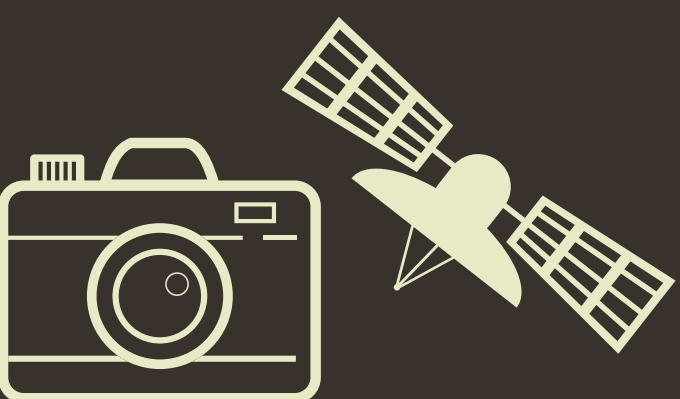


HOUSE PRICE PREDICTION USING SATELLITE IMAGERY



SPARKY REALTORS
GROUP 5



TEAM MEMBERS



SPARKY REALTORS

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INTRODUCTION

Aditya

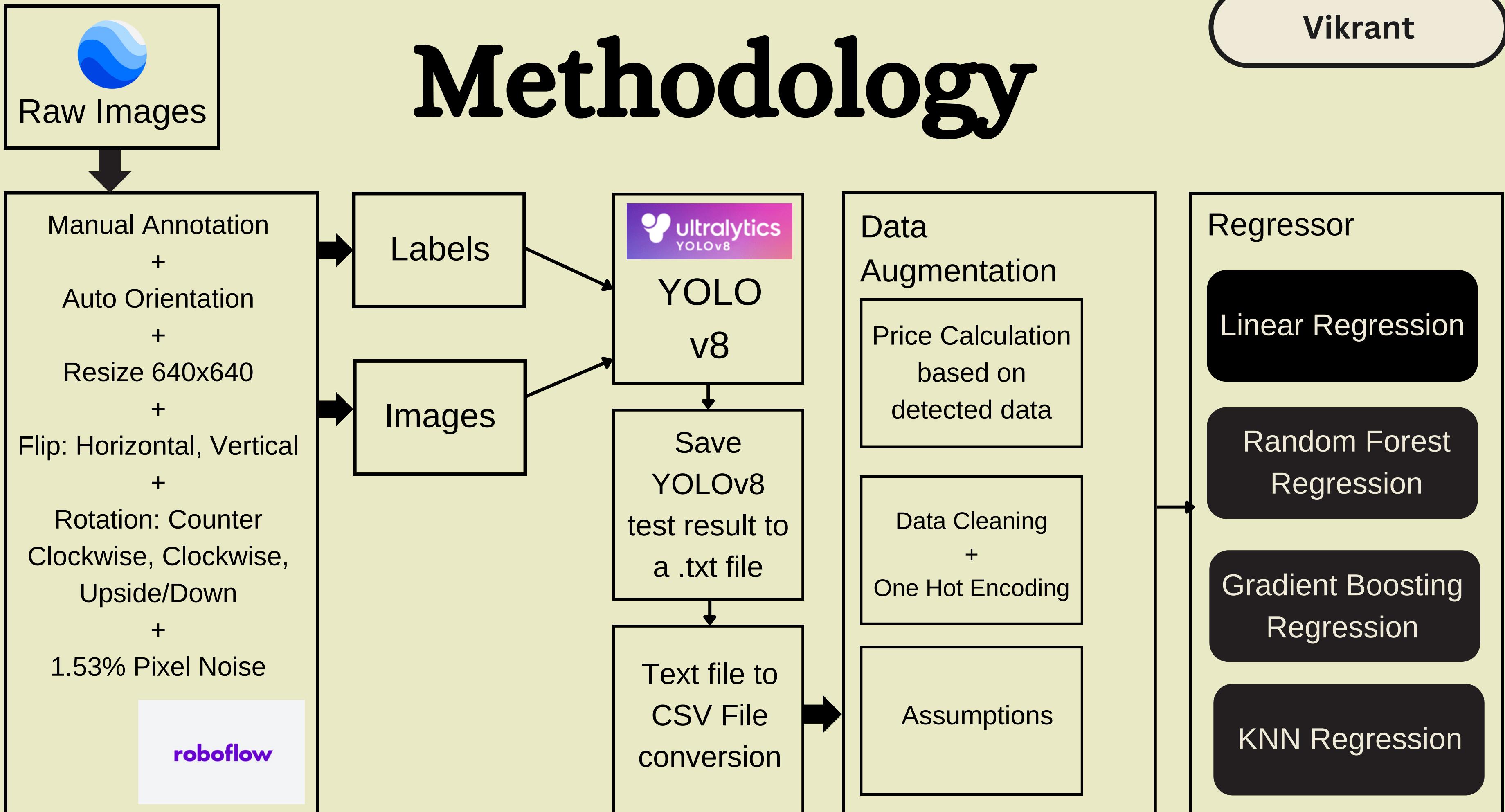
- Traditional methods for predicting house prices lack use of comprehensive satellite imagery and may be subjective.
- Integrating satellite imagery and machine learning offers a potential solution.
- However, scalable and robust methodologies are needed.
- Our project aims to develop a reliable model using satellite imagery to predict house prices accurately.
- This will enhance real estate valuation processes.



