



House Price Forecaster

Collaborators

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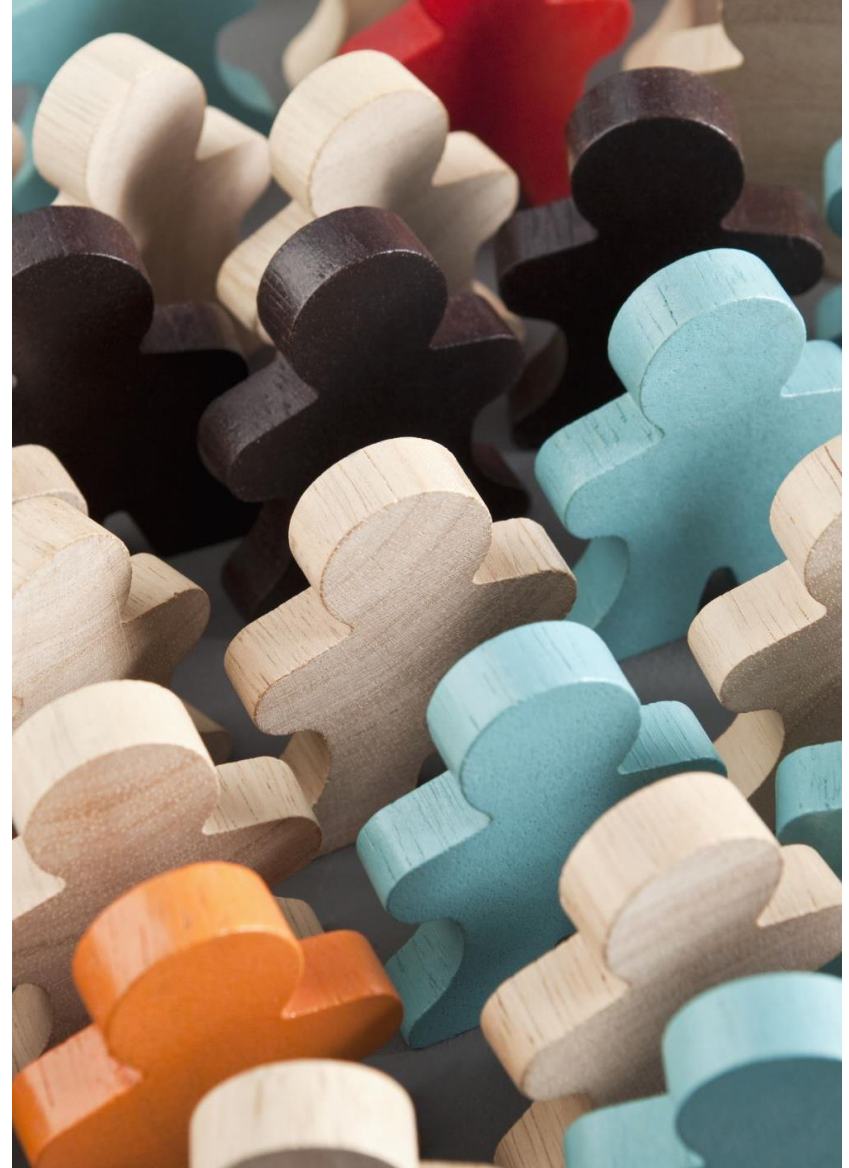


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Introduction

- Forecasting the prices of residential homes in Ames, Iowa, US using machine learning.
- This project involves creating a regression model to forecast house prices based on various features.



