

# 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



# Lease.ai Features



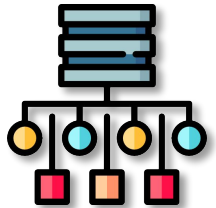
## START WITH NEIGHBORHOOD SEARCH (+ RECOMMENDATIONS BASED ON USER PROFILE)

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

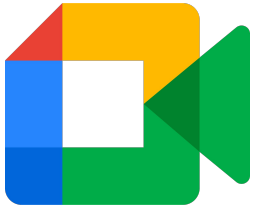
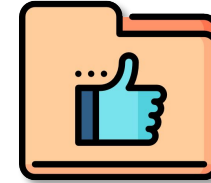
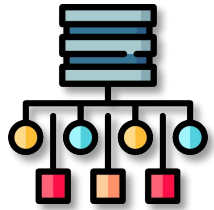
Request a live tour if offered/ discuss unanswered questions about the apartment and buying/leasing logistics

# FEATURE PRIORITIZATION (based on importance and estimated engineering timeline)

Version 1 (Rolling out MVP)

2 months

Version 2



3 months

# TARGET MARKETS AND GO TO MARKET STRATEGY

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

 **OpenAI** API Beta [DOCUMENTATION](#) [PLAYGROUND](#) [RESOURCES](#) [UPGRADE](#)

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PERSONAL 

Playground ⓘ

     Google APM Apartment Q/A  

**A:** Capitol Hill is a neighborhood in Seattle, Washington. Capitol Hill is a popular neighborhood for young professionals and families. Broadway, the main thoroughfare through the neighborhood, is lined with lively restaurants, bars and quirky shops. There are many businesses on Broadway that cater to a youthful clientele. It has a great location, close to downtown and the University of Washington. North Capitol Hill is made up of large Colonial, Victorian and Craftsman style homes. More fast-paced and rowdy than some of Seattle's other residential neighborhoods, Capitol Hill is perfect for anyone looking for city life without living directly in the Downtown area.


**Q:** What is it like to live in the Wallingford neighborhood in Seattle?  
**A:** Wallingford is a neighborhood in Seattle, Washington. Wallingford is a diverse and lively neighborhood. It is home to the University of Washington and has a large number of students living in the area. The main street through Wallingford is North 45th Street, which is lined with shops, restaurants and bars. There are also many parks in the area, including Gasworks Park, which offers spectacular views of Downtown Seattle and the Olympic Mountains.



**Q:** What is it like to live in the East Austin neighborhood in Austin?  
**A:** East Austin is a neighborhood in Austin, Texas. East Austin is one of the most diverse neighborhoods in Austin. It is home to many students and young professionals. The main street through East Austin is MLK Jr Blvd, which has many shops, restaurants and bars. There are also many parks in the area, including Zilker Park, which hosts the annual Austin City Limits Music Festival every October.


**Q:** What is it like to live in the Southwest Portland?  
**A:** Southwest Portland is a neighborhood in Portland, Oregon. Southwest Portland is a beautiful residential neighborhood located on the west side of Portland. The main street through Southwest Portland is SW Barbur Blvd, which has many shops, restaurants and bars. There are also many parks in the area, including Gabriel Park and Terwilliger Parkway, which hosts the annual Waterfront Blues Festival every July.


**Q:** Tell me about Center City in Philadelphia?  
**A:** Center City in Philadelphia is the central business district of Philadelphia, Pennsylvania. Center City is home to many shops, restaurants and bars and is also where most of the city's skyscrapers are located. The main street through Center City is Walnut Street, which is lined with shops, restaurants and bars. There are also many parks in the area, including Rittenhouse Square and Washington Square, which hosts the annual Made in America Music Festival every August.


**Q:** What is like to rent an apartment in the Fulton River District of Chicago?  
**A:** The Fulton River District is a neighborhood in Chicago, Illinois. It is located on the North Side of Chicago, along the south bank of the Chicago River. The neighborhood is home to many residential buildings, as well as the Merchandise Mart and the Apparel Center. Many tourists visit the area for its convenient location near downtown and major tourist attractions such as Navy Pier and the Magnificent Mile, as well as dining and shopping options along the river. The neighborhood is also close to Lake Michigan.


SUBMIT 


 


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davinci 


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

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Presence Penalty 0.29  


Best Of 1  


Stop Sequences  
Enter sequence and press Tab  

Inject Start Text  
☒ ↵A:

Inject Restart Text  
☒ ↵↵Q: 

# 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>

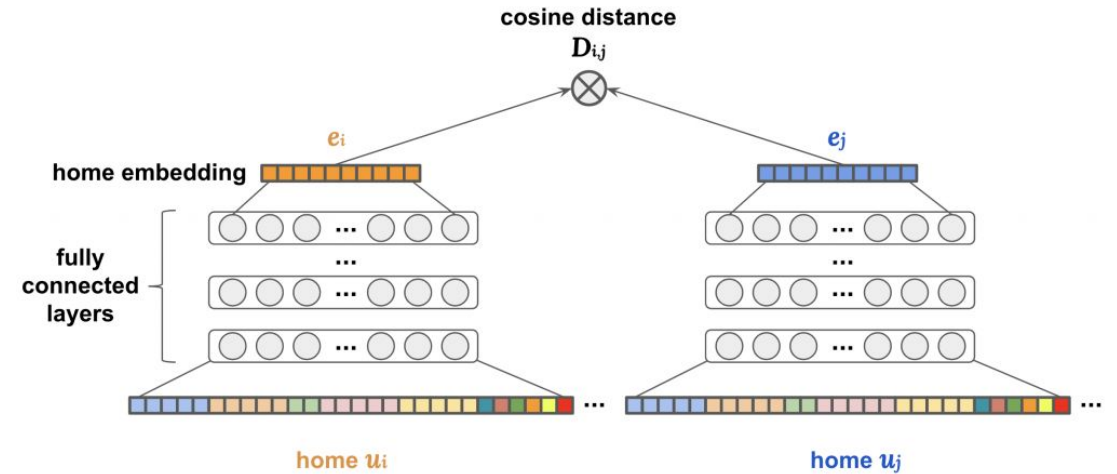
# THE TECHNOLOGY: Deep learning representations for recommendations

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.