Advantages of predicting price using Satellite Imagery

- 1 Large Coverage
- 2 Scalability
- 3 Time saving
- 4 Foolproof

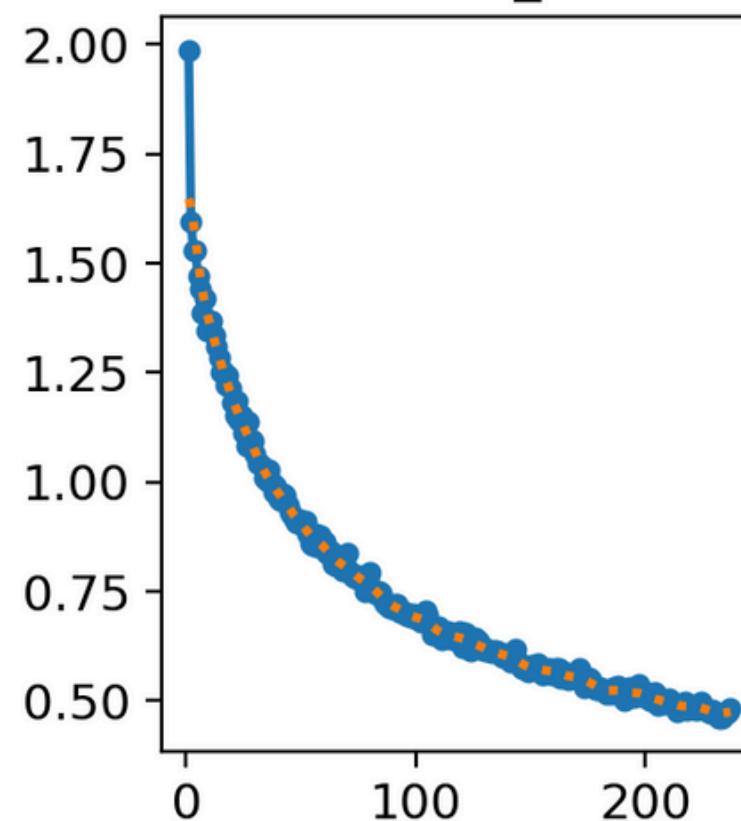
Methodology



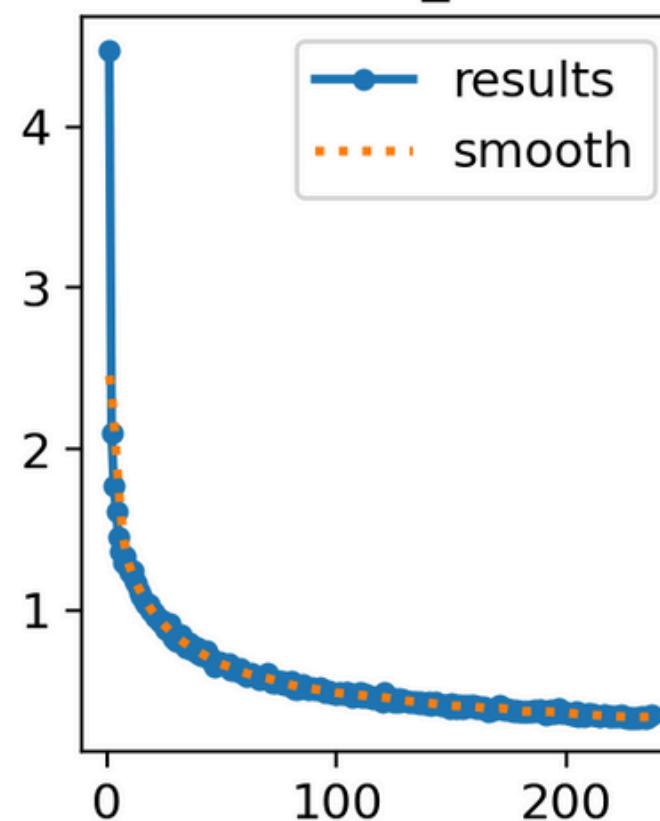
Part 1 : Feature Detection and Extraction