Data Source

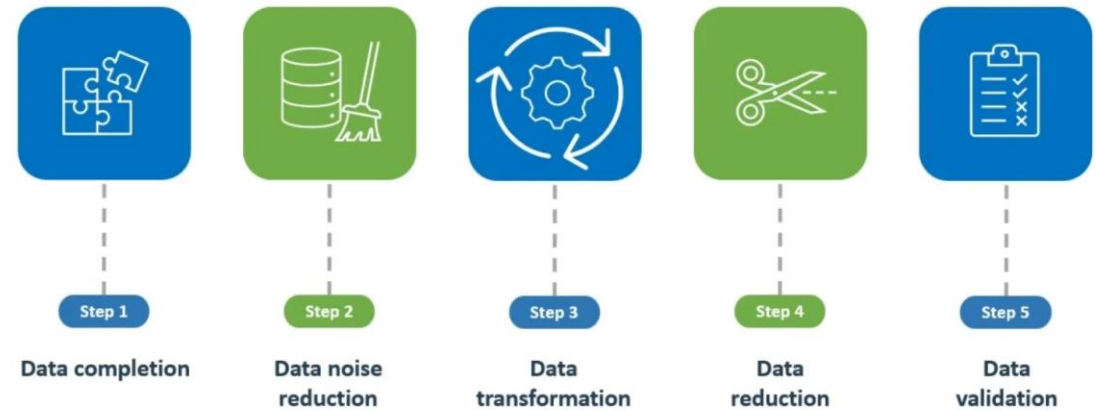


Data preprocessing

➤ Initial Data Preprocessing

➤ Final Data Preprocessing

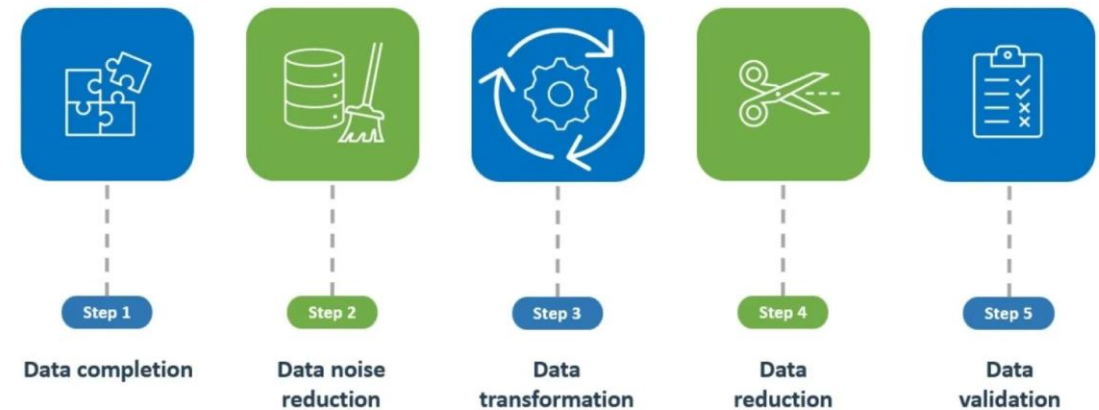
Steps for data preprocessing



Initial Data Preprocessing

