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Course: MSc Data Science and Analytics with placement

Supervised by: Dr Helen Xiang

Type of Proposal: Detailed Project Purposal

Predicting House Prices Using Machine Learning

### Hypothesis

The project aimed to foretell the housing predictions was using data science and analytics. Here project was about using advanced regression techniques and even implement them on neural networks to forecast the prices of changes.

### The Problem / Short description of your idea

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I always wonder why house prices always skyrocket even it not much worth it. I have researched over the other areas or even other countries as well this situation was everywhere.

I have looked upon several examples. Every buyer has one common thing. The buyer was unexplored how much price was previously sold, and even they have it. The buyer will not use statistical analysis to price negotiations. Simply buyer tries to negotiate the price based on the realtor prices.

So, I firmly believe this project will help buyer will help negotiate the price on the previous costs, not based on the realtor.

### The project aim(s)

The project's overall aim was to predict the house price based on previous sold prices and changes in the overall years.

For successfully handling this project, I will use these concepts it.

1. Data wrangling
2. Statistical Analysis
   1. Bayesian Statistics
3. Machine Learning Techniques
   * 1. Regression Techniques
     2. Validation
     3. Hyperparameters fine-tuning
4. Neural Networks
5. Publishing and visualising final reports.

### The project objectives

* The primary objective of this project was to prevent the loss of buying a house at high prices.
* Even it can eradicate spikes on housing markets over prices.
* The user will gain some understanding of the locality.

### How you plan to conduct your research

This project divided into four tasks

1. Data cleaning

The data cleaning process was crucial to check any missing values and perform data transformations if necessary.

1. Analysis on data

Fundamental analysis of data is mandatory to understand how each feature works and how each element relates to the other.

1. Applying machine learning and Neural Networks

Data will feed into machine learning algorithms. Upon performing, several algorithms will choose a working model.

1. Finalising the model and reports

Once finalised model, an End-to-end model project will be done. So, the user can feed the data and fetch the reports.

### Project plan

This project semester has 14 weeks to complete this project.

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Implementation in Weeks** | **2** | **4** | **6** | **8** | **10** | **12** | **14** |
| Data Cleaning |  |  |  |  |  |  |  |
| Analysis |  |  |  |  |  |  |  |
| ML & Neural Networks |  |  |  |  |  |  |  |
| Final Model |  |  |  |  |  |  |  |
| Final Documentation |  |  |  |  |  |  |  |

### References/ Bibliography

This whole project based these books.

* + Walpole, R., 2016. *Probability & statistics for engineers & scientists, global edition*. 9th ed. [Place of publication not identified]: Pearson Education Limited.
  + Géron, A. and Demarest, R., 2019. *Hands-on machine learning with Scikit-Learn and TensorFlow*. 2nd ed. Sebastopol (Clif.) [etc.]: O'Reilly.