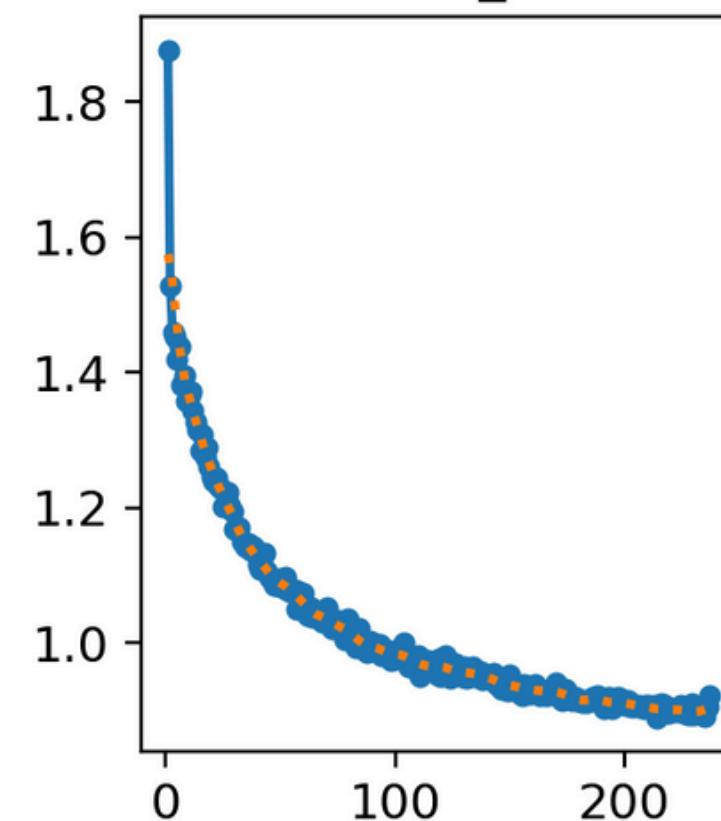
train/box_loss



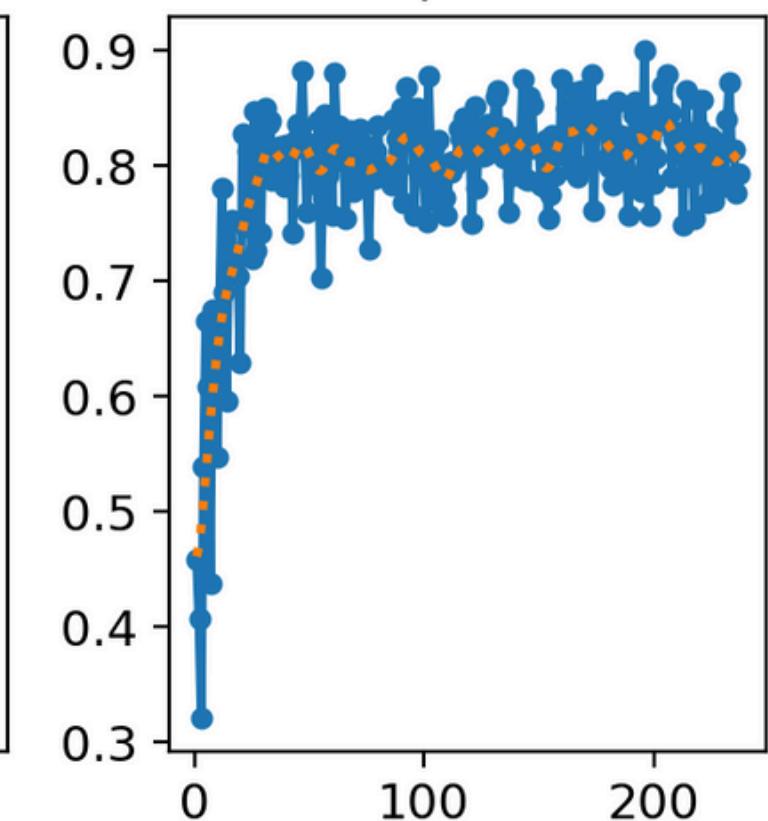
train/cls_loss



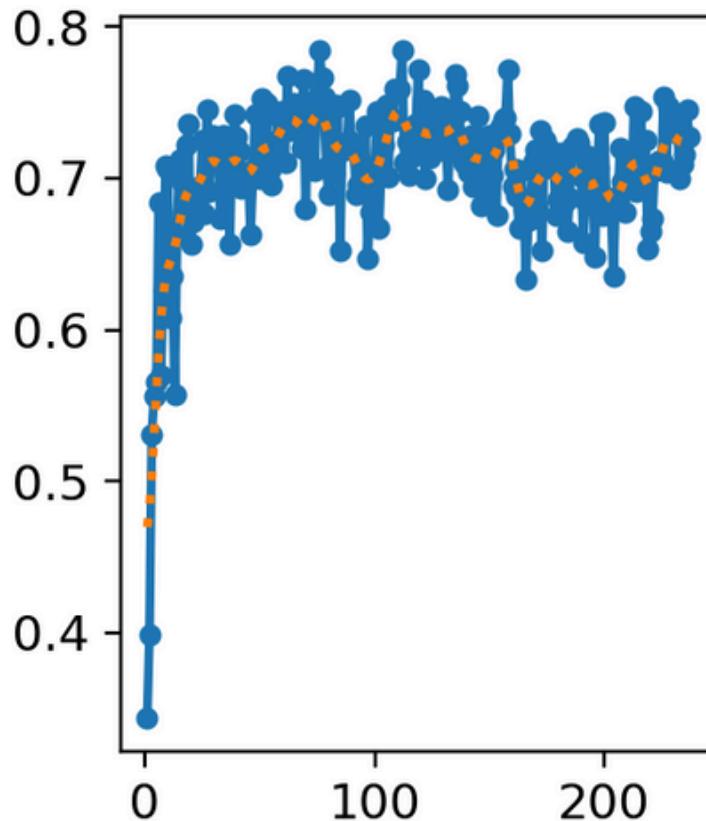