- Impute Missing values
- Apporprate data types
- Binning

Steps for data preprocessing

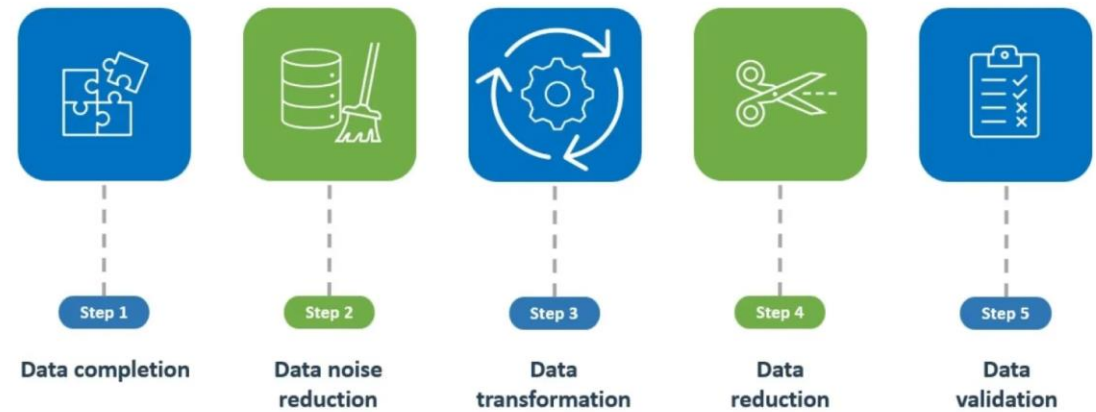


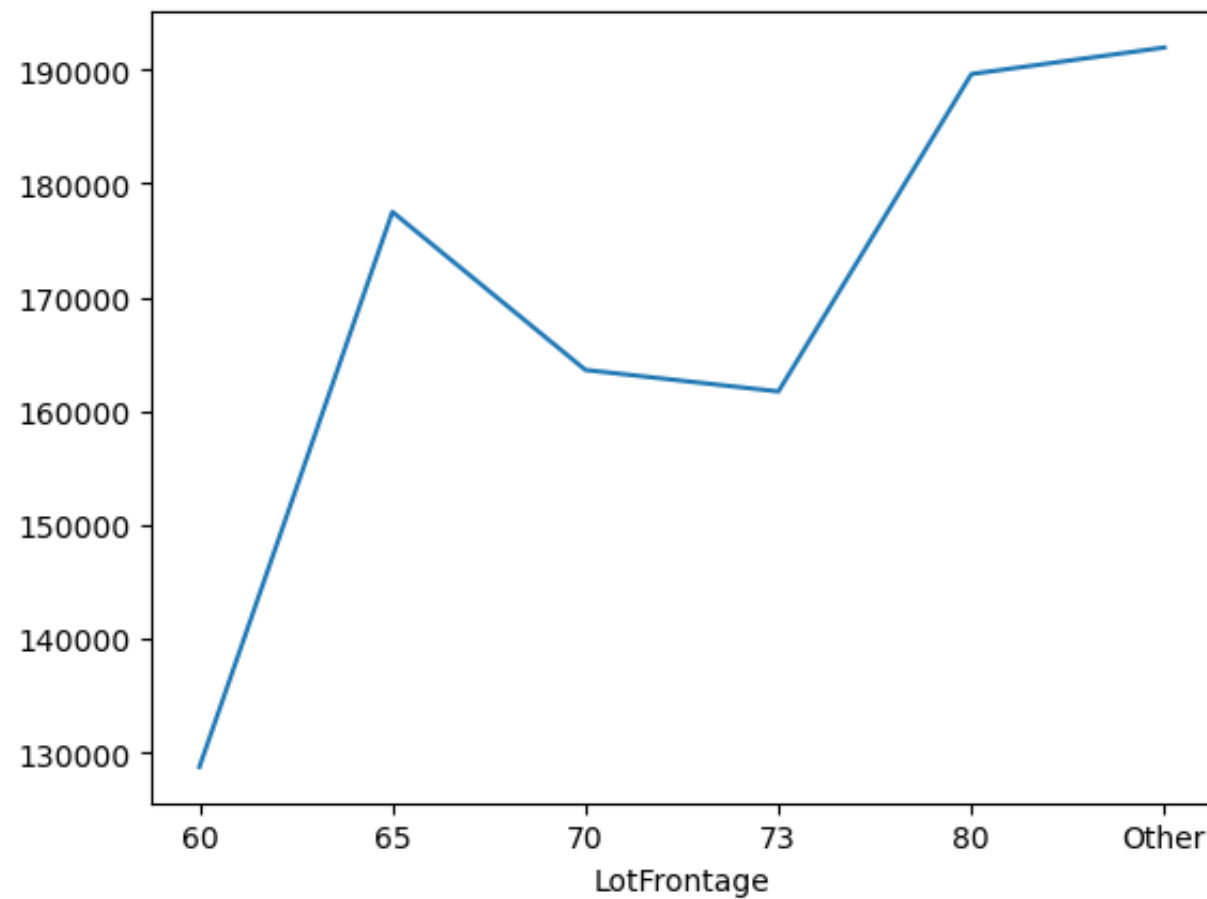
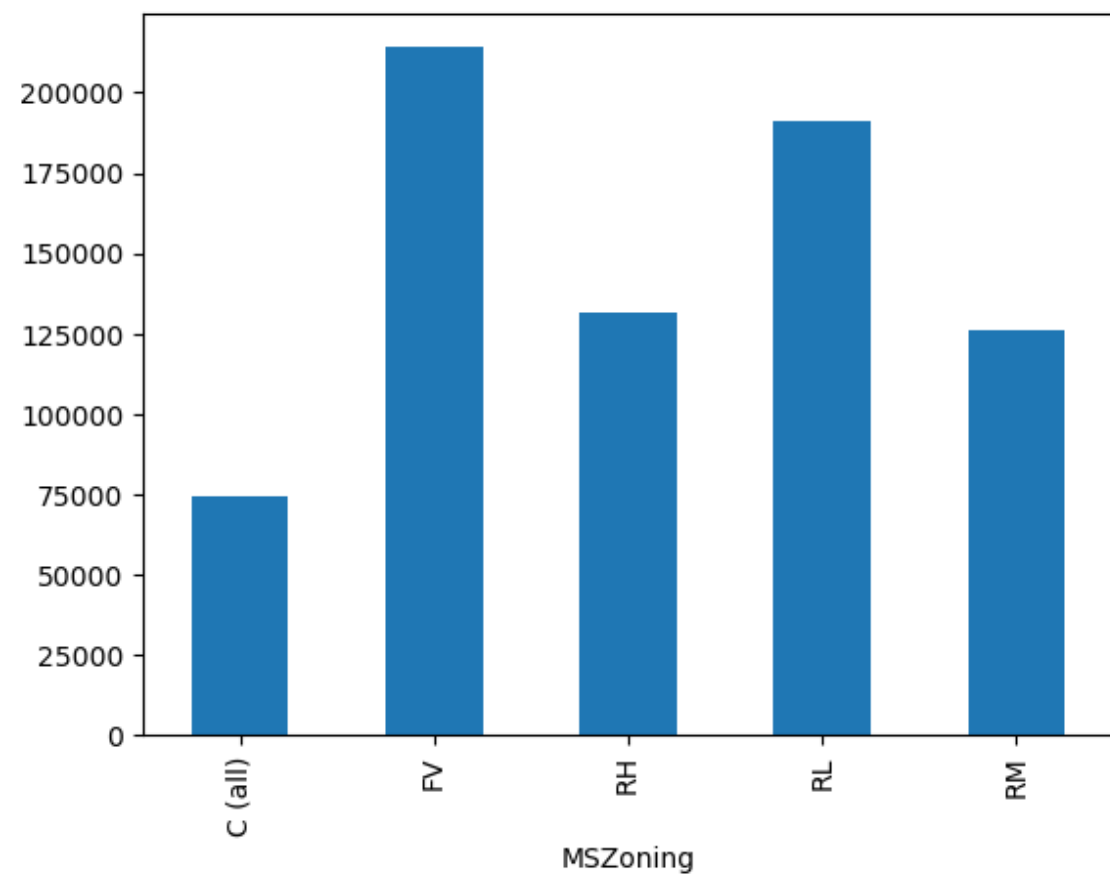
Final Data Preprocessing

