



# **HOTEL RECOMMENDER**

Albina Sitdikova  
03/24/2021  
Metis Bootcamp

# Data



## REVIEWS

60.000 reviews

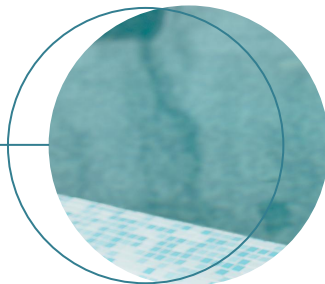


## SOURCE

TripAdvisor

## HOTELS

1.000 hotels



## USERS

7.000 users

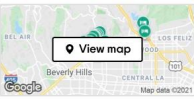




**Tripadvisor**

West Hollywood **Hotels** Things to do Restaurants Flights Vacation Rentals Shopping Vacation Packages \*\*\*

United States > California (CA) > West Hollywood > Best Lodging in West Hollywood, CA (with Prices)  
West Hollywood Hotels

 **View map**

Check In  Check Out  Guests  1 room, 2 adults, 0 children

**West Hollywood Hotels and Places to Stay**

19 of 34 properties are available in West Hollywood Sort by: Best Value

**COVID-19**  
☐ Properties taking safety measures

**Deals**  
☐ Free cancellation  
☐ Reserve now, pay at stay  
☐ Properties with special offers

**Price**  
\$0 - \$416 +  
Price per night

**Popular**  
☐ 5 stars & up  
☐ 5 stars  
☐ Pool  
☐ 4 stars

**Property types**  
☐ Hotels  
☐ All-inclusives  
☐ B&Bs & Inns  
☐ Hostels

**Show more**  
**View Vacation Rentals**

**Amenities**  
☐ Free Wifi

**Recently viewed in West Hollywood**

**Hotel 850 SVB** (37) **5.0** **\$595** **View deal**

**Breakfast included**

**Top Rated**

**1 Hotel West Hollywood** **5.0** **\$289** **View deal**

**Breakfast included**

**The London West Hollywood at Beverly Hills** **5.0** **\$349** **View deal**

Hotel ratings

← See all 22 hotels in West Hollywood

Hotel 850 SVB **Visit hotel website** About Location **Reviews**

**Marcos D** wrote a review Feb 2020  
Sao Paulo, SP • 10 contributions

**5.0**

**Cool, peaceful hotel**

"Few, nice rooms, with small terraces facing the backyard. I think normally it seems to be a quiet place, but there was a building construction site quite near. Also have a good vibe. As I remember, the staff was decent and helpful. Clean and charming decoration."

**Read more**

**Date of stay:** August 2019

**Helpful** **Share**

**Response from Ben P, General Manager at Hotel 850 SVB**  
Responded Feb 6, 2020  
Dear Moti415, Thank you for the Amazing Review! We hope to have you back in the future! Sincerely, Ben Palmer General Manager

**HowieNRace** wrote a review Jan 2020  
1 contribution

**5.0**

**Fantastic & Well Thought Out Accommodation**

"Our family party of 5 (all adults) stayed at the 850 earlier this month. The rooms are cozy, well-appointed and comfortable and the staff were fantastic and couldn't help more. A continental breakfast is served each morning in the common room and complimentary drinks for guests on the roof at night. A simple but well thought out room service with food supplied from a related restaurant was top notch. The location is fantastic with Sunstrip Boulevard and the WeHo strip two minutes walk away."

**Read more**

**Date of stay:** January 2020

**Helpful** **Share**

**Response from Hotel850GM, General Manager at Hotel 850 SVB**  
Responded Jan 11, 2020  
Dear Howie-and-Race, Thank you for the wonderful review! We look forward to having you back in the future! Sincerely, Benjamin Palmer General Manager

**N D** wrote a review Dec 2019  
Dallas, Texas • 6 contributions • 2 helpful votes

**5.0**

**Great high end boutique in Weho**

"Great high-end boutique hotel perfectly situated in West Hollywood. Glad that I found this new and updated accommodation for my future stays. Great decor, service & quaint atmosphere. Check-in and hotel stay was made even better by Carlos at the front desk. He does an amazing job! Will definitely stay here again."

**Read more**

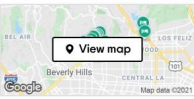
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
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**Price**

\$0 - \$416 +

Price per night 

**Popular**

☐  & up 16

☐ 5 stars 2

☐ Pool 15

☐ 4 stars 11


**Property types**


☐ Hotels 14

☐ All-inclusives 1

☐ B&Bs & Inns 1


☐ Hostels 1


[Show more](#) 




[View Vacation Rentals](#) 


**Amenities**




☐ Free Wifi 13



**19 of 34 properties are available in West Hollywood** Sort by: Best Value 


**Recently viewed in West Hollywood** 


 **Hotel 850 SVB**  (37)  
\$595  
Expedia.com  [View deal](#)

[Collapse](#) 


**Hotel 850 SVB**    37 reviews


 [Hotels.com](#)  [\\$595](#)


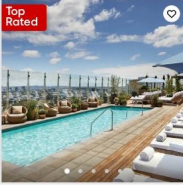

 [\\$595](#)



 [\\$595](#)


[View all 15 deals from \\$595](#)


 Free cancellation

 Reserve now, pay at stay


**Top Rated**   **1 Hotel West Hollywood**  212 reviews


 [Booking.com](#)  [\\$289](#)


 [\\$289](#)




 [\\$546](#)



[View all 18 deals from \\$289](#)

 Free Wifi

 Pool

 Taking safety measures


**Breakfast included**   **The London West Hollywood at Beverly Hills**  2,290 reviews


 [Booking.com](#)  [\\$349](#)


#2 Best Value of 34 places to stay in West Hollywood

User ratings


← See all 22 hotels in West Hollywood

Hotel 850 SVB  About Location **Reviews**



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Sao Paulo, SP • 10 contributions


 **Such peaceful hotel**


"Few, nice rooms, with small terraces facing the backyard. I think normally it seems to be a quiet place, but there was a building construction site quite near. Also have a good vibe. As I remember, the staff was decent and helpful. Clean and charming decoration."


