

Hotel Recommendation System

Presenter: Zura Nebieridze

Team member: Zura
Nebieridze, Xiaofeng Zhao,
Qihuang Chen, Siddharth
Shukla, Aman Gupta



Motivation

- An actual hotel tourism company that's able to provide all datasets they have.
- The company needs a recommender system that would increase their sales.
- Recommendations are everywhere



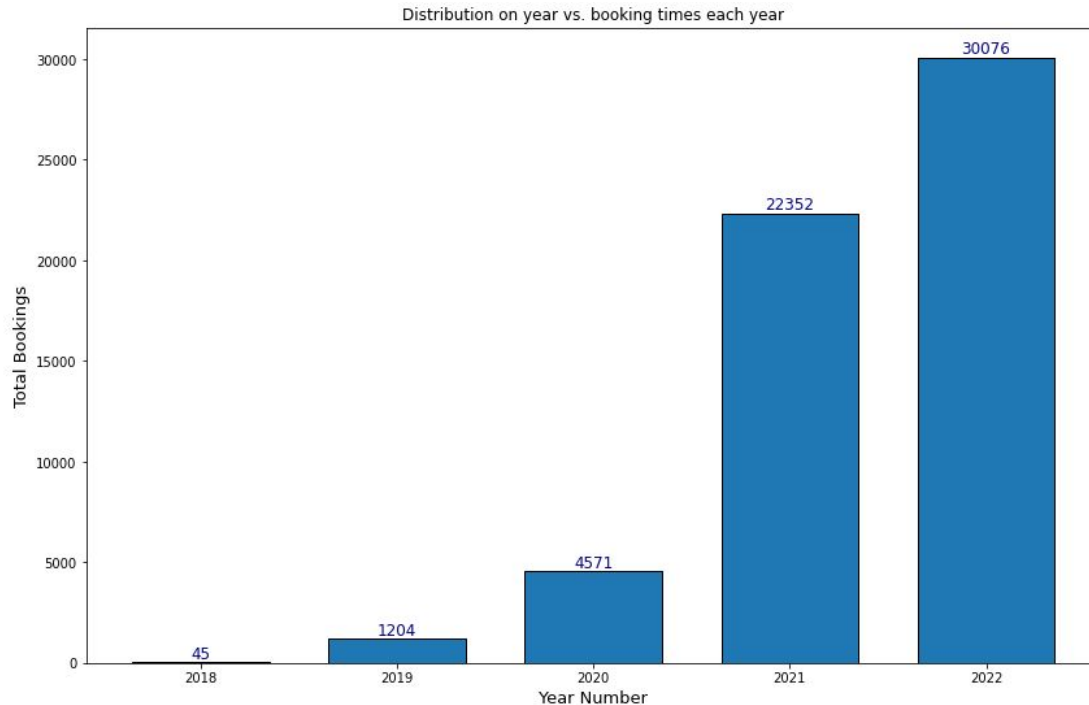
Google Ads

Let's talk

DATA!

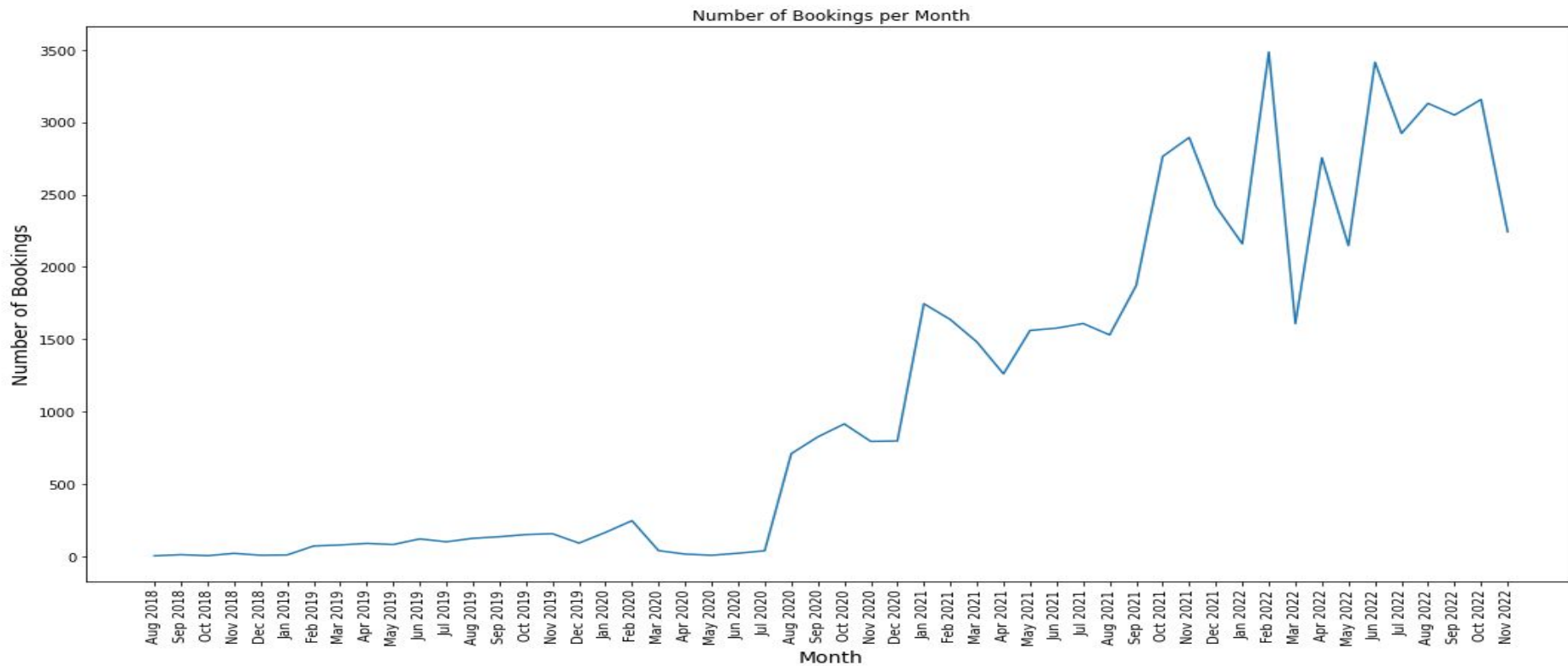
of bookings distribution based on the year.

