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CA 1 Project Report

Problem solving using pattern recognition

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# 1 Introduction

With advances in artificial intelligence over the last 20 years, researchers have been exploring the possibilities of how much computers can replicate human behavior or execute complex tasks that perhaps most humans are unable to do. With pattern recognition, it is possible to enable a computer to learn with without specifically programming it to execute tasks. Examples of such tasks include, but are not limited to, self-driving vehicles, giving recommendations on videos(Netflix, youtube), fraud detection, consumer trends and etc.

Drawing inspiration from our previous project in our first semester at NUS ISS, our group has decided to go back to the home rental market and consider how landlords decide a price on renting out their homes.

With over 6 million listings world wide and an annual revenue of $3 billion, which is expected to grow by 250% in 2020, we chose AirBnb as a case study and sourced the internet for datasets on AirBnb listings. The following project report will detail our approach to the project and state our findings.



*(Source:* [*https://www.wsaw.com/fox/content/news/Stevens-Point-homeowners-can-rent-homes-on-AirBnB-and-VRBO-512899481.html*](https://www.wsaw.com/fox/content/news/Stevens-Point-homeowners-can-rent-homes-on-AirBnB-and-VRBO-512899481.html)*)*

# 2 Tools and Techniques

## 2.1 Tools

The following items below are the tools and libraries used to implement this project.

|  |
| --- |
| Tools |
| Anaconda |
| Spyder |
| Libraries |
| SKLearn |
| Pandas |
| Numpy |
| Matplotlib |
| Math |
| statsmodel |

## 2.2 Techniques

During the course of the project, we decided to use both classification and regression techniques to not only predict home rental prices, but also to see what insights can be drawn from the data which may or may not affect the home pricing.

### 2.2.1 Classification

### 2.2.2 Regression

There are four machine learning techniques used for regression learning to help with predicting home rental prices.

# 3 Model Design

# 4 Model Performance

# 5 Project Findings

# 6 Summary

# References

1. <https://ipropertymanagement.com/airbnb-statistics/#targetText=The%20target%20market%20for%20Airbnb,guest%20arrivals%20at%20Airbnb%20listings.>
2. <https://www.sas.com/en_sg/insights/analytics/machine-learning.html>