train/dfl_loss



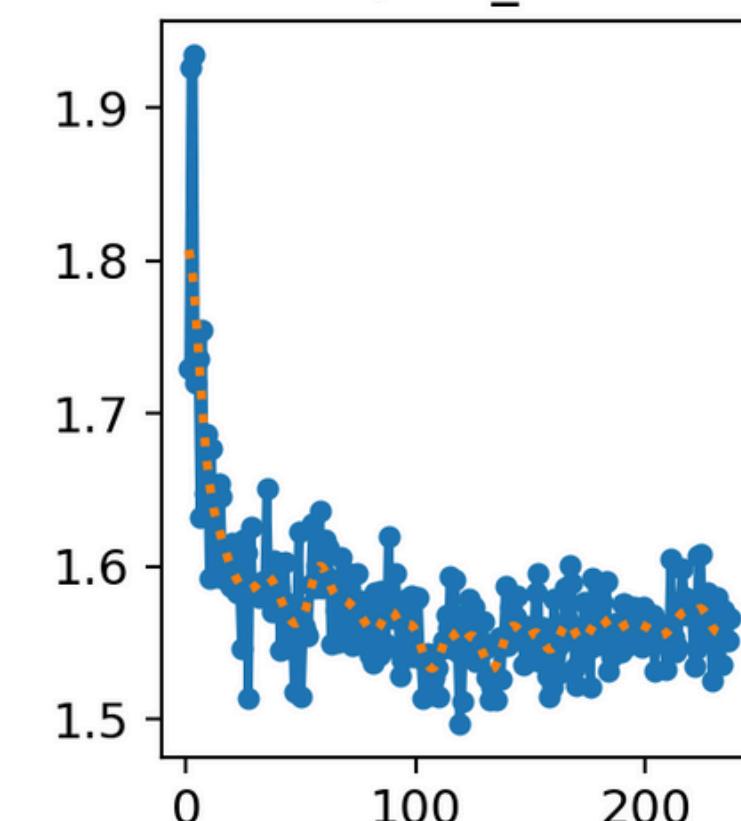
metrics/precision(B)



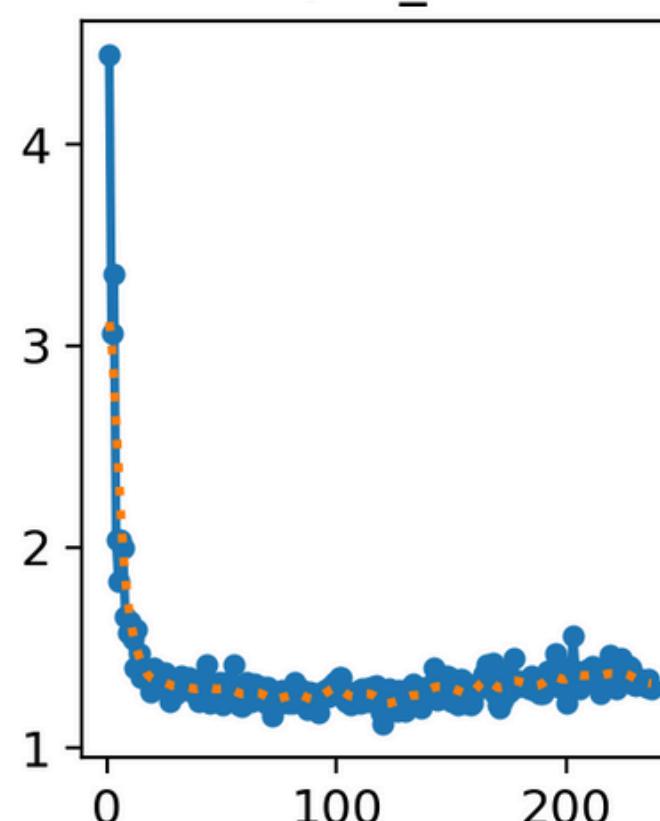
metrics/recall(B)