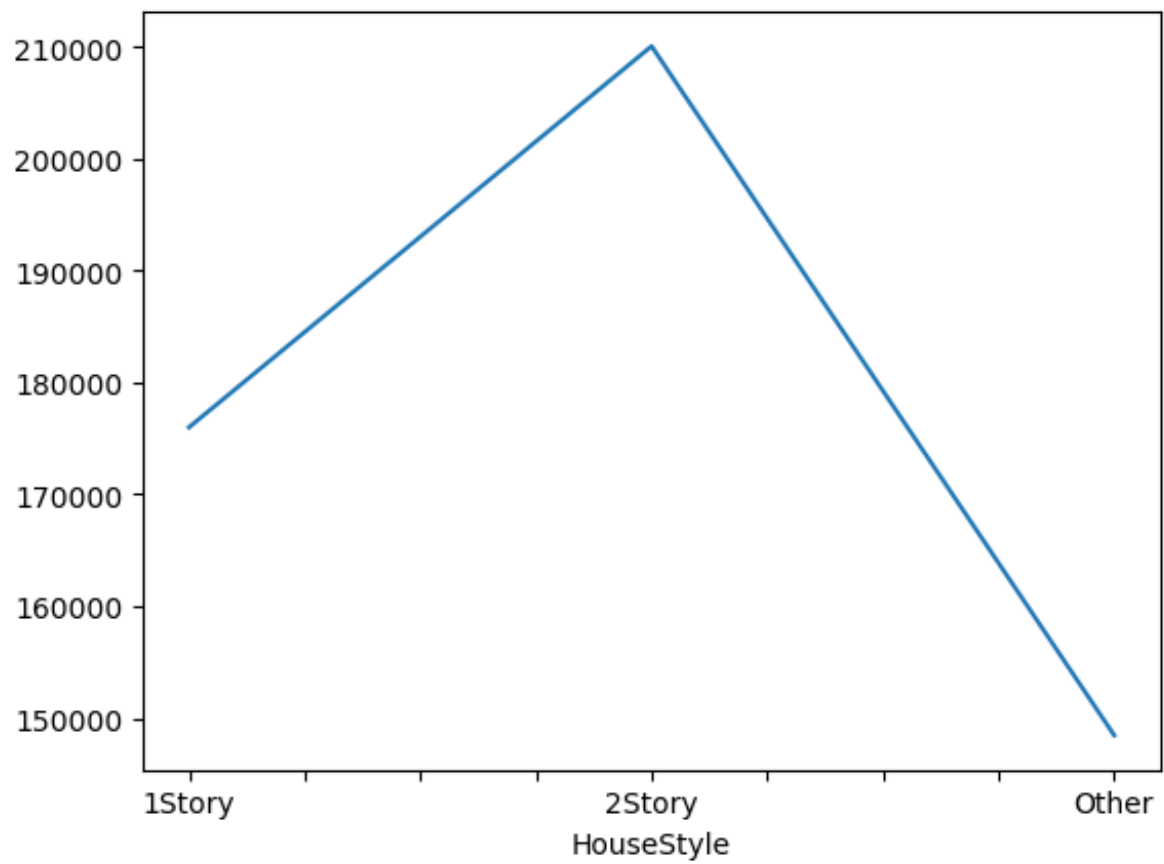
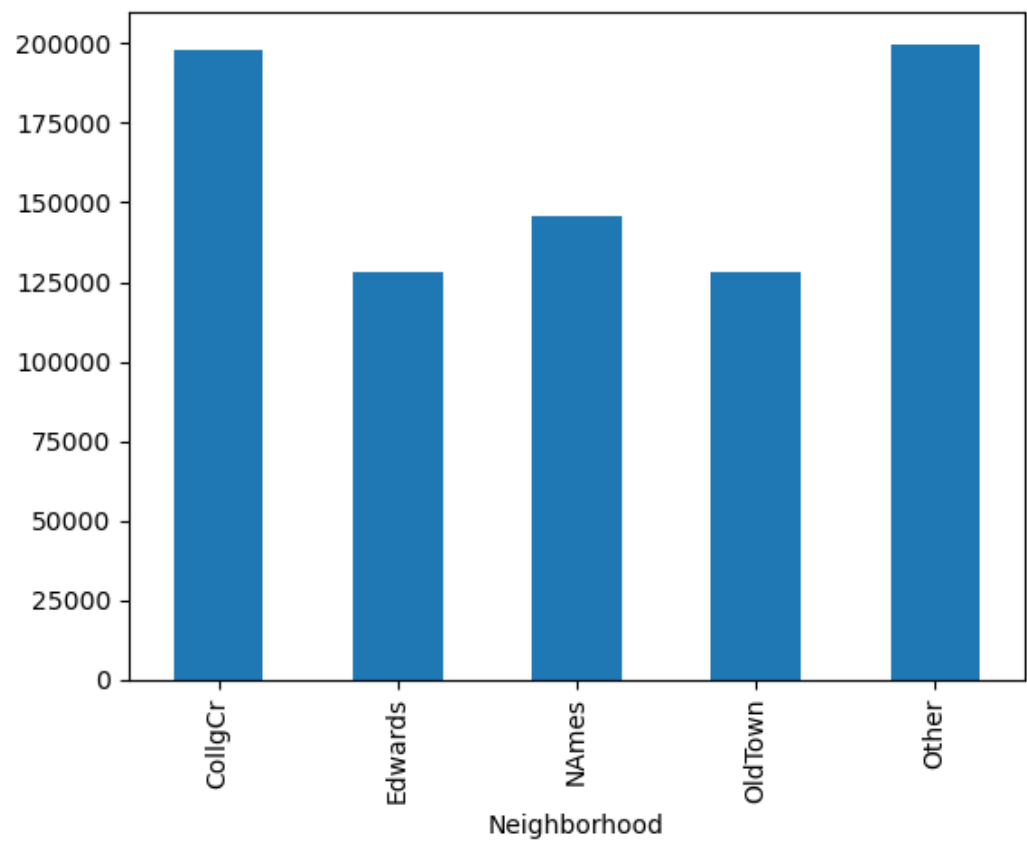
➤ Scaled data