- Rapid growth from 2018 - 2022



Booking history

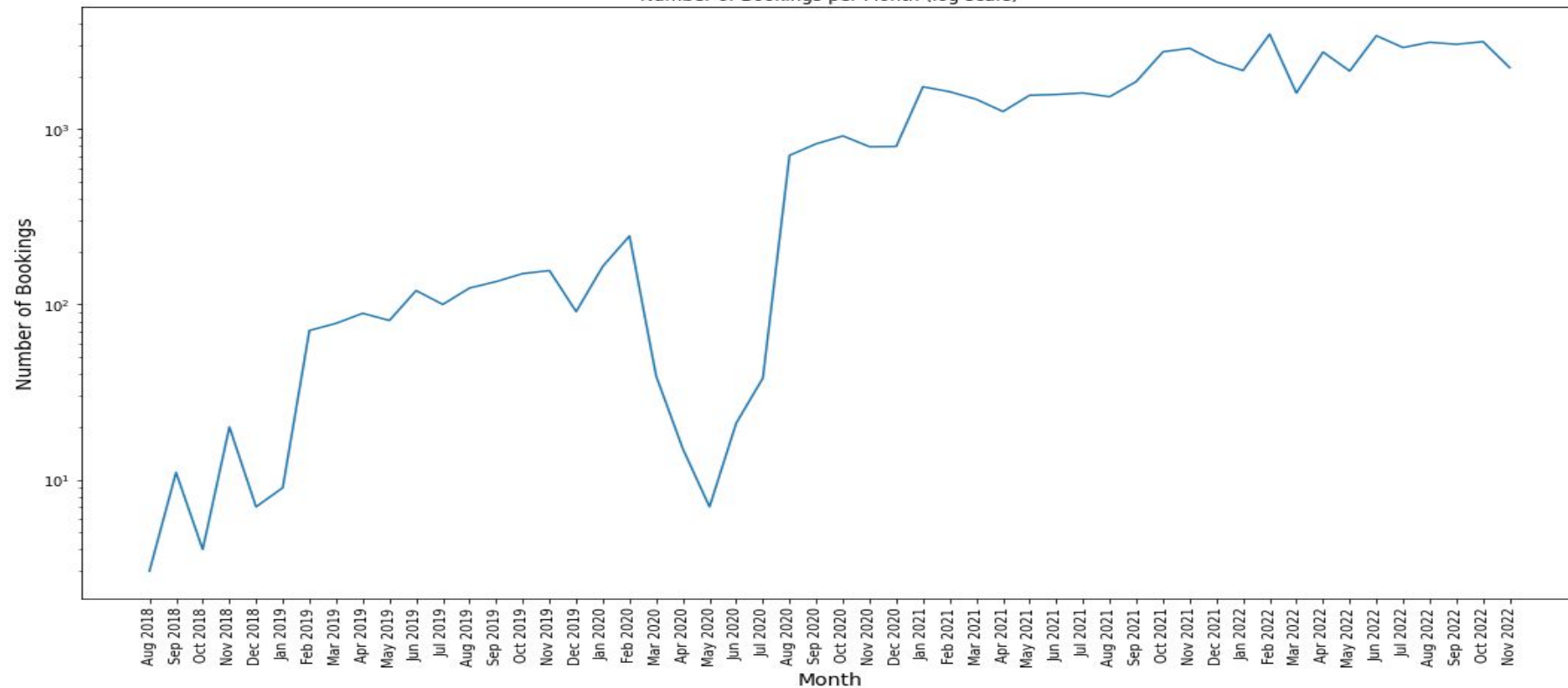
- Year 2018 - 2022



Booking history (log scale)

