

Mad Sentiment Analysis on Airbnb Data



Note: Image created with negative sentiment on airbnb

Motivation/Issue

On Airbnb, individual review ratings are hidden unlike other services.

Airbnb

35 Reviews ★★★★★

Summary

Accuracy
Communication
Cleanliness



Location
Check In
Value



Amy

Our experience was great. Very close to the action. Pretty clean place.

November 2015

Helpful



Charmaine

The place: Its simplicity makes the stay feel like home. There's a bathroom and 2 toilets for sharing. It wasn't a concern, considering it's our first time to have a sharing bathroom, since it is always clean. The room, even though small, is clean (under the bed was a little dusty). AC is cold but dripping. At weekends, sleeping early won't be that

+ More

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Anouk

Clean room, very Nice bathroom and excellent mojito's!

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Trip Advisor

Read reviews that mention:

Search reviews



All reviews select guest bob's steakhouse loyalty ambassador gingerbread cookies
free morning beverage bobs steak house signature room concierge mark spray starch
bobs bar gingerbread man wells fargo museum free pressing rooms were nice clean
morning delivery short walk or tram ride to beverage delivery titanic movie
pressing service service online

Traveler rating

☐ Excellent 2,747
☐ Very good 768
☐ Average 142
☐ Poor 42
☐ Terrible 16

Traveler type

☐ Families (871)
☐ Couples (1,513)
☐ Solo (160)
☐ Business (670)
☐ Friends (218)

Time of year

☐ Mar-May (823)
☐ Jun-Aug (1,213)
☐ Sep-Nov (993)
☐ Dec-Feb (686)

Language

☒ All languages
☐ English (3,523)
☐ Spanish (52)
☐ German (48)
[More](#)



Imacca4
Denver, Colorado

1 review

My favorite hotel in SF

Reviewed yesterday

Everything about the Omni hotel makes you feel welcome, from the hot cider and fruit in the lobby to the staff who welcome you every time you walk in the door. The rooms are well appointed, quiet and comfortable and the location is perfect for both business and pleasure. You have to pay for wifi, but if you join their...

[More](#)

Helpful?

Thank Imacca4

Report

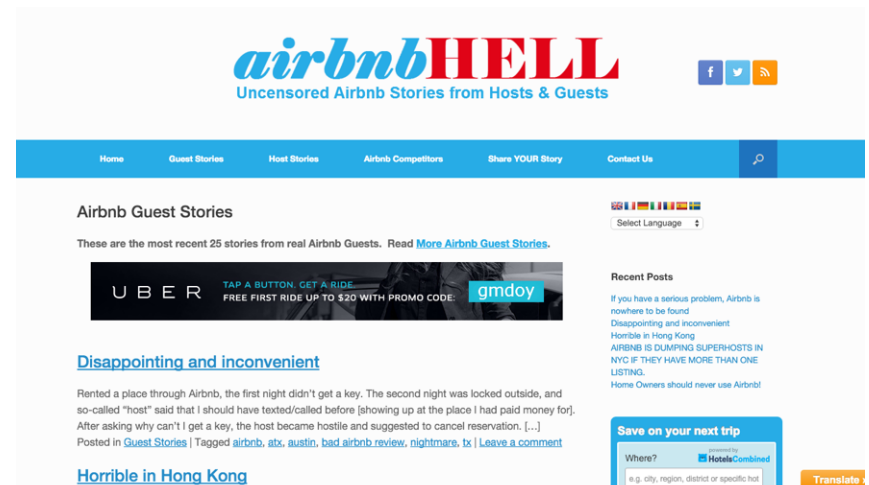
Motivation/Issue

Easy to miss potential risks that may have been experienced by Airbnb users and mentioned somewhere in reviews

For me...



For others...



Give sentiment label for each review and focus on extracting negative reviews

Project Overview

(^O^) : Happy with output

(•_•) : Okay with output

(´•ω•`) : Disappointed with output

Data Cleaning

- Dataset merging (^O^)
- Review language detection (^O^)

Label Review Data

- Topic modeling/label via keyword (•_•)
- Alchemy Sentiment Analysis API (^O^)

Modeling

- Bag of words (•_•)
 - Random Forest
 - SVM
- Word2Vec (•_•)
 - Random Forest
 - SVM
- Word2Vec/K-means (^O^)
 - Various models
 - Bagging SGD

Further Research

- Data Product
- Label review data with model trained with competitor sites

EDA

- Who are the host? (´•ω•`)
- Reservation seasonality with location (zipcode) (´•ω•`)
- Reservation seasonality in general (^O^)
- Reservation seasonality with pricing (•_•)
- Top undervalued places? (^O^)
- Word cloud based on sentiment (^O^)

Further Research

- Visualize on map
- Feature selection and interaction with regression problems

Analysis

- 1) Data merge
- 2) Review language selection
- 3) Label review
- 4) Modeling with Bag of words
- 5) Modeling with word2vec
- 6) seasonality analysis

Other : Topic modeling and word clouds

Other : Who are the host?

Further Research: Data Product

A simple site that tells if the Airbnb room has potential risks

Input page

A Web Page

http://avoidbadairbnb.com

Avoid Bad Airbnb

Put Airbnb room url that you are considering below to find out if the place has potential risks

Airbnb room url

Find out

No risk

Output page

A Web Page

http://avoidbadairbnb.com

Good to go!

The airbnb room looks safe. Go book it :)


Risk


A Web Page


http://avoidbadairbnb.com

Oh no, there may be some problem with the room...

Output reviews may include some risks that previous stayers have experienced. Check it out and see if these are acceptable to you.

 Shemion
This home was quiet, and in an amazing location. A studio-style apartment on the bottom floor of a classic looking San Francisco house. The apartment is right next to a nice park where people are out walking their dogs, and as was a short Uber ride to downtown SF. I'll be back soon.
+ More
August 2015 [Helpful](#)

 Kethryn
this is a lovely basement apartment, very clean and everything you could want is provided. Pretty garden, great location. I stayed with my son and we were both very happy to have chosen this property. This was my first experience with Airbnb and I was very pleased.
August 2015 [Helpful](#)

 Gabriela
Una casa muy importante de cada viaje es el lugar donde uno se hospeda durante a estadía en el extranjero, con toda seguridad puedo decir que el apartamento de Holly Co emanó un brindo una excelente experiencia, sobre la localización de esta ciudad me
+ More
July 2015 [Helpful](#)

How I do it:

1. Use Flask to make a minimum viable site
2. Use Kimono lab to scrape reviews from a given url
3. Use my trained model to predict sentiment of the reviews
4. If len(negative reviews) is 0: direct to "Good to go" page
Otherwise, output negative reviews on "Oh no" page



Further Research: Other todo

Label review data with model trained with competitor sites

1. Use Trip Advisor review data
2. Label 4 and 5 as positive, 3 as neutral, 1 and 2 as negative
3. Train the model and apply it to Airbnb review data

Visualize on map

1. Learn [Vincent](#) library
2. Visualize price range/sentiment/number of reviews based on zipcode or address

Feature selection and engineering with regression problems

- Run regression analysis making price/number of reviews as y and other attributes (# rooms, location, sentiment etc) as predictors
- Try feature engineering and selection with Statsmodel and Sklearn