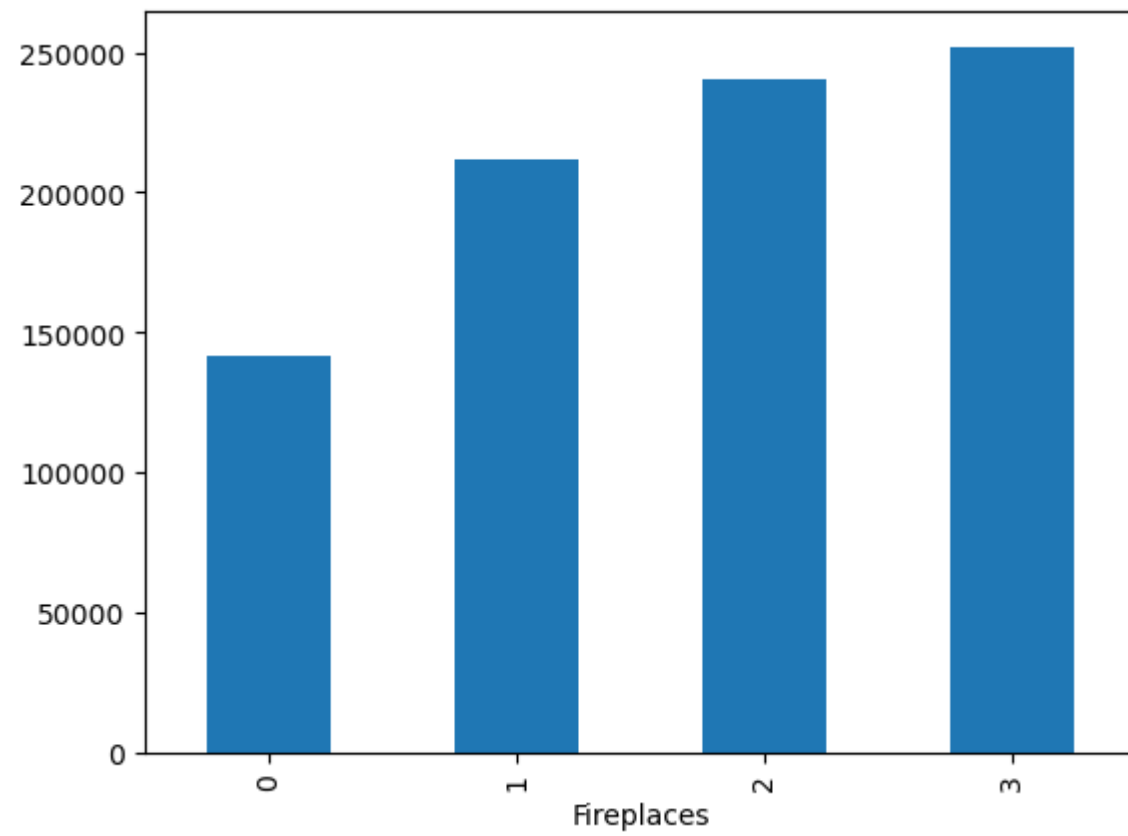
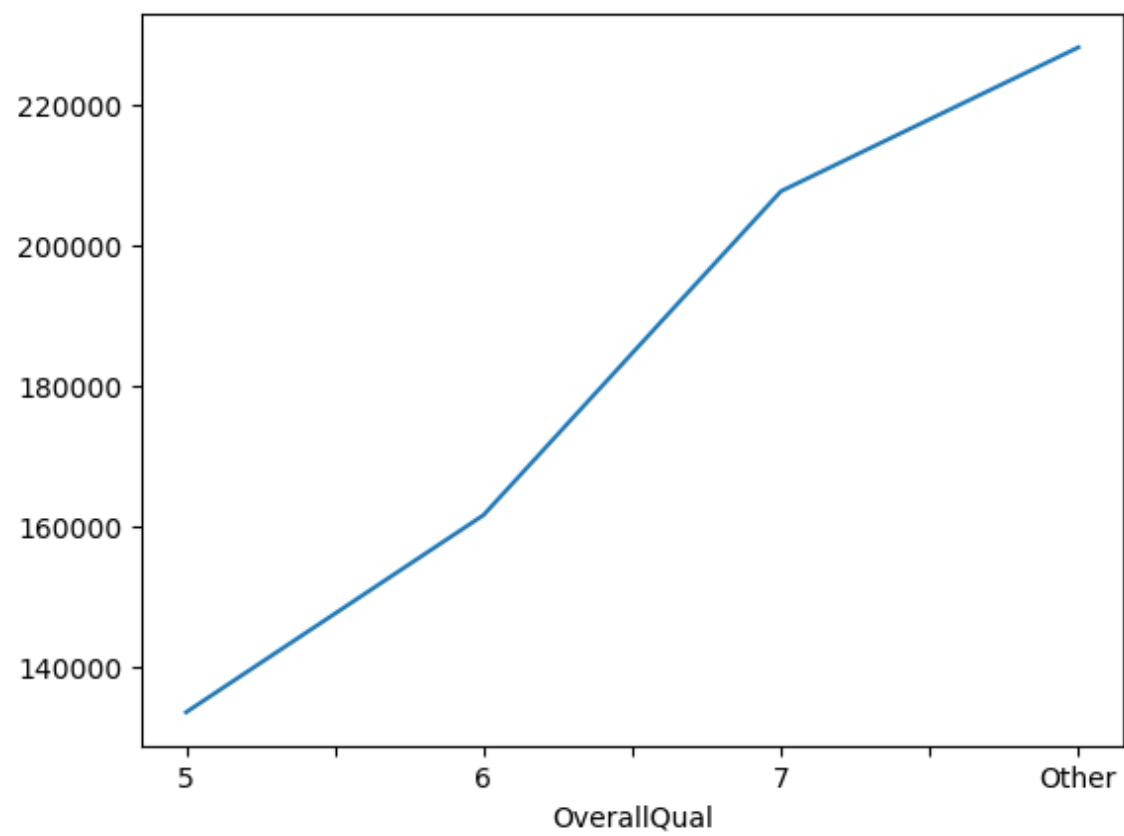
➤ Hot Encoding