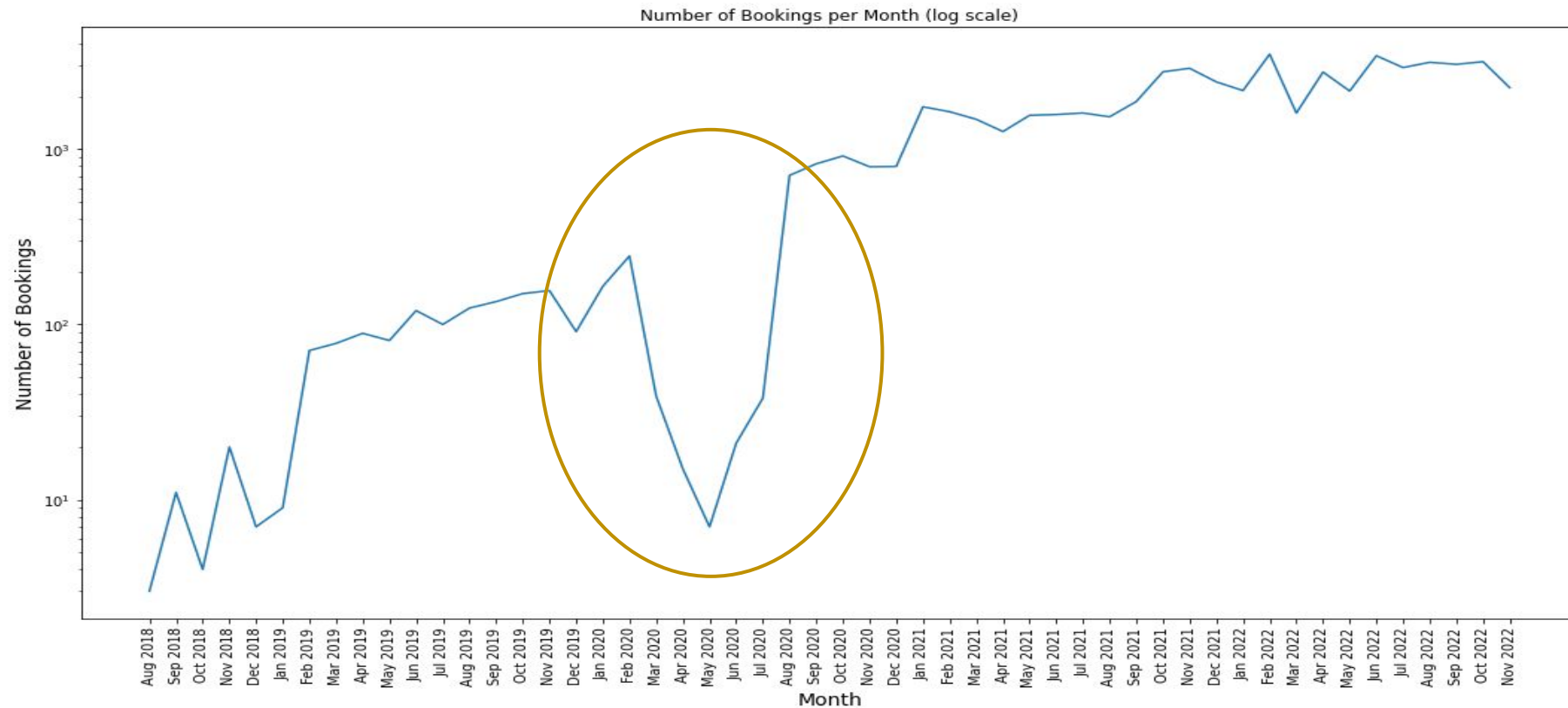
- Year 2018 - 2022

Number of Bookings per Month (log scale)