[Read more](#) 

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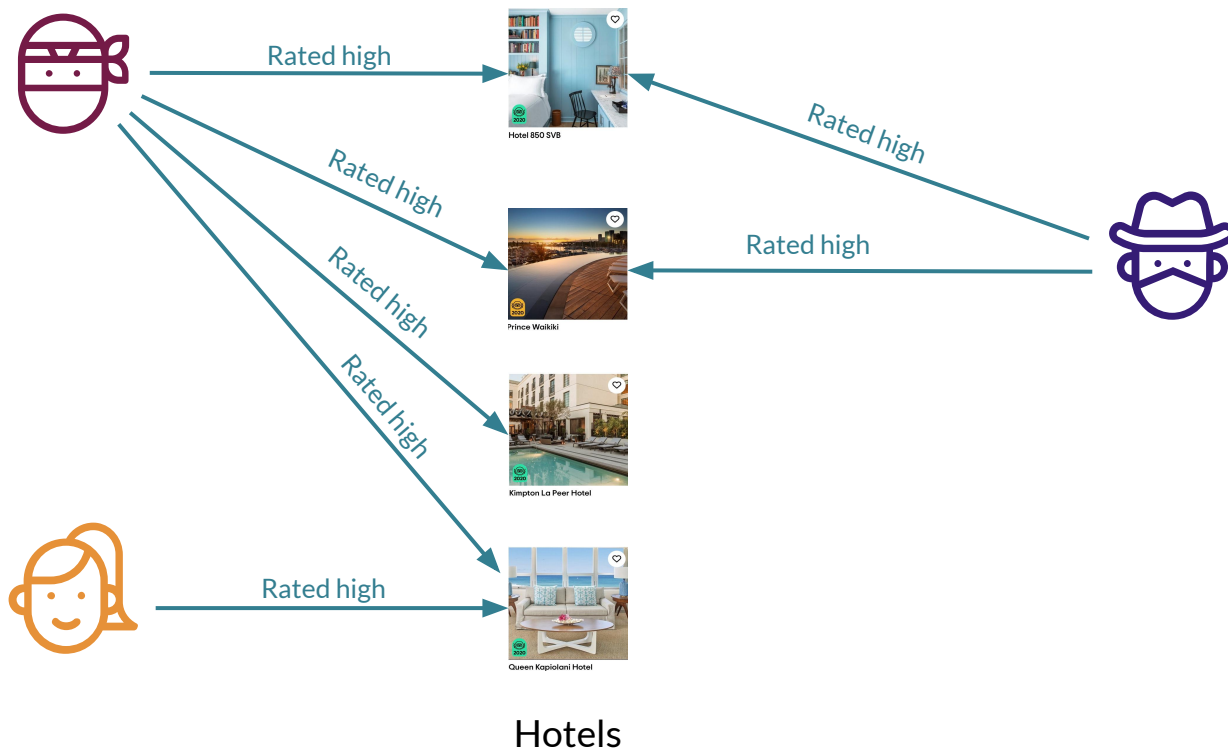
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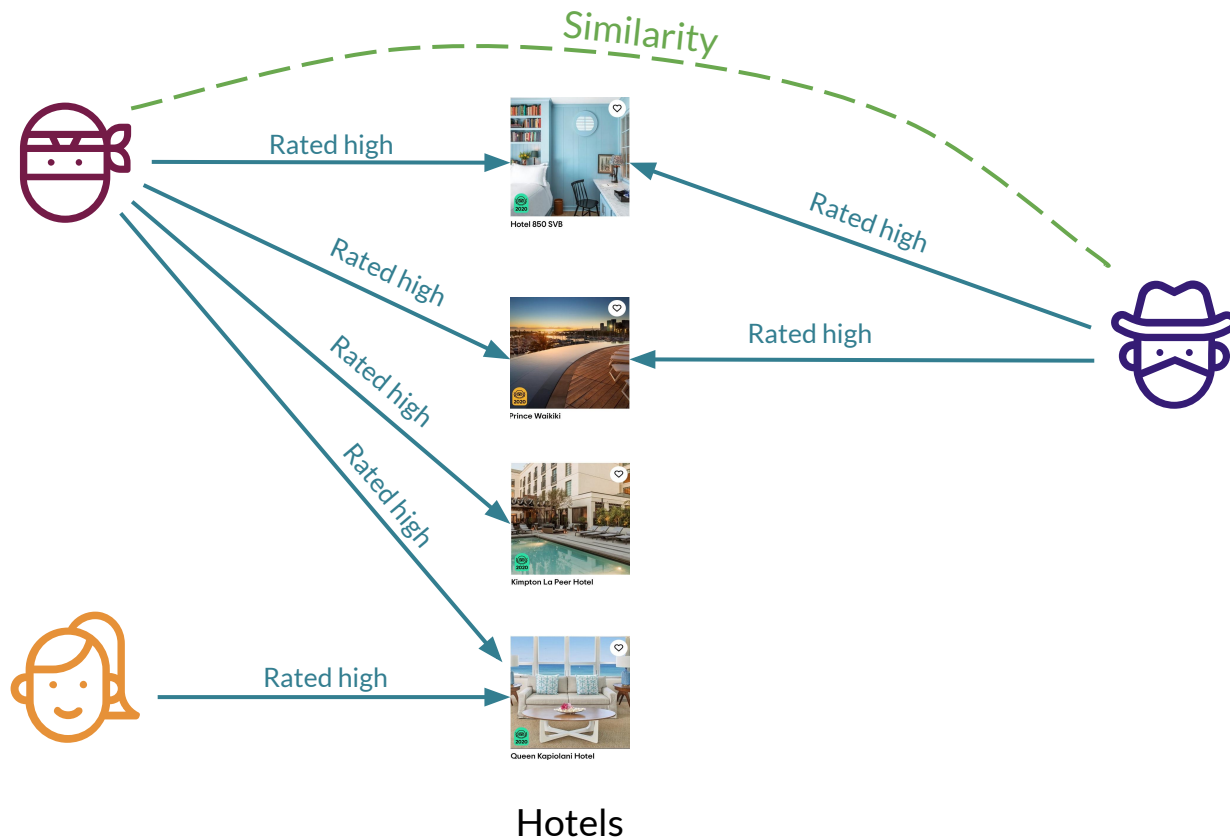
[Read more](#) 