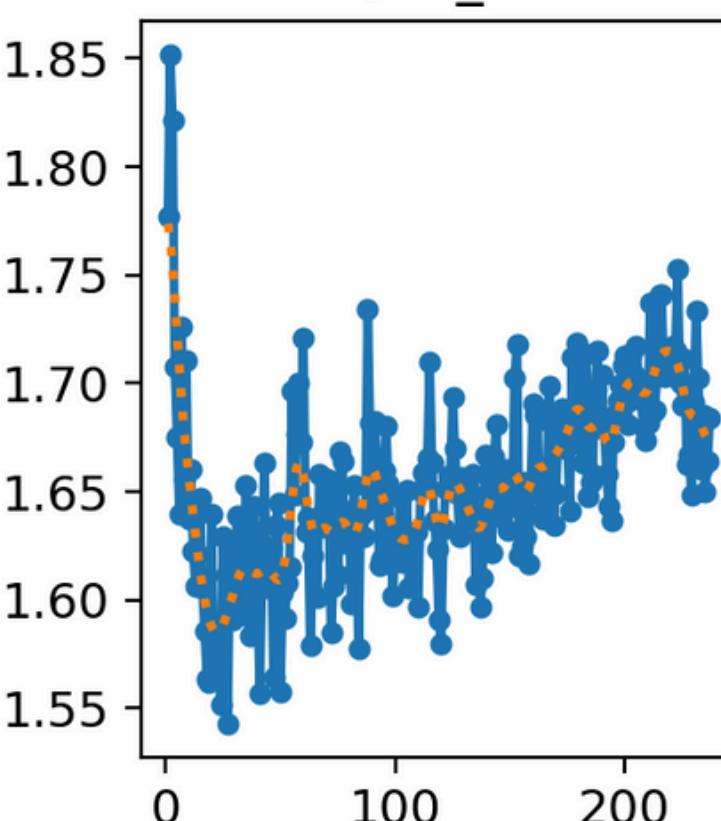
val/box_loss



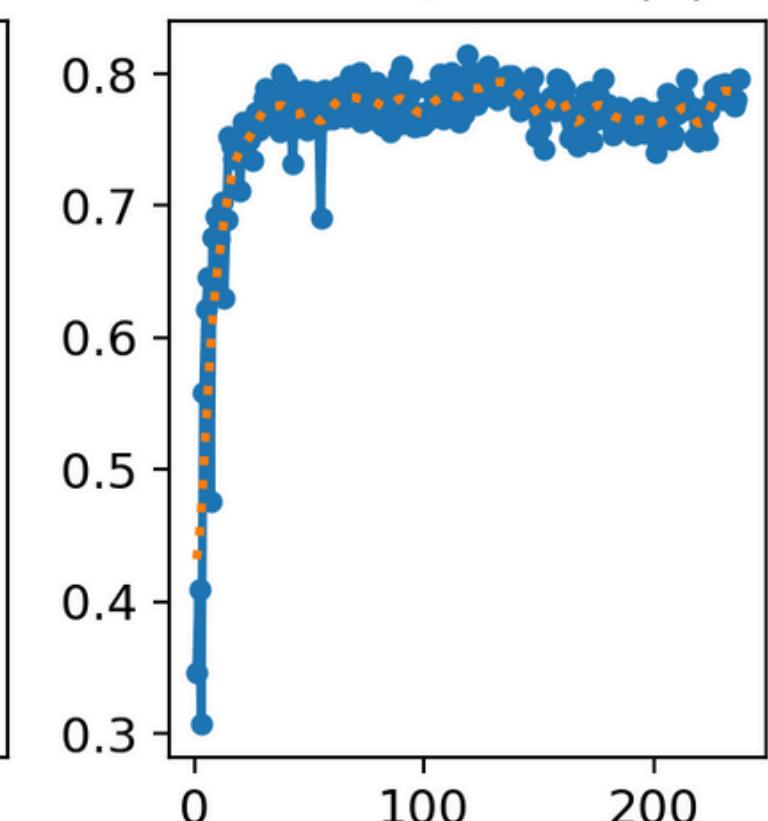
val/cls_loss



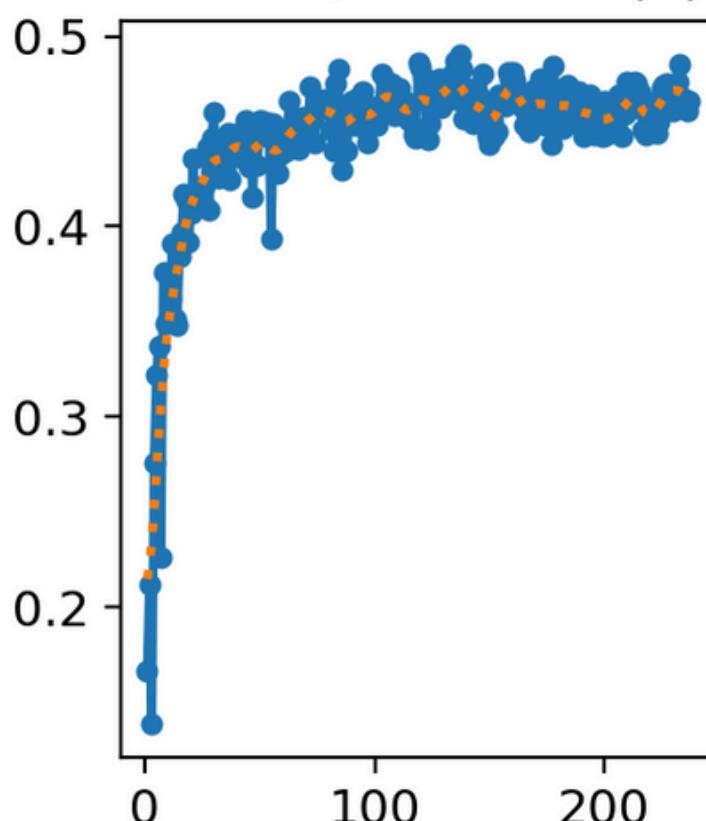
val/dfl_loss



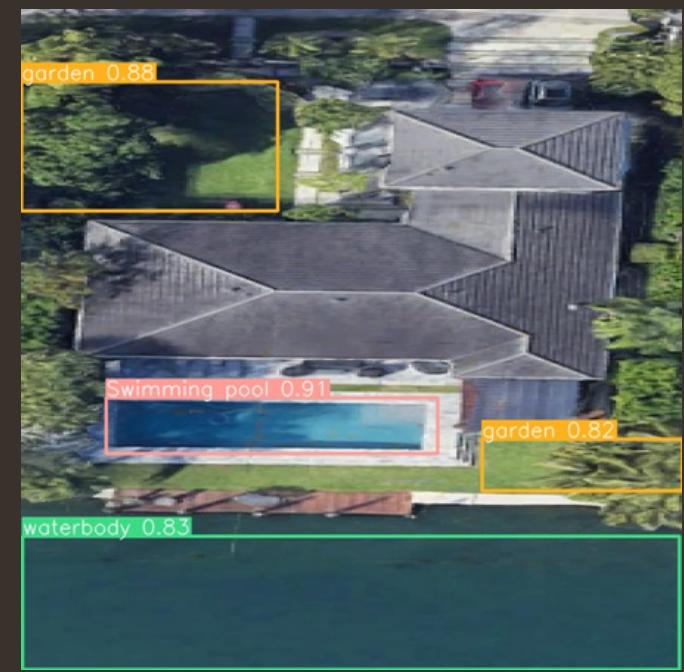
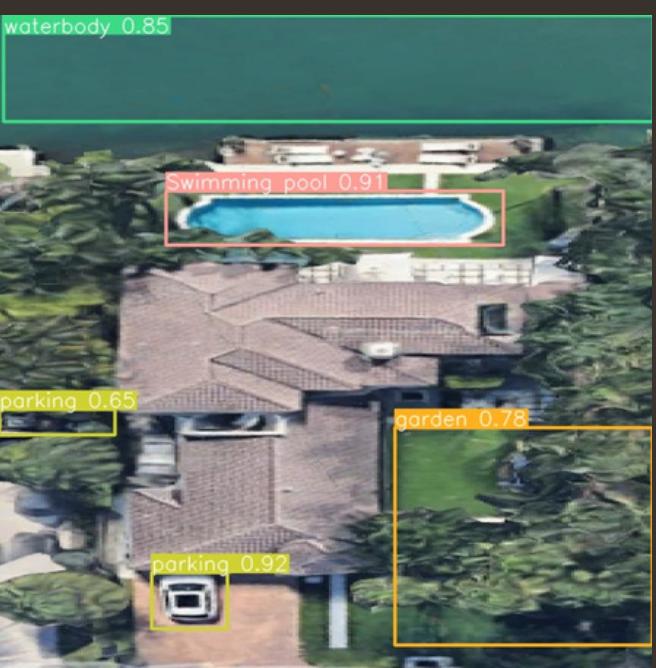