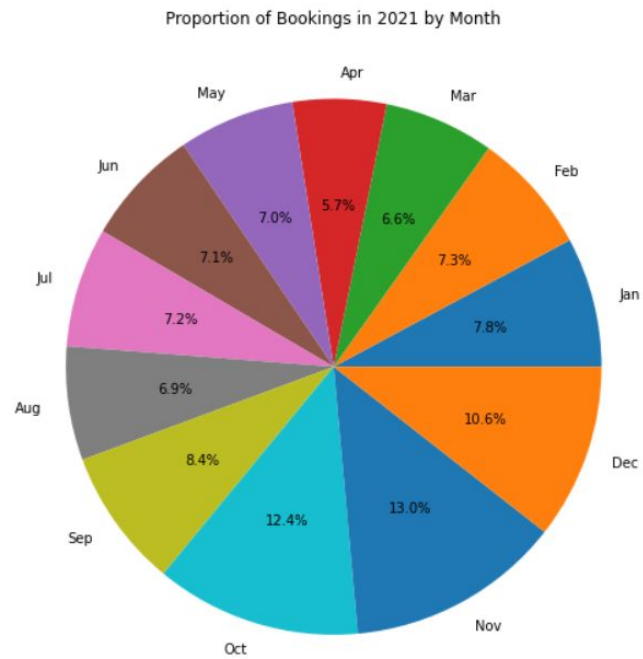
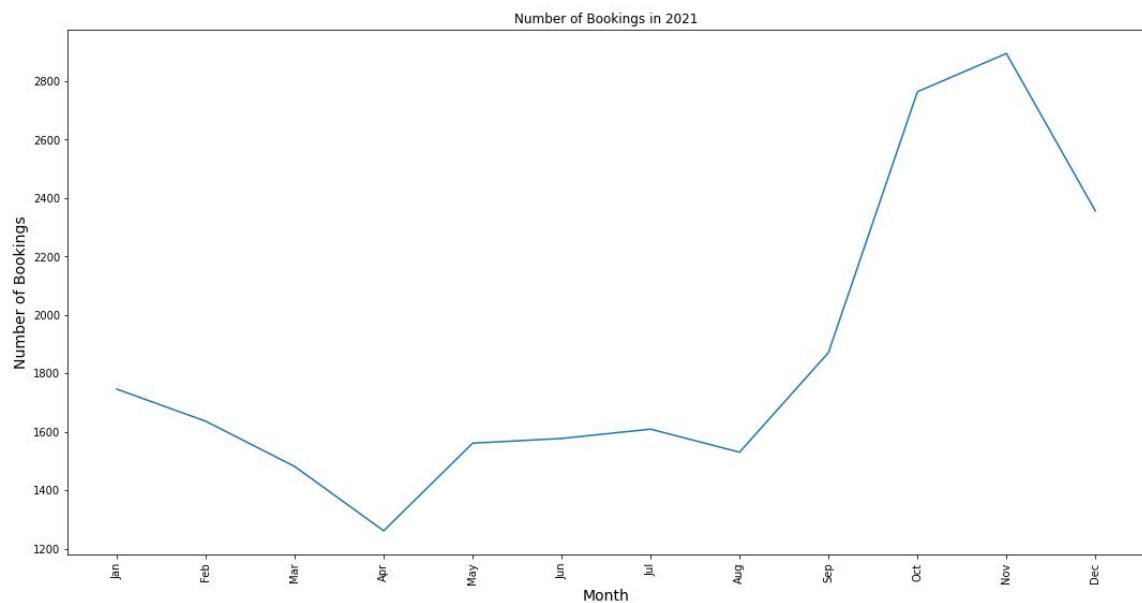
Booking history (log scale)