Steps for data preprocessing











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HOUSE PRICE PREDICTION

USING MACHINE LEARNING TECHNIQUES

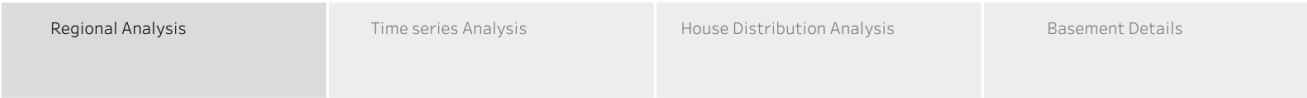


Ames is best known as the home of Iowa State University (ISU), with leading agriculture, design, engineering, and veterinary medicine colleges.

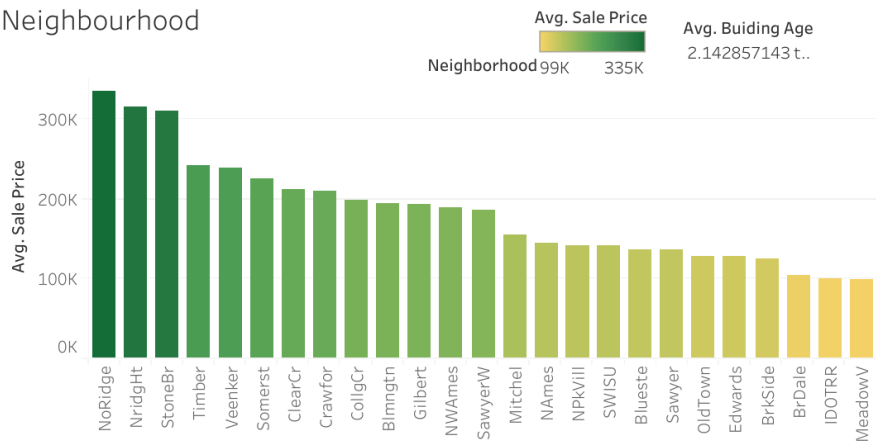
Click on the House price Analysis to view the entire analysis on house prices.

[House Price Analysis](#)

