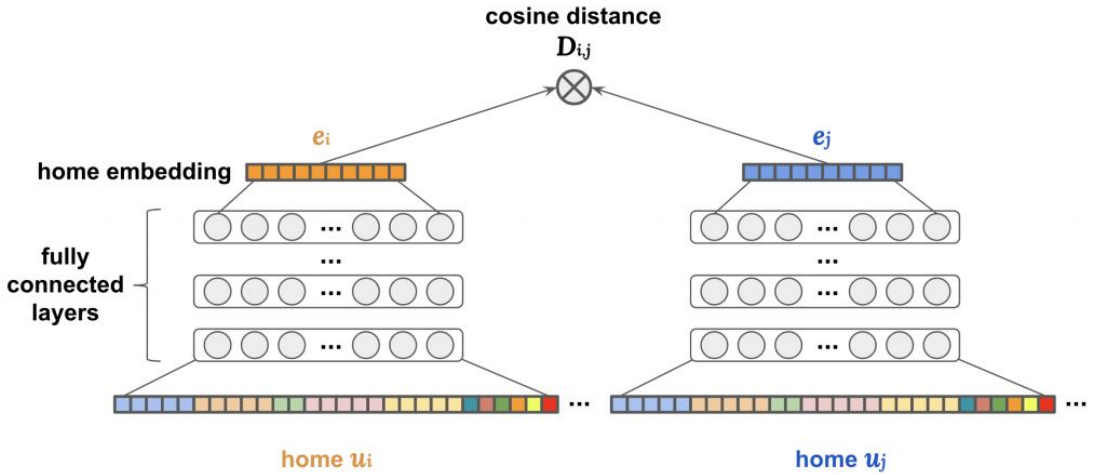
https://www.kaggle.com/shahjaidev/intent-identification-with-bert

THE TECHNOLOGY: Deep learning representations for recommendations

Leveraging state of the art deep learning based recommendation techniques, we can provide users with high quality recommendations consistent with their preference profile.

Learn Apartment Embeddings (numerical vector representations that tell us how similar two apartments are) from features such as size, number of bedrooms, neighborhood, etc.

Learn User Embeddings (numerical vector representations that tell us how similar two user preference profiles are) from features such as number of family members, age, etc.



Leveraging existing dataset/ collected data of user purchases, train another neural network that takes as input a user embedding along with an apartment embedding, and returns a purchase prediction probability (“scores”). Ranking these scores gives us the ‘top k’ best recommendations for a given user.

Note: A traditional, surefire alternative approach is to treat this as a matrix factorization collaborative filtering recommendation problem.

Evaluating Product Success: Metrics

1. Daily Active Users, Monthly Active Users.
2. User growth rate across cities: Heuristic for overall demand in the market
3. Customer Retention rate by demographic: Heuristic for how much of a fit our product is
4. Percentage of users that use certain product apartment.ai product features: Enables us to prioritize improvements and roll-outs

Thank you!

Other Notes:

-> The first apartment.ai product launch would be a web app, but I'd design and build the UI in Flutter, enabling swift mobile app launches (ios and android) that leverage the same backend APIs implemented for the web app backend.

-> I planned to design some mockups, but did not have enough time inside my 2 hour window.

-> I enjoyed doing research into state of the art recommendation algorithms I could use, and hence delved deeper into the technical details on that slide.