- Year 2018 - 2022



Monthly Booking

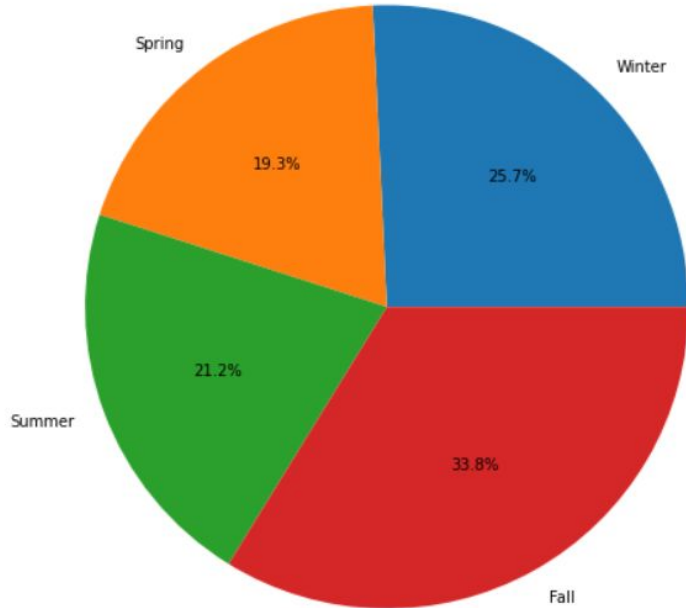
- Year 2021



Seasonal Booking

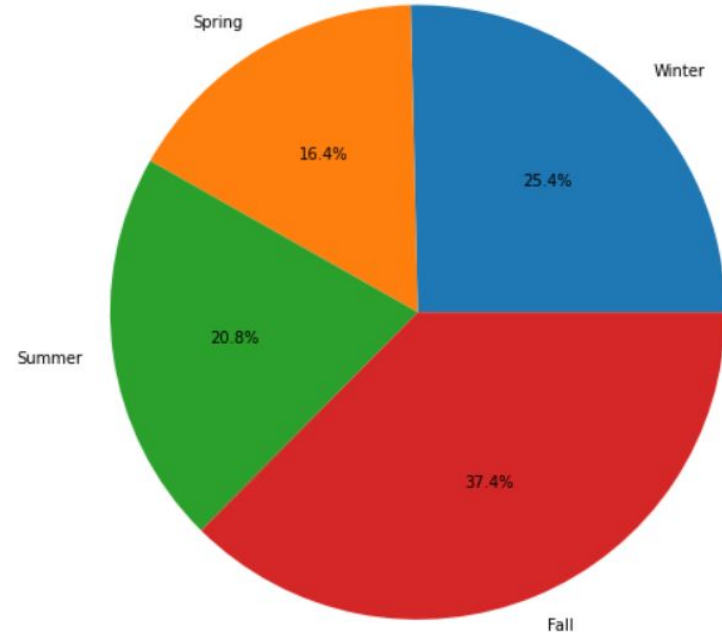
- Year 2021

Proportion of Bookings in 2021 by Season



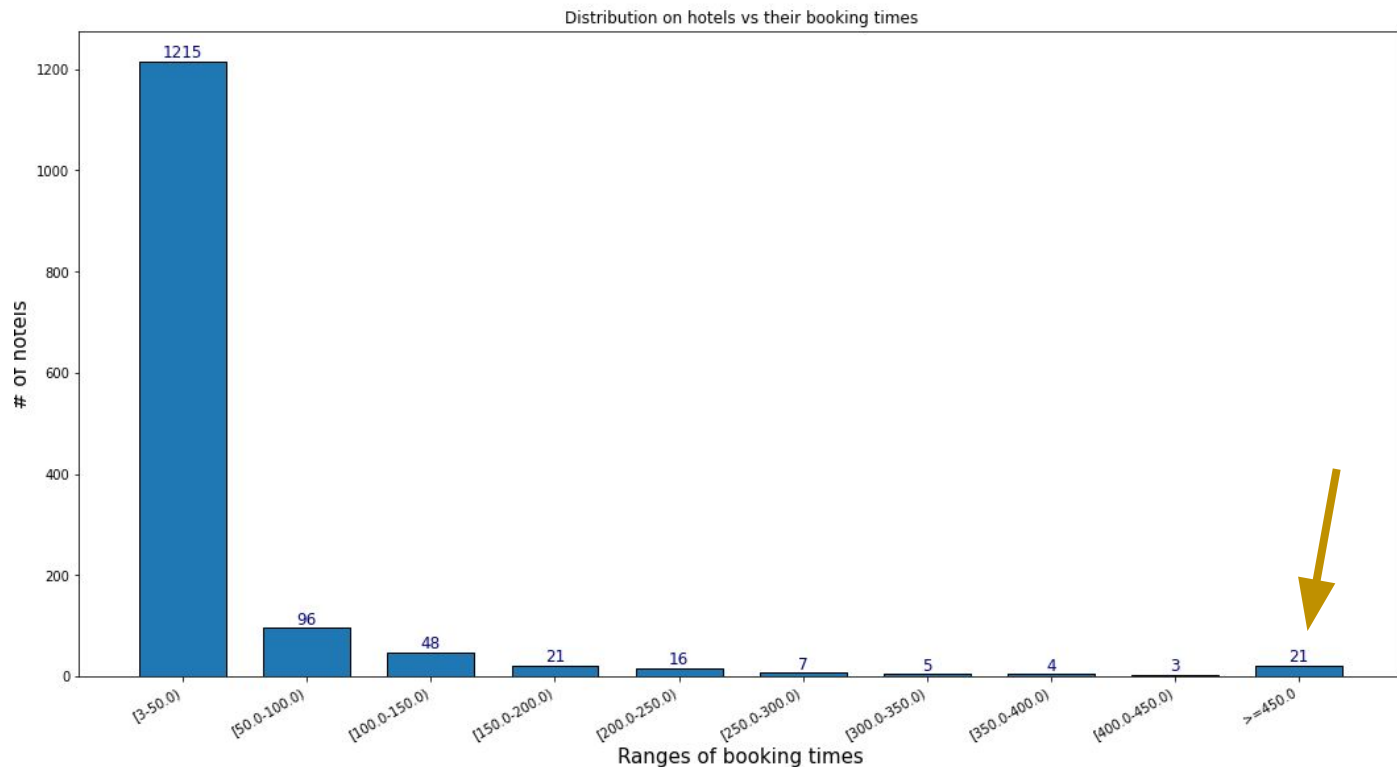
- Year 2019 - 2021

Proportion of Bookings in 2019-2021 by Season



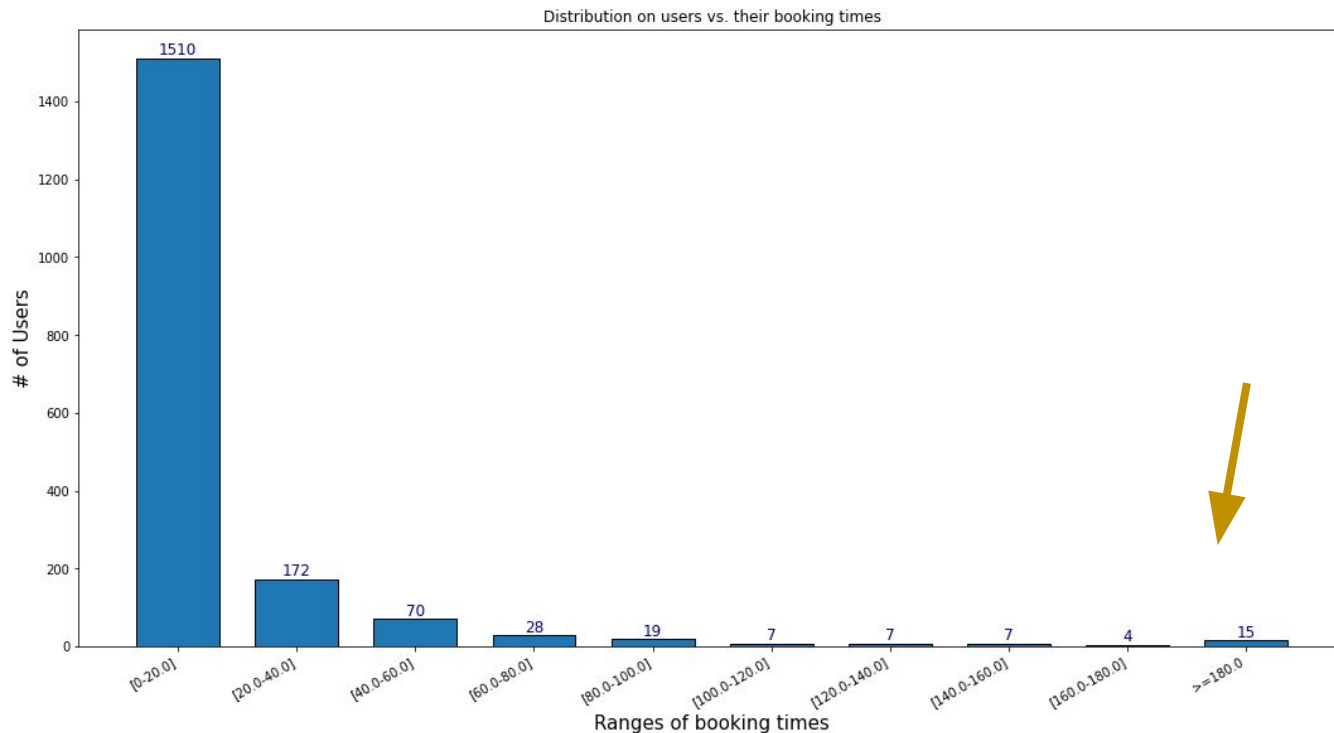
Distribution on hotels vs. their booking times