**Date of stay:** December 2019

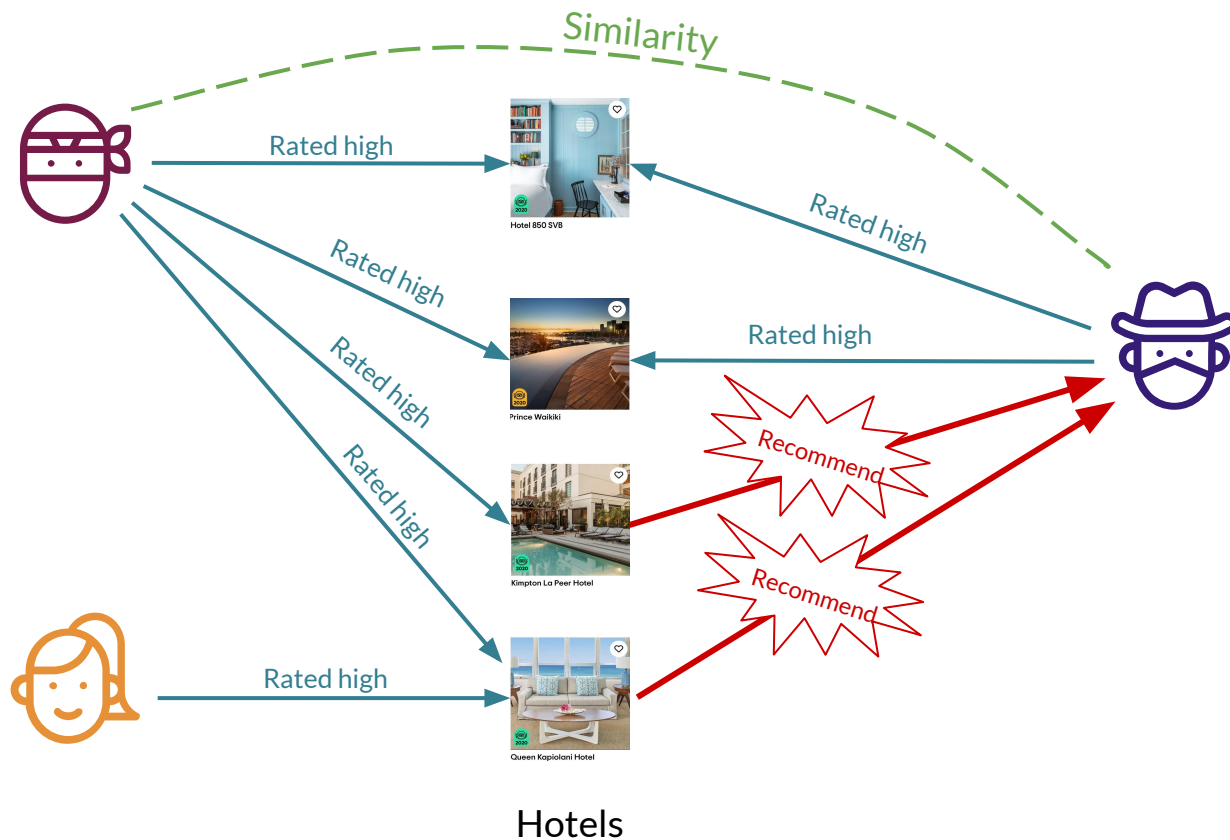
# User-Based Collaborative Filtering



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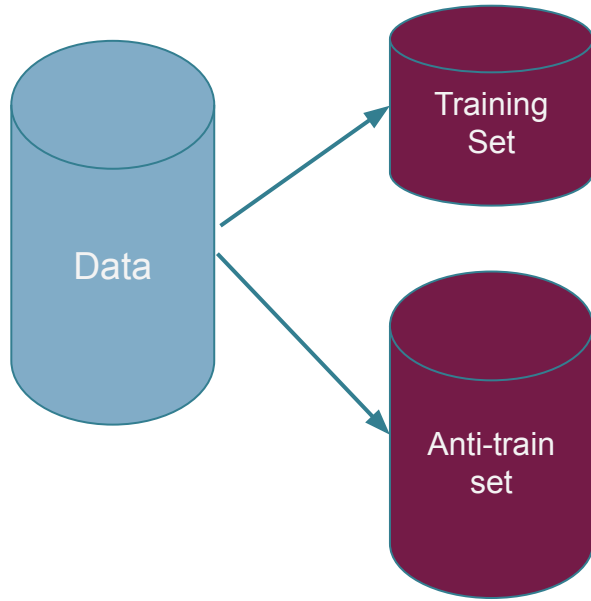