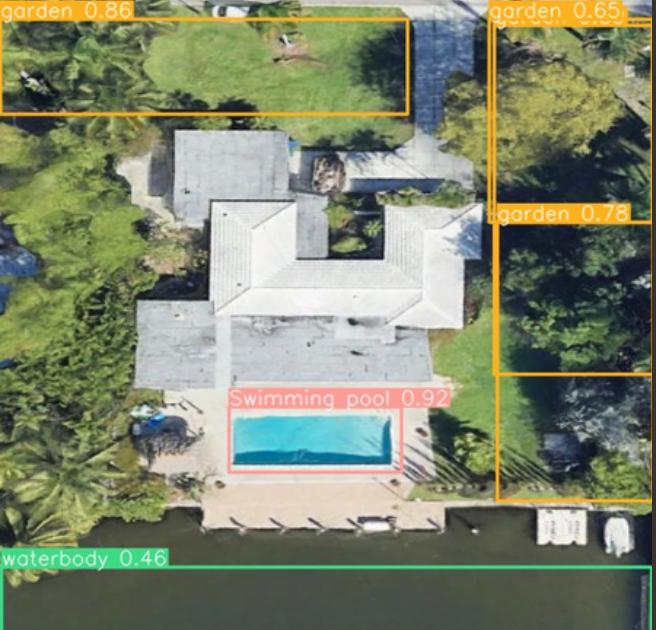
metrics/mAP50(B)



metrics/mAP50-95(B)



Detection Results



Detection Results:



Feature
Swimming Pool
Tennis Court
Parking Space
Waterbodies
Gardens
Boats
Solar Panels