- The number of hotels: 1436



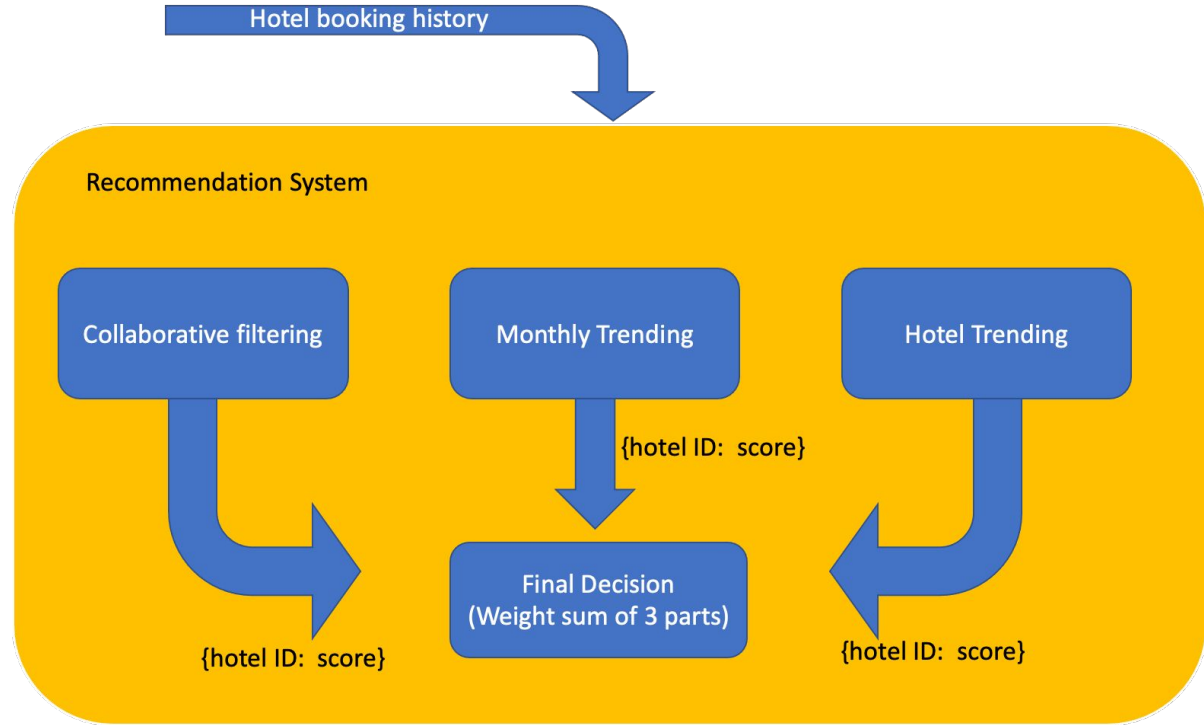
Distribution on users vs. their booking times

