New York City Airbnb Analysis

By Jennifer Ha
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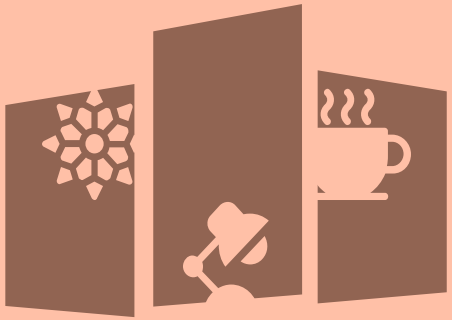


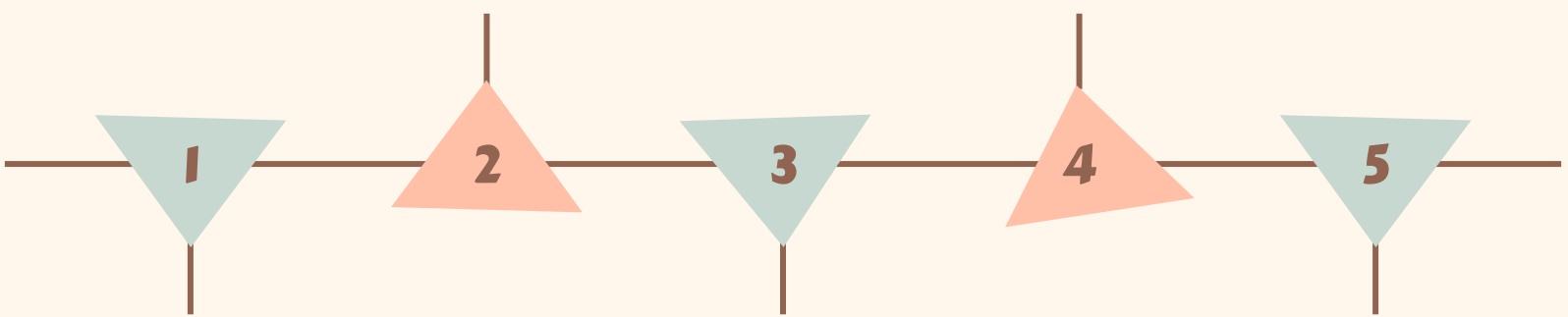
Business Problem

Predict whether a list is valuable or not

Top 25% of the listings with the highest weighted review scores rating are considered to be valuable listings.

Explore different types of machine learning models and share the best performing model to the Airbnb marketing team.

Data & Methods



NYC Airbnb Listings Data

- 74 columns, 36,722 rows
- August 2020 - July 2021

Data Cleaning & Preparation

- 17 columns, 36,722 rows
- Weighted Review Scores Rating
- Boolean Conversion

Preprocessing & Pipeline

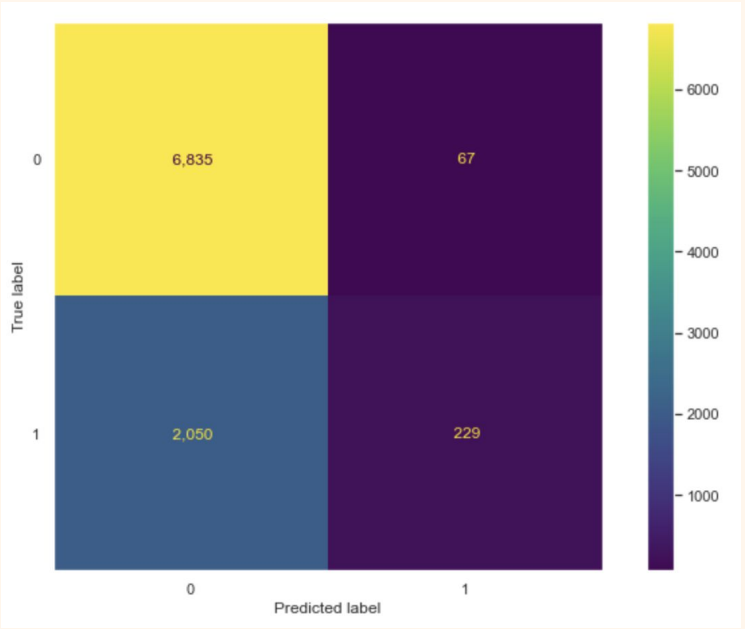
Machine Learning Model Iteration

Model Optimization

- Hyperparameters Tuning

Results

- Our winning model: the gradient boosting model with hyperparameters tuning
- increased the precision by 18.5% with almost no sacrifice to the accuracy and ROC-AUC score
- showed highest threshold when deciding whether a listing is valuable or not




```
Train Scores
----------
Accuracy: 0.7732471587814531
Precision: 0.84400826446281
ROC-AUC: 0.820293822299771
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Test Scores
-----------
Accuracy: 0.7694150963947283
Precision: 0.7736486486486487
ROC-AUC: 0.7875422974866968
```

Next Steps

I

Understand what features makes a listing valuable

II

Re-visit over-fitting models and think about how we can reduce the over-fitting

III

Consider expanding this project to make predictions using global data

Thanks

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