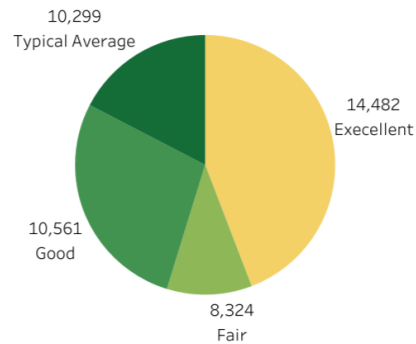
House Price Analysis



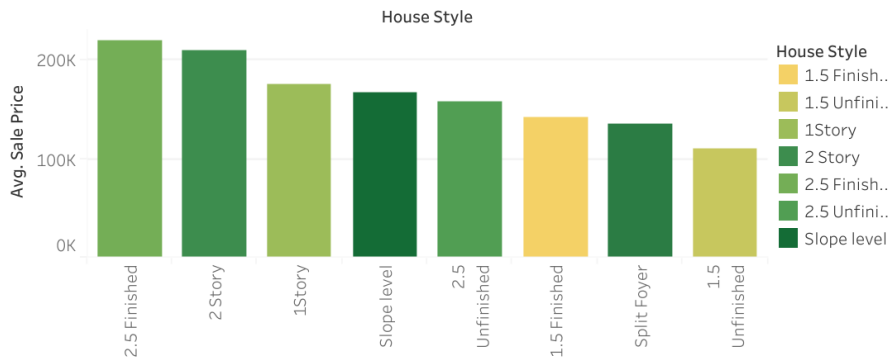
Neighbourhood



Exterior Quality



House Style Price Correlation



House Price Analysis

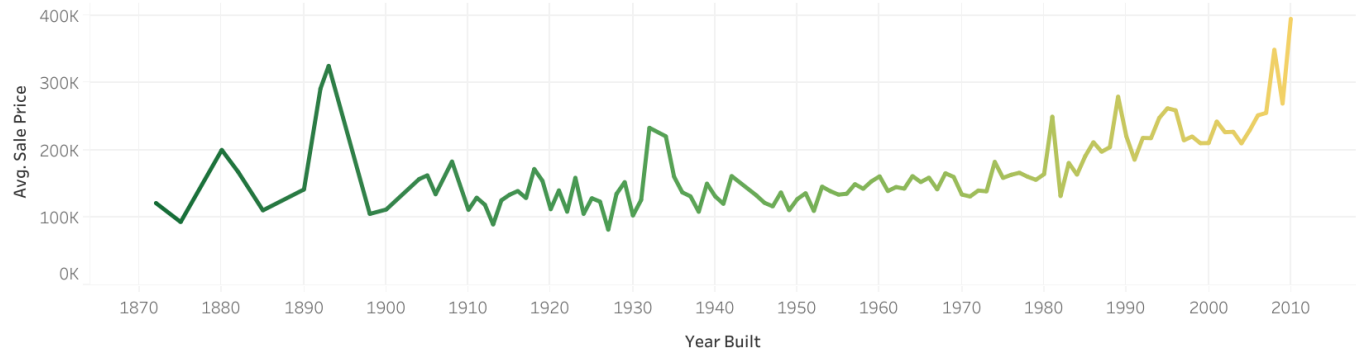
Regional Analysis

Time series Analysis

House Distribution Analysis

Basement Details

Year Built



Year Sold



Year Built
1872 to 2010

Yr Sold
2006 to 2010

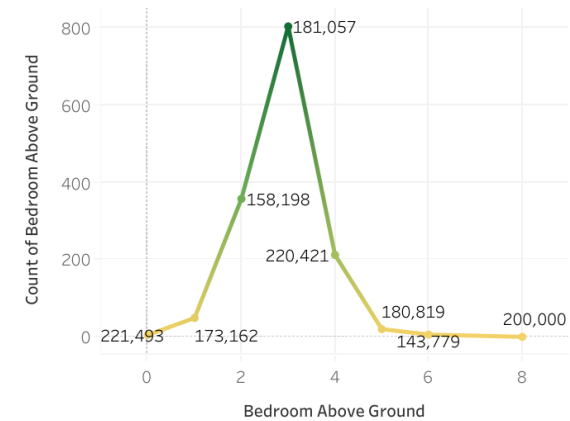
Building age Vs House style

House Style	Min. Buiding Age	Avg. Sale Price
1.5 Finished	5	143,117
1.5 Unfinished	51	110,150
1Story	0	175,985
2 Story	0	210,052
2.5 Finished	69	220,000
2.5 Unfinished	66	157,355
Slope level	1	166,703
Split Foyer	1	135,074

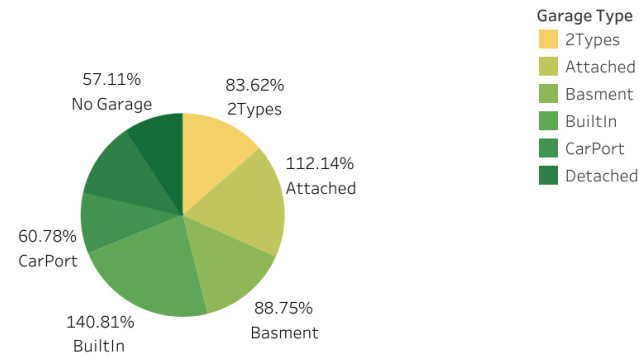
House Price Analysis

Regional Analysis	Time series Analysis	House Distribution Analysis	Basement Details
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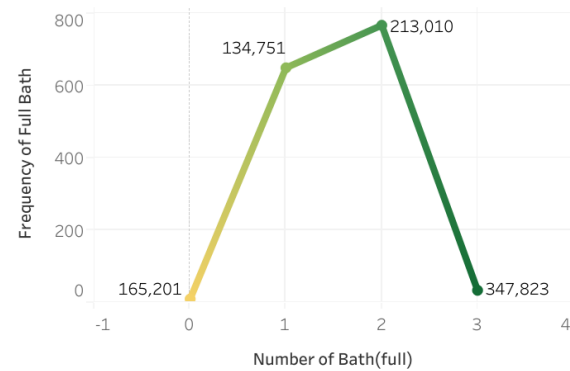
Bedroom Distribution



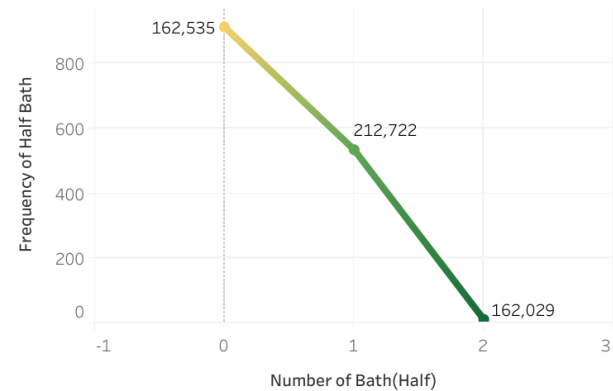
Garage Type



Above Ground Bath(Full)



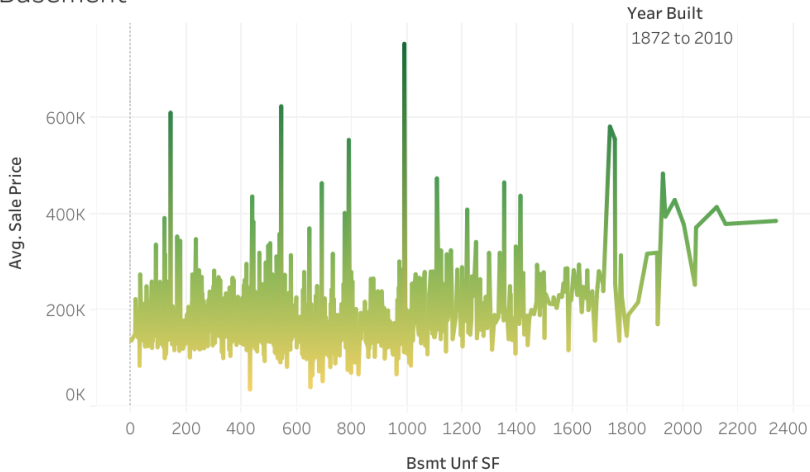
Above Ground Bath(Half)