- The number of users: 1836

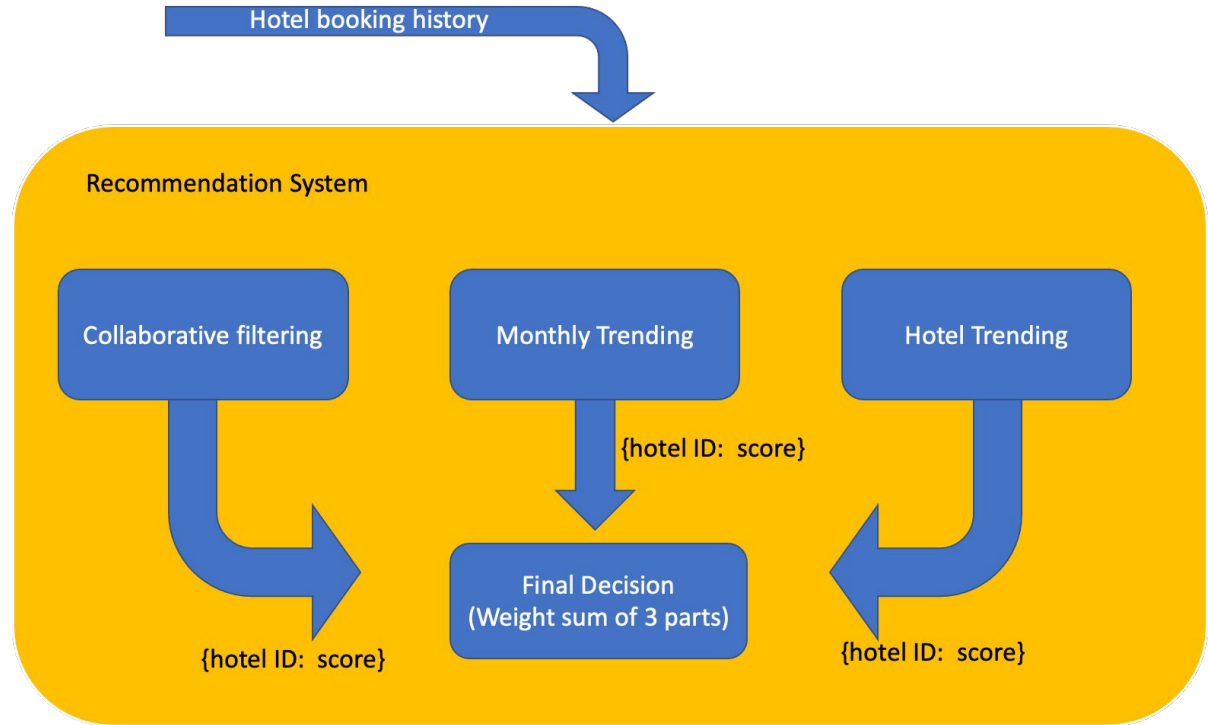


Methodology

- Collaborative filtering
- Monthly Trending
- Hotel Currently Trending



UserID
+
Weights
Of The
Functions



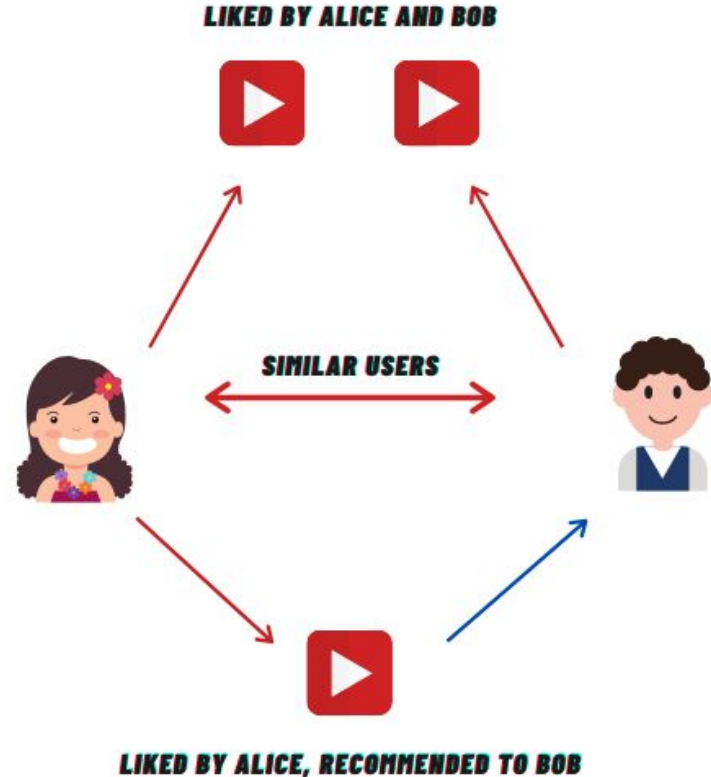
Hotel List based on
recommendations for
the user

Collaborative Filtering

We are all the same
on the inside.

