## Methodolgy :

I have used the following key items to understand better and comprehensively how I can predict the price for a new listing to ensure it does not surpass 'maximum pricing' and also does not incur huge loss at the same time.

1. Number of people that can be accommodated
2. Number of bedrooms
3. Type of room : Private, Entire home, shared
4. Minimum stay
5. Reviews
6. Latitude
7. Longitude

For the type of room I have used the following identifiers:

0 for Private room
1 for Entire home
2 for Shared home

I have created a feature with the above 7 crucial factors.

## Train/Test Split:

My data has **5614 rows**, I have done 0.7/0.3 split.

## Why KNN?

The machine learning technique that I have used is KNN. To think back to my strategy of finding listings similar to mine, average their price and set my listing price as that average is basically the essence of KNN. Out of the 3929 rows in the training set, I noticed that if I ran the simulation with 100 neighbours I got the best accuracy with 65.

This meant that broadly I can divide the training data into 65 neighbourhoods and then calculate the distance of these neighbourhoods from my test data to make the predictions on the test data.

## Results:

The training set of 3929 rows gave 65 as the best k value, I ued the test data to find the accuracy.

| | |
|---|---|
| The best accuracy 0.0777448071217 | |
| F1 score 0.049674745299619391 | |
| Jaccard similarity score | 0 |
| .06943620178041543 | |

## Discussion:

For the new listings using the predict() function I can get accurate values of the new listings. If the features are increased by including those that further impact the target variable which is the price then accuracy will see an increase. Features that I can think of which can be useful would be
   1. Distance from public transport
   2. Proximity to hospital/medical help
   3. Availability of internet

## Conclusion:
It was a learning experience to understand how difficult it is  for a new listing to find an optimal pricing on Airbnb. Big cities like Amsterdam have no shortage of more meaningful features that can increase accuracy of new listings.