# User-Based Collaborative Filtering

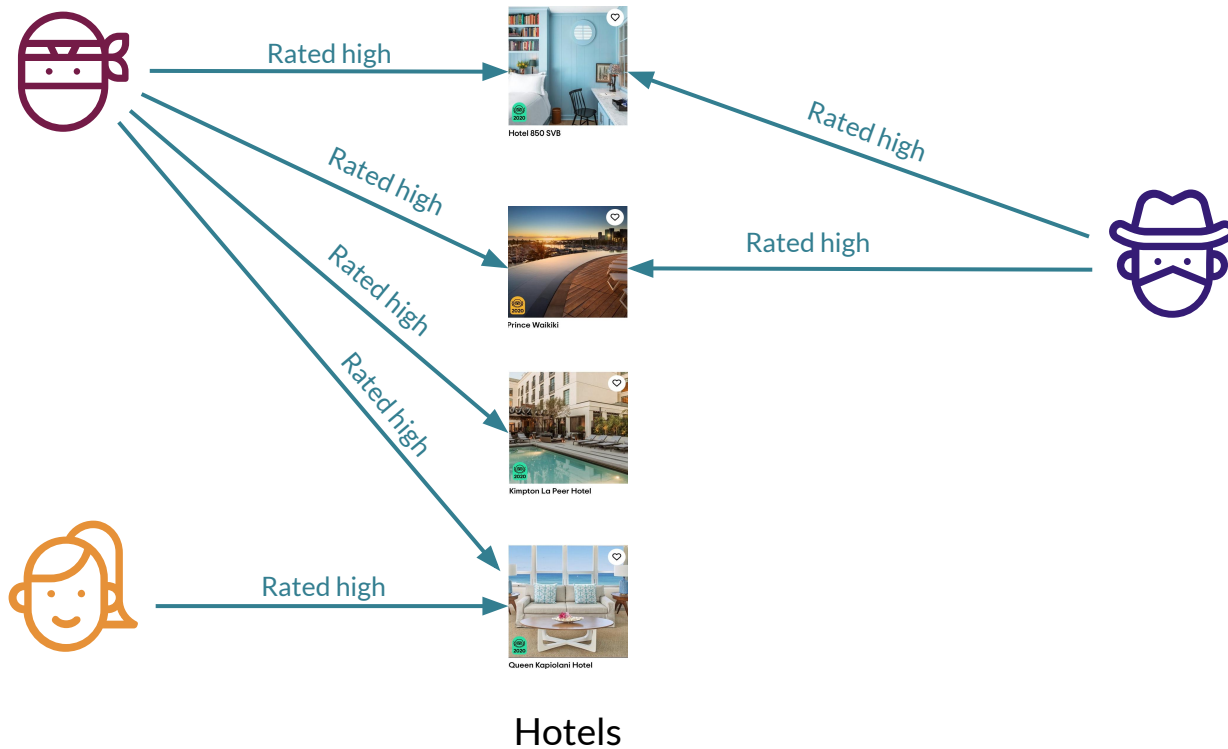




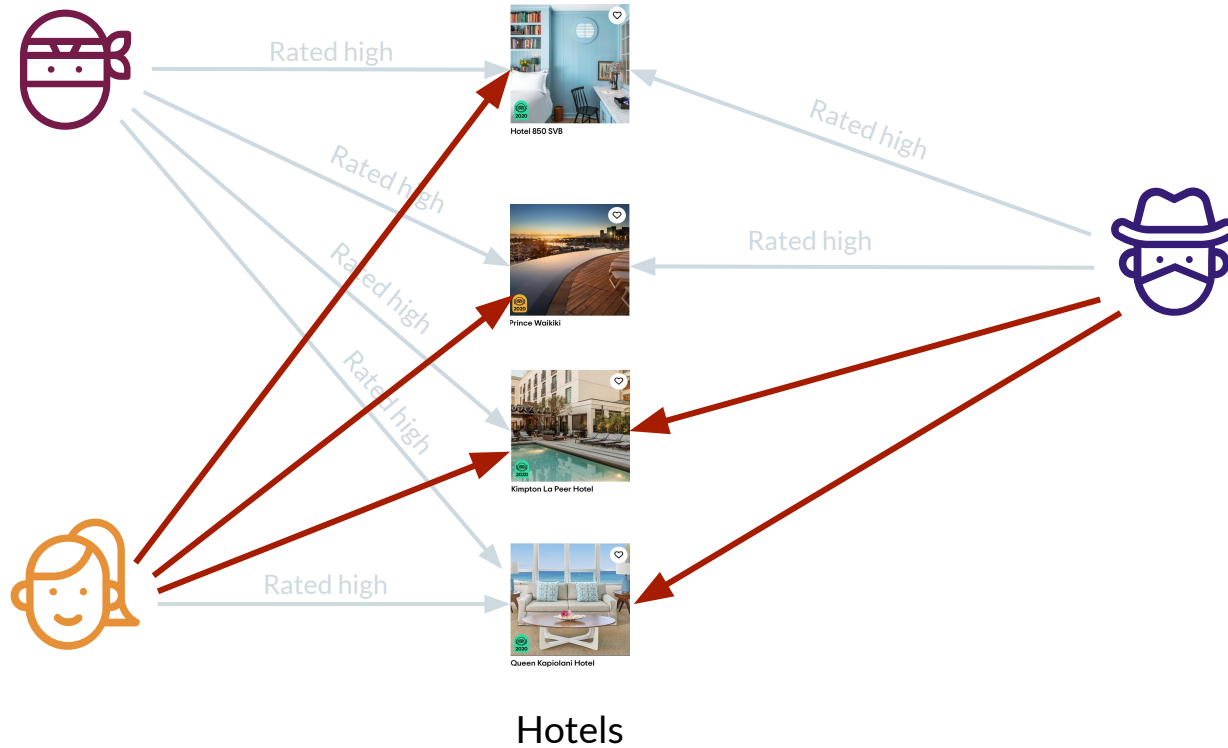
# Schema of top 10 recommendation



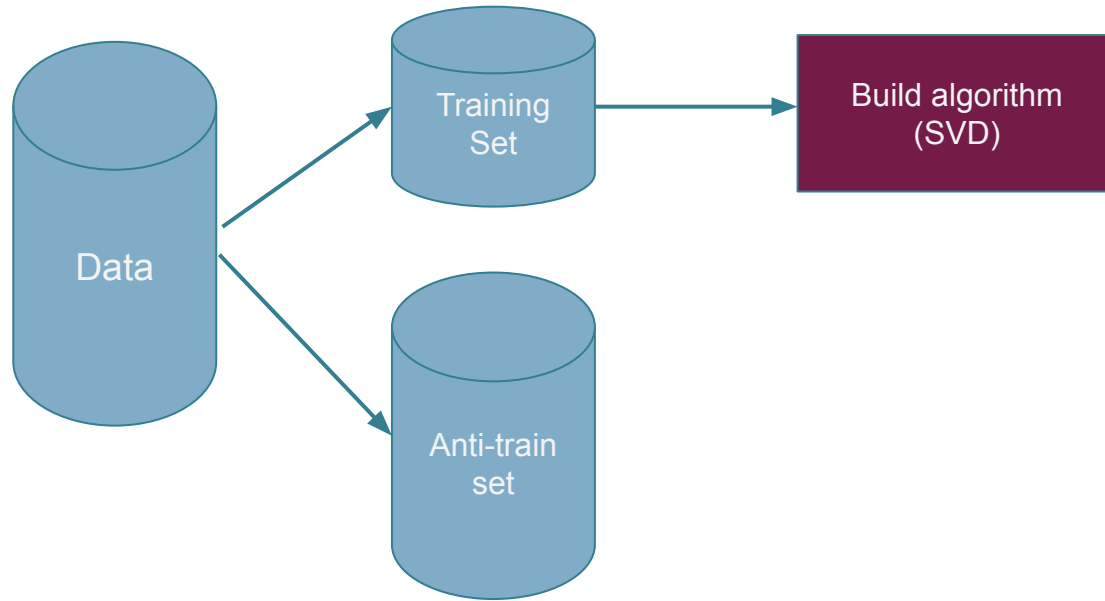
# Training set



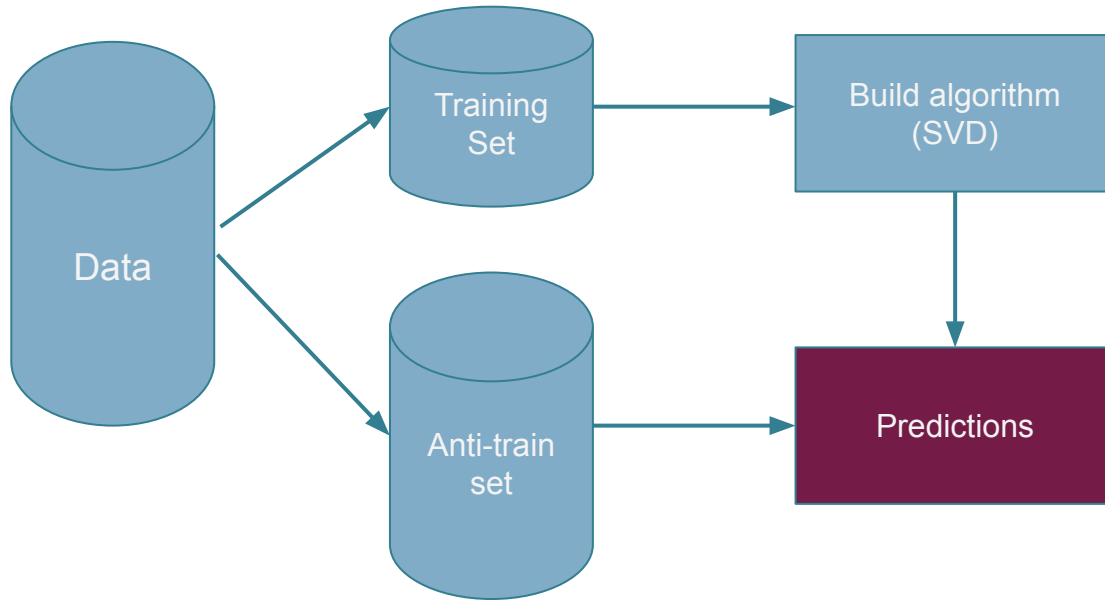
# Anti-train set



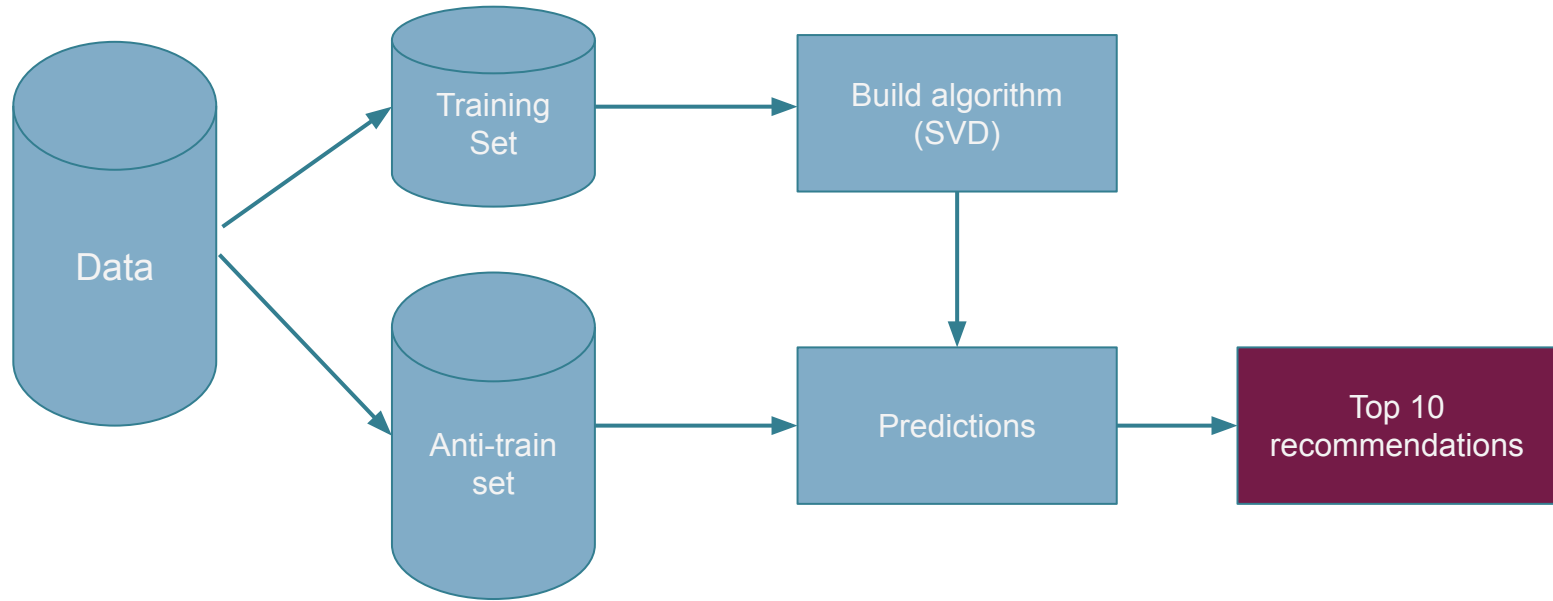
# Schema of top 10 recommendation



# Schema of top 10 recommendation



# Schema of top 10 recommendation



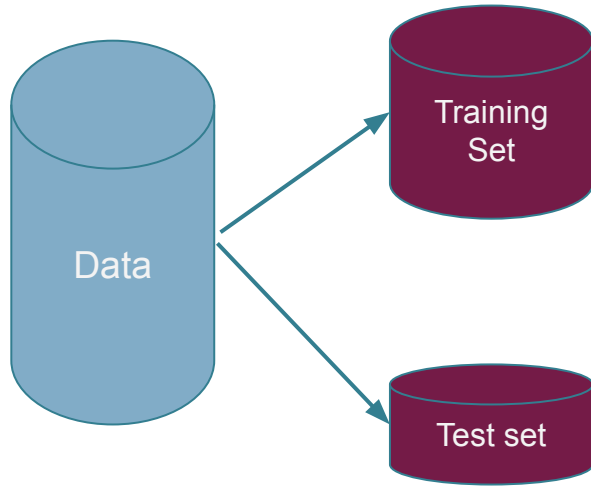


