

Final Project  
Case Study in Finance - House Rooms Classification

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**Abstract**

In FinTech Mortgage business investment (Mortgage Portfolio) decisions are made based on a house and its rooms.

Therefore, having the ability to classify the rooms of a house to identify the tyep of room such as diningroom vs bedroom vs et al enables these investment decisions.

The code in this project helps with binary classification of Dining room vs Bedroom by using

* Convolutional Neural Networks in Part 1
* Pre-trained Convolutional Neural Network VGG16 in Part 2 and
* Pre-trained Convolutional Neural Networks - Xception in Part 3

The data set leveraged is from Kaggle’s [Home Rooms Image Data Set](https://www.kaggle.com/datasets/robinreni/house-rooms-image-dataset/data)\*.

This Kaggle Data set has 1248 bedroom pictures and 1158 dining room pictures.

With the Part 1, Convolutional Neural Network the validation accuracy was 82.5%.

With Part 2, Pre-trained Convolutional Neural Network VGG16 and after fine tuning the validation accuracy is 95% and test accuracy is 94.04%.

**Final Result**

**With Part 3, Pre-trained Convolutional Neural Networks - Xception and after fine tuning the validation accuracy is 97% and test accuracy is 98.13%.**

You Tube Videos

* Two minute (short): https://youtu.be/uqDYF-L85D8
* 15 minutes (long): https://youtu.be/GPKKnFPIraM
* [https://www.kaggle.com/datasets/robinreni/house-rooms-image-dataset/data](https://colab.research.google.com/corgiredirector?site=https%3A%2F%2Fwww.kaggle.com%2Fdatasets%2Frobinreni%2Fhouse-rooms-image-dataset%2Fdata)