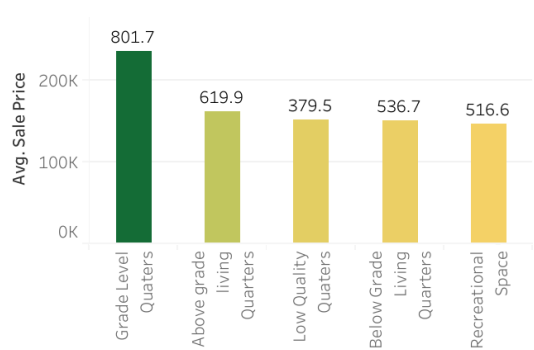
House Price Analysis

Regional Analysis	Time series Analysis	House Distribution Analysis	Basement Details
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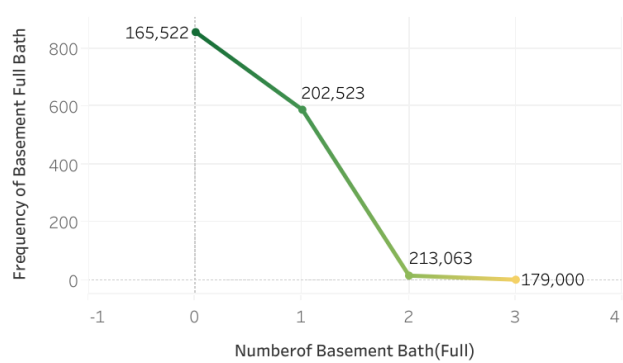
Basement



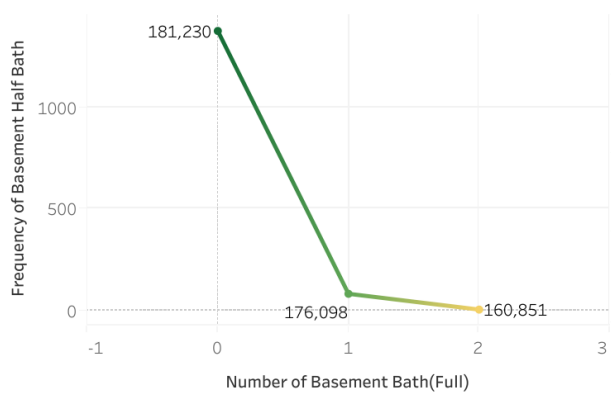
Basement Finish



Basement Full Bath

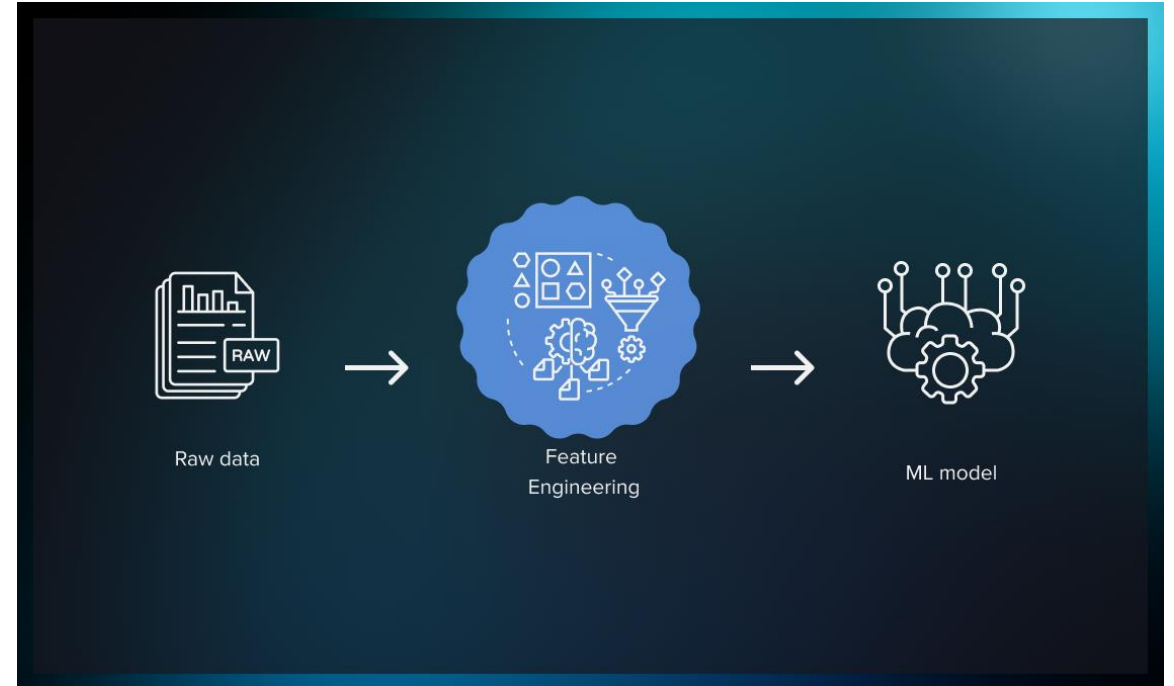


Basement Half Bath