# How to evaluate recommendations?



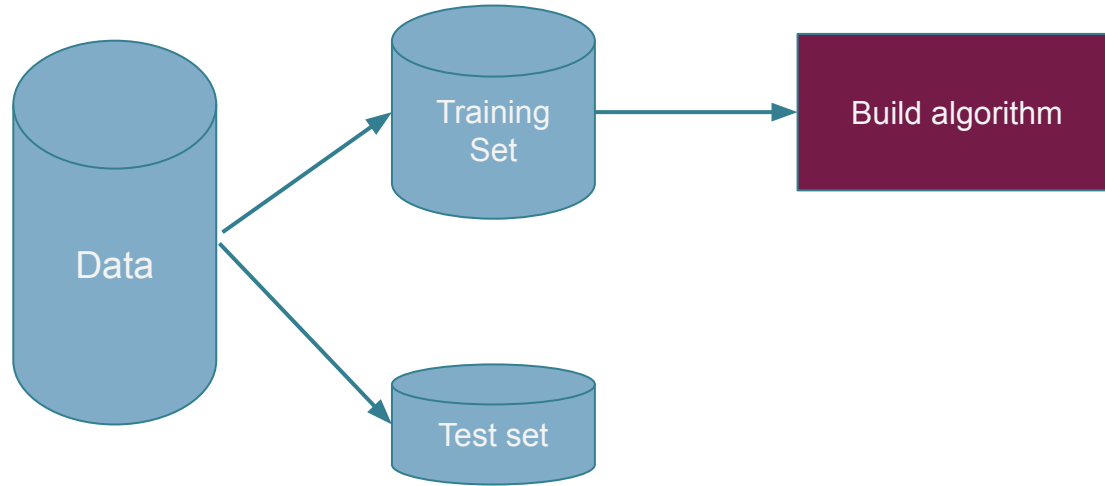
# Evaluation

## Collaborative Filtering Recommender



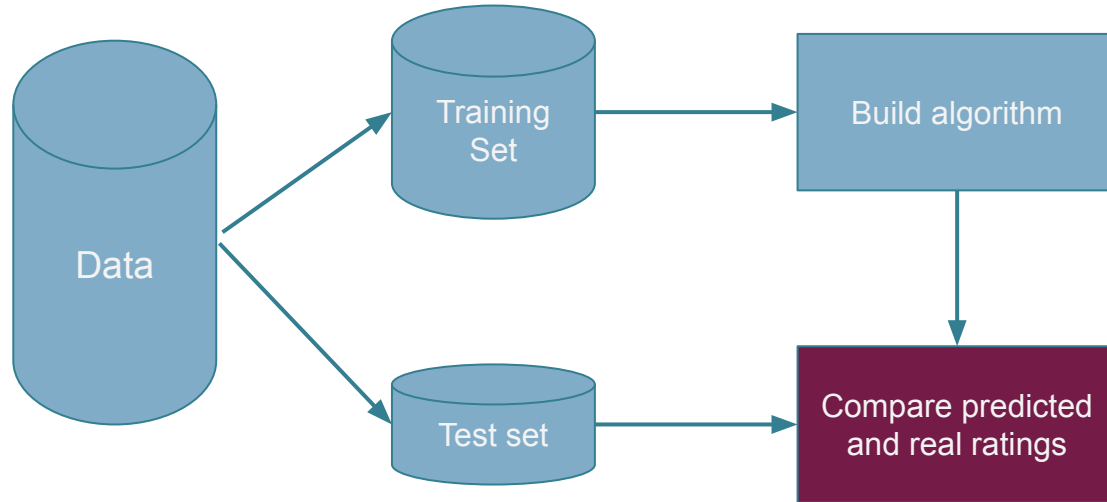
# Evaluation

## Collaborative Filtering Recommender



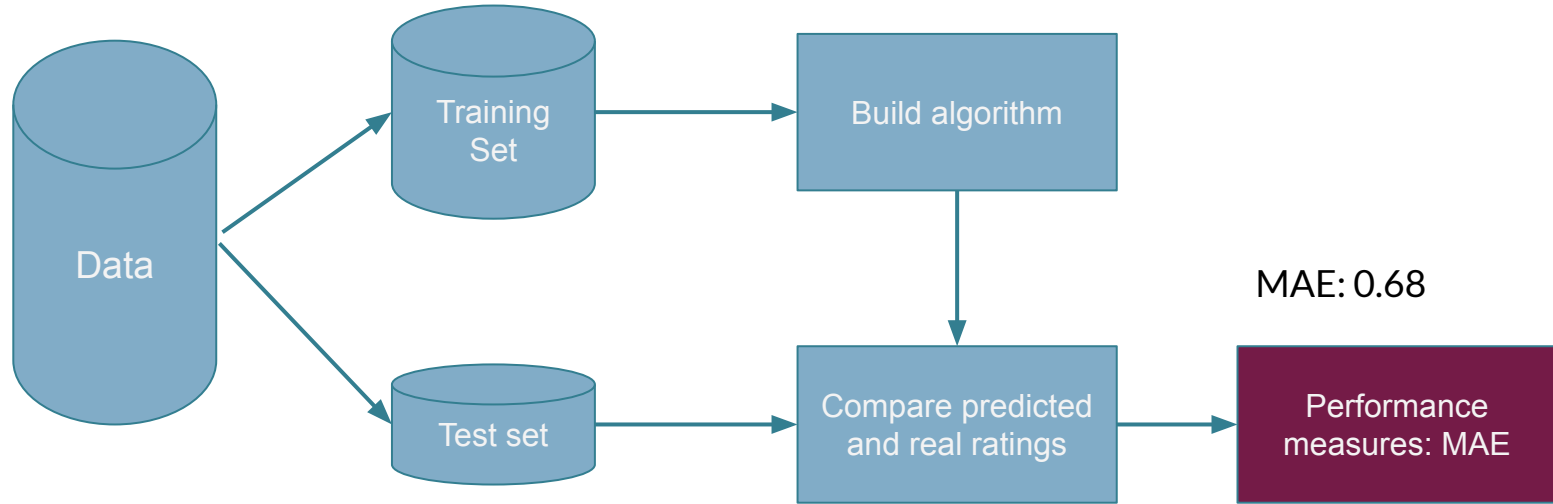
# Evaluation

## Collaborative Filtering Recommender

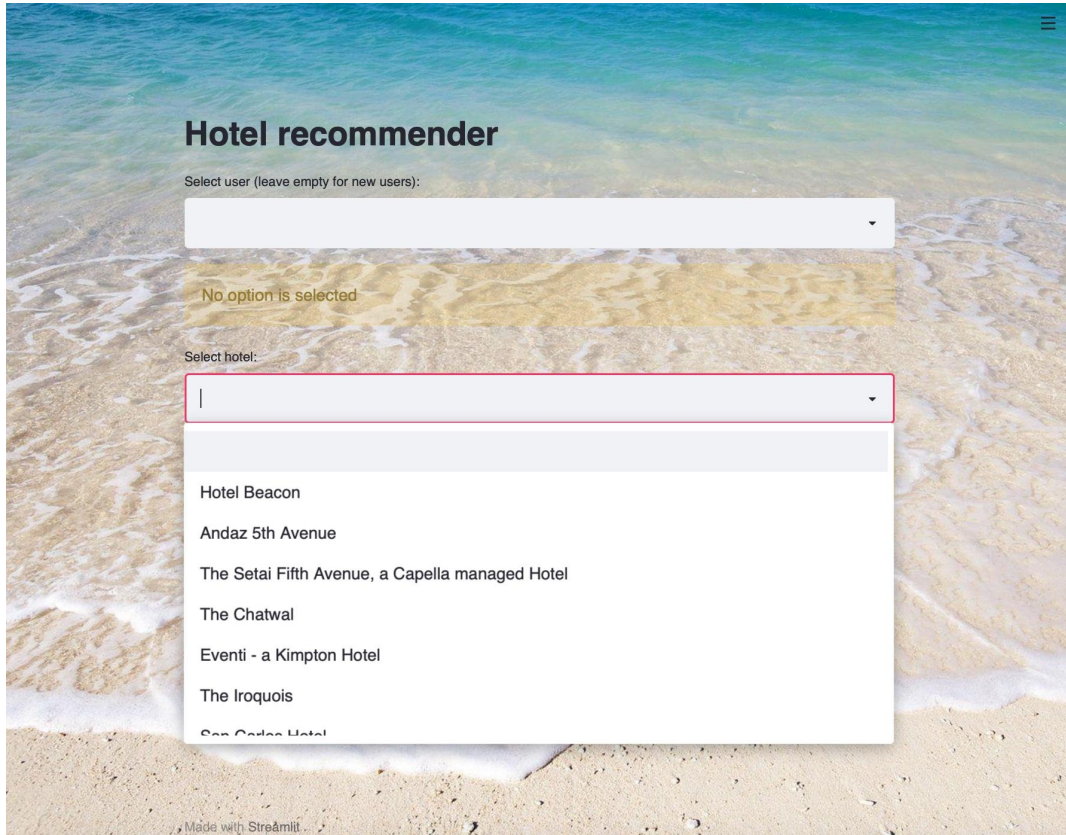


# Evaluation

## Collaborative Filtering Recommender



# New user



The screenshot shows