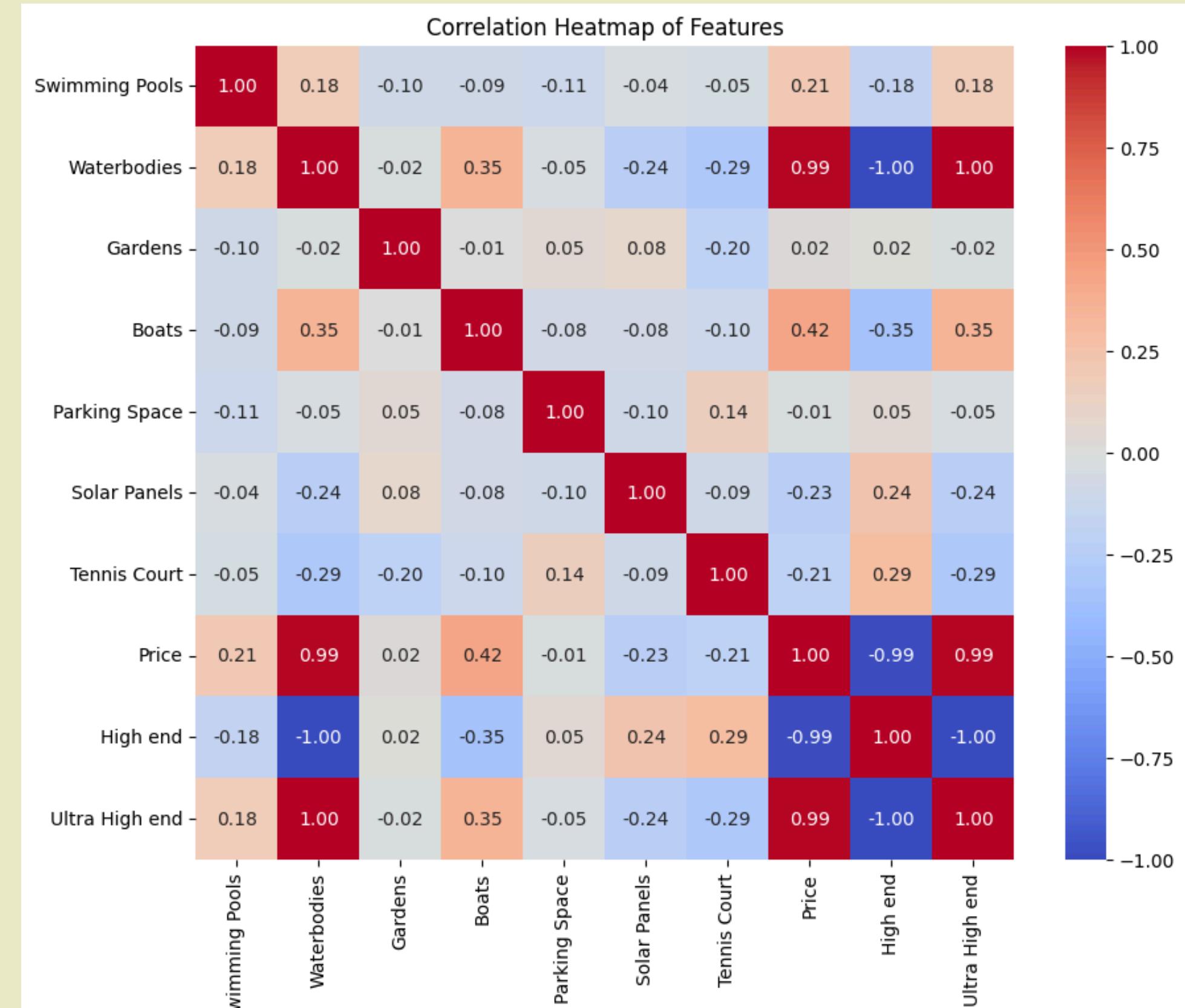
Part 2 :Data Augmentation

Feature Price Assumption

Feature	Value in USD
Swimming Pool	1 million
Tennis Court	5 million
Parking Space	1 million
Waterbodies	30 million
Gardens	5 million
Boats	2 million
Solar Panels	0.5 million

- . Base Price : 20 million
- High(Price > 20 million and Price<30 million)
- Ultra High(Price > 30 million)

Covariance Heat map



Feature in CSV Format

Swimming Pools	Waterbodies	Gardens	Boats	Parking Space	Solar Panels	Tennis Court	Price	High end	Ultra High end	USD Price(M)
1	0	2	0	1	0	0	23000000	1	0	23
1	0	5	0	0	3	0	25000000	1	0	25
1	1	2	0	1	0	0	53000000	0	1	53
1	1	0	0	0	0	0	51000000	0	1	51
1	0	0	0	1	0	1	27000000	1	0	27
1	0	0	0	0	0	0	21000000	1	0	21
1	0	0	0	0	0	0	21000000	1	0	21