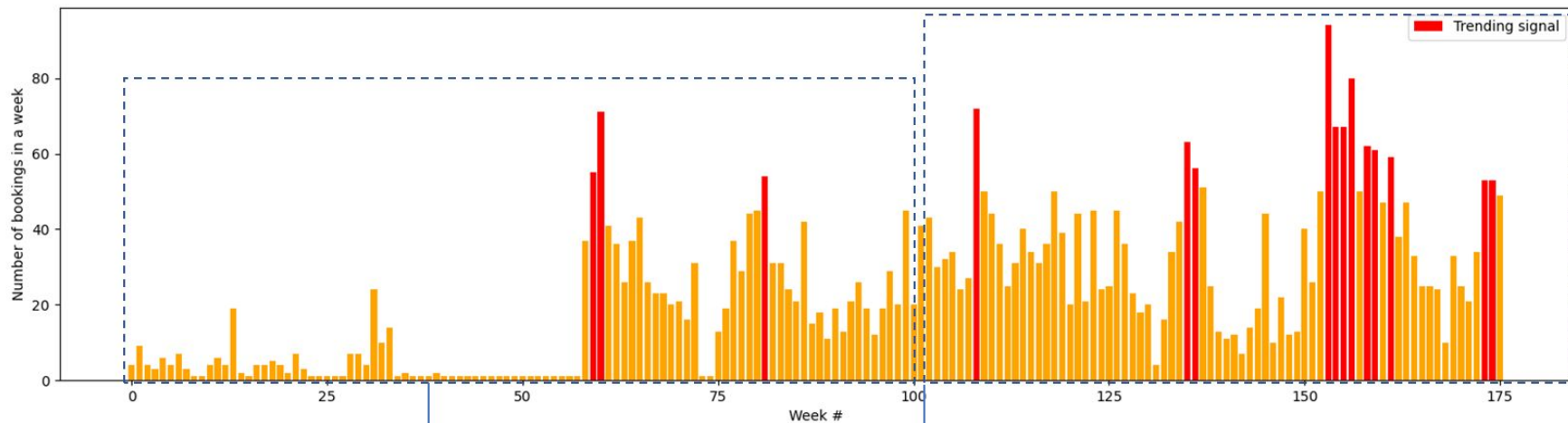


COLLABORATIVE FILTERING



Hotel Trending

- Compute statistic and apply it to recommendation



Data for training

Start Prediction

(Bar marked with **RED** indicates we will recommend the hotel at this time)

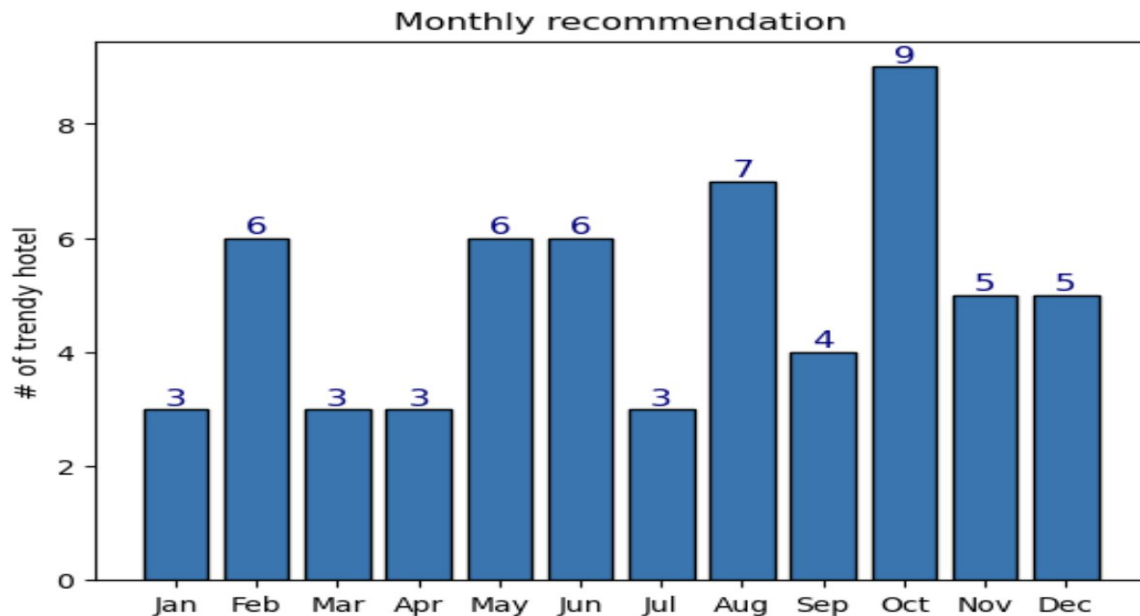
Monthly recommendation observation

- Hotels particularly Particular in certain months
- Below are a few examples of total booking > 250

```
[15, 71, 24, 48, 40, 69, 127, 146, 34, 36, 27, 14]
[62, 106, 38, 43, 44, 26, 38, 25, 61, 103, 68, 48]
[87, 82, 63, 50, 69, 52, 49, 219, 203, 155, 112, 38]
[21, 73, 51, 84, 149, 277, 184, 169, 151, 128, 82, 41]
[18, 35, 10, 17, 10, 32, 65, 86, 41, 44, 29, 11]
[9, 19, 14, 54, 98, 168, 87, 123, 63, 59, 37, 15]
[61, 133, 43, 103, 29, 79, 119, 142, 106, 186, 146, 90]
[278, 54, 42, 63, 73, 84, 37, 68, 50, 50, 104, 135]
[35, 37, 20, 39, 73, 61, 18, 41, 20, 44, 41, 18]
```


Monthly Based Recommendations

- Monthly recommended hotels that satisfies at least 250 bookings and 1.5 standard deviation from average month bookings



Demo

Movie Recommender

Collaborative Filtering %

0

Monthly Trending %

0

Hotel Trending %

100

Enter a User ID: 2976

Random User ID

Go

Output

MovieID	TotalScore
109170	100.000000
50705	99.826193
109214	97.731293
6325	93.206075
112736	85.722419
102821	69.399889
109985	60.610811
110252	55.876117
160837	54.037733
108977	50.159236

Thank You

Any Questions?