a web application titled "Hotel recommender" set against a background image of a beach with turquoise water and golden sand. The form contains two main sections. The first section, labeled "Select user (leave empty for new users):", features a white dropdown menu that is currently empty, with a yellow tooltip below it stating "No option is selected". The second section, labeled "Select hotel:", features a white dropdown menu with a red border that is open, displaying a list of hotel names. The background image has a small hamburger menu icon in the top right corner and a "Made with Streamlit" watermark at the bottom left.

## Hotel recommender

Select user (leave empty for new users):

No option is selected

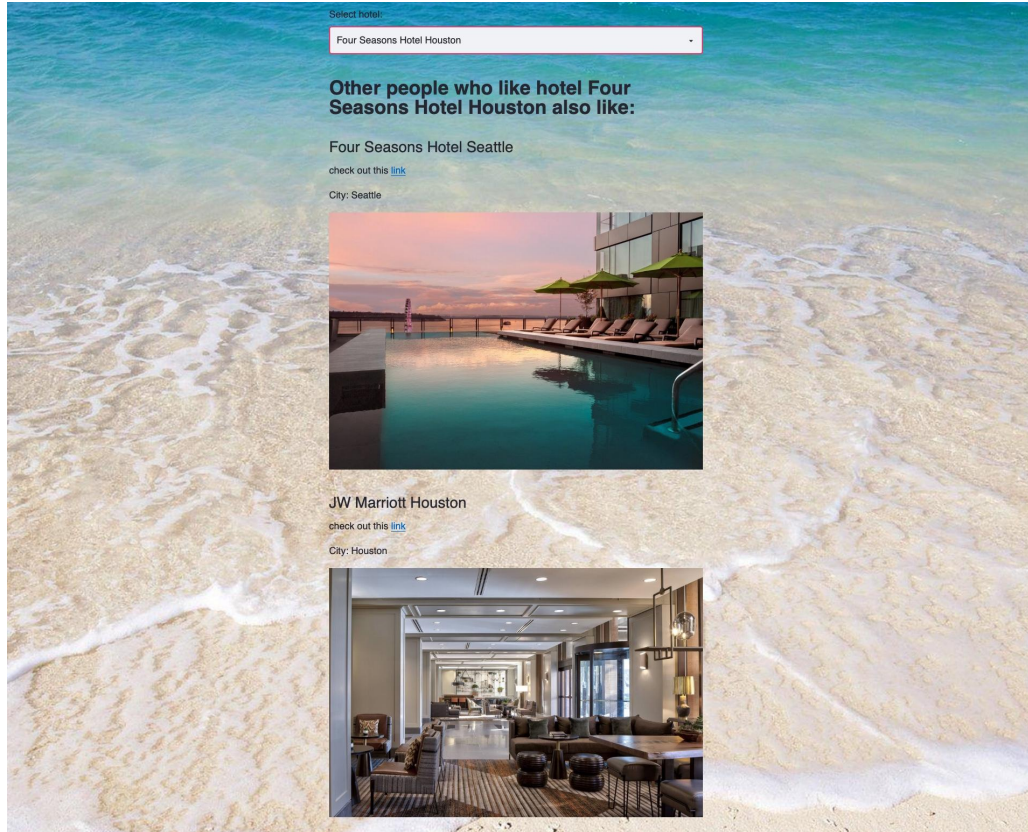
Select hotel:

- Hotel Beacon
- Andaz 5th Avenue
- The Setai Fifth Avenue, a Capella managed Hotel
- The Chatwal
- Eventi - a Kimpton Hotel
- The Iroquois
- San Carlos Hotel