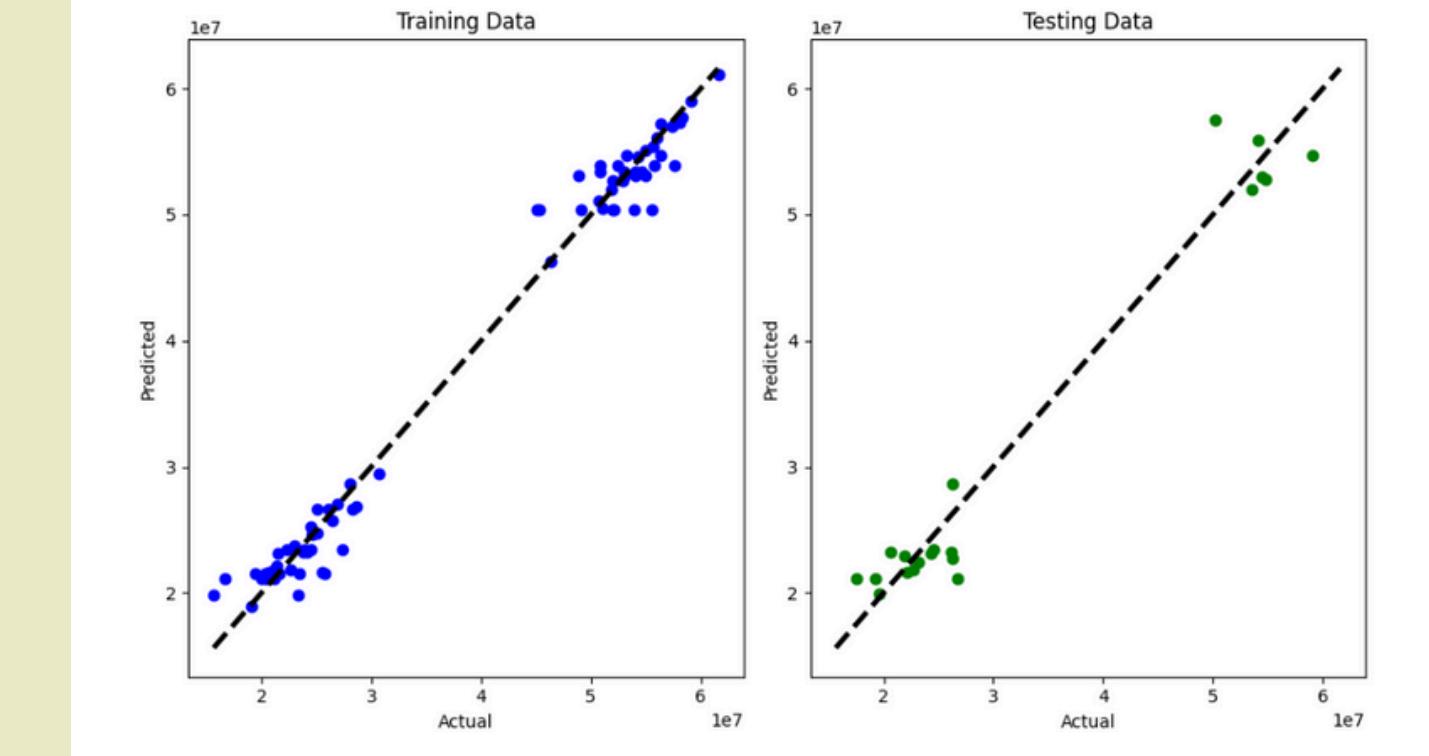
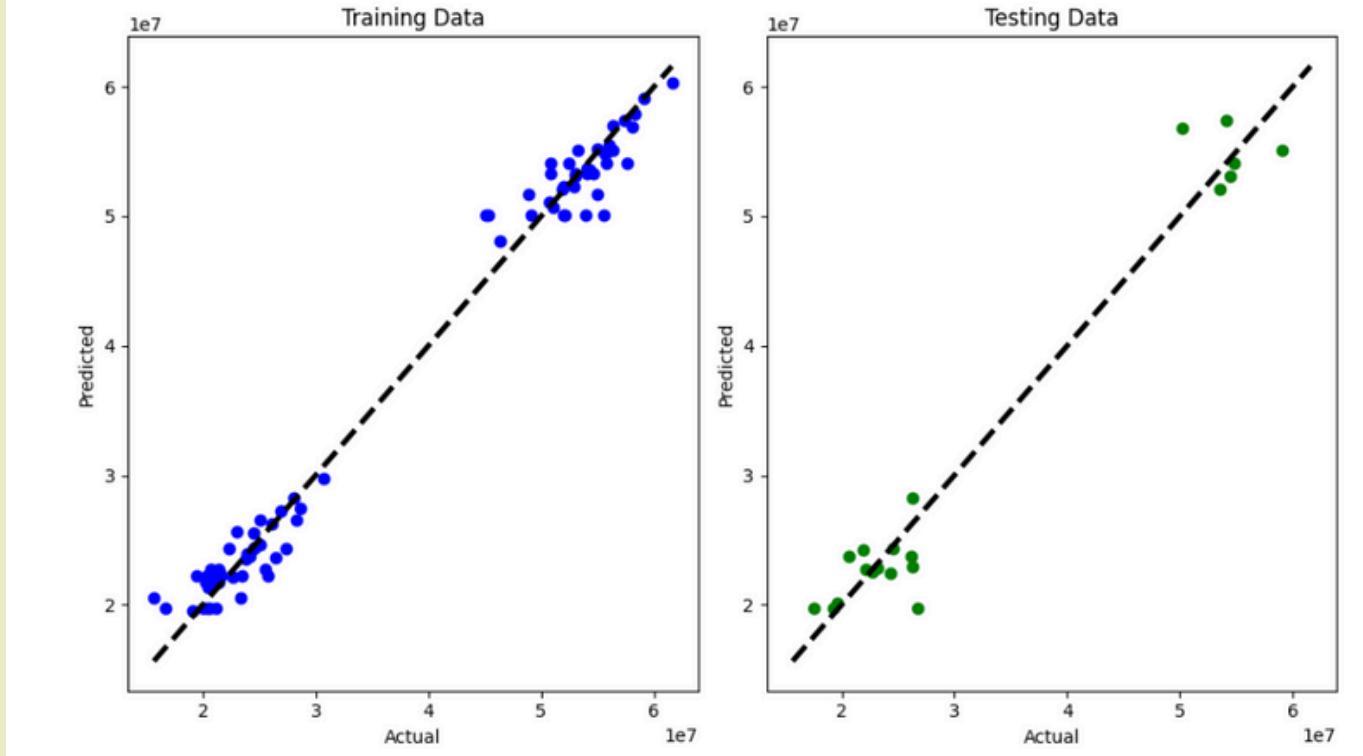
Part 3:Prediction

PRICE PREDICTION

S No.	ML Algorithm	Training Accuracy	Testing Accuracy
1	Linear Regresion	98%	96%
2	Random Forest	97%	96%
3	GBM	98%	96%
4	KNN	96%	77%

GRAPH PREDICTION & OVERFITTING

Vishrut & Vikrant



Linear Regression(Noise)



Gradient Boosting method

Possible Solutions for Overfitting:

- Increasing the Image DataSet
- Increasing Linear Independence
- Adding more locations
- Use of Segmentation Models



- More Accurate input by changing from 2D to 3D using SLAM
- Try to give more input to prevent overfitting
- Add Real Time Video Support in Drones which is possible with YOLOv8
- Include More cities
- Measure Earthquake and Flood Damage on Infrastructure

*Thank
you!*