Made with Streamlit

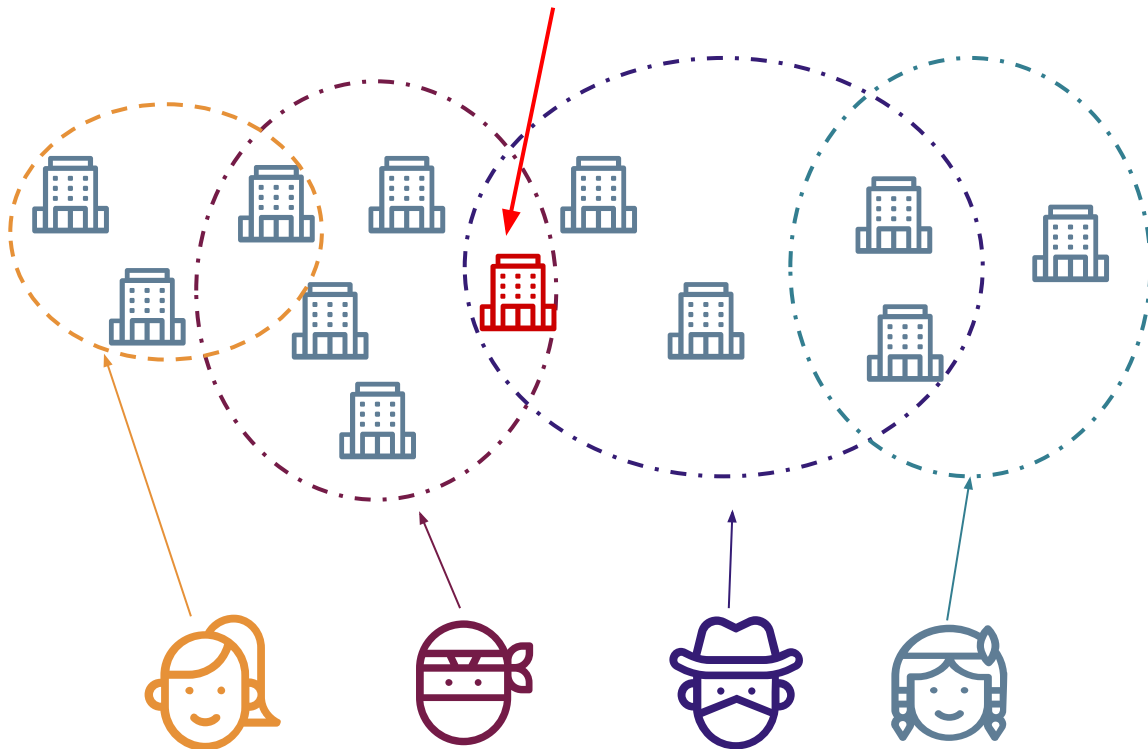


# New user



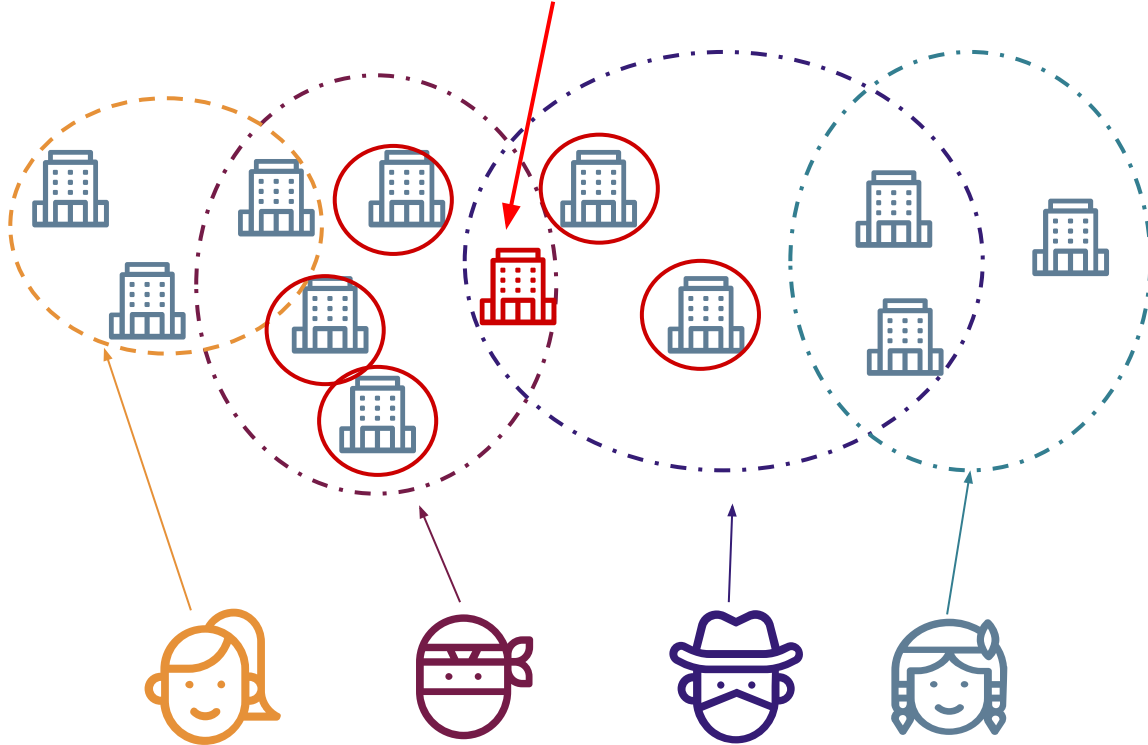
# KNN for hotel similarity

K=5



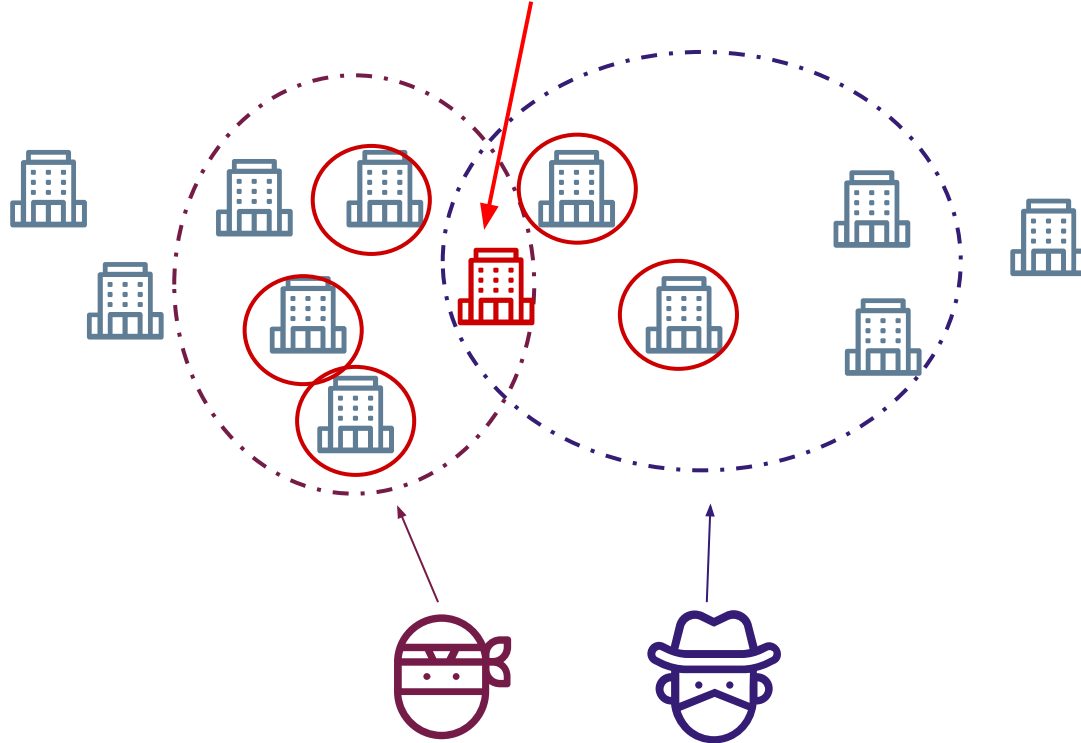
# KNN for hotel similarity

K=5



# KNN for hotel similarity

K=5



# Cold start hotels (new user + new hotel)



## Hotel recommender

Enter a user. Returns empty for new guests.

leslie06

### Top 10 recommendations below for user leslie06:

Trump International Hotel & Tower Chicago

[View details](#)

City: Chicago





# Result

- Implemented Collaborative Filtering Recommendation System
- Top 10 hotels recommendations for each user
- KNN method for cold start problem
- Created web app to demonstrate work of recommendation system



# THANKS!

Albina Sitdikova



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**GitHub:** [/albasitdikova](https://github.com/albasitdikova)



**LinkedIn:** [/in/albasitdikova](https://www.linkedin.com/in/albasitdikova)

# Appendix



TripAdvisor Dataset from:

<https://www.cs.cmu.edu/~jiweil/html/hotel-review.html>



# Feature work

- Use Spark or Dash to process all reviews
- Use content based recommendation system for cold start problem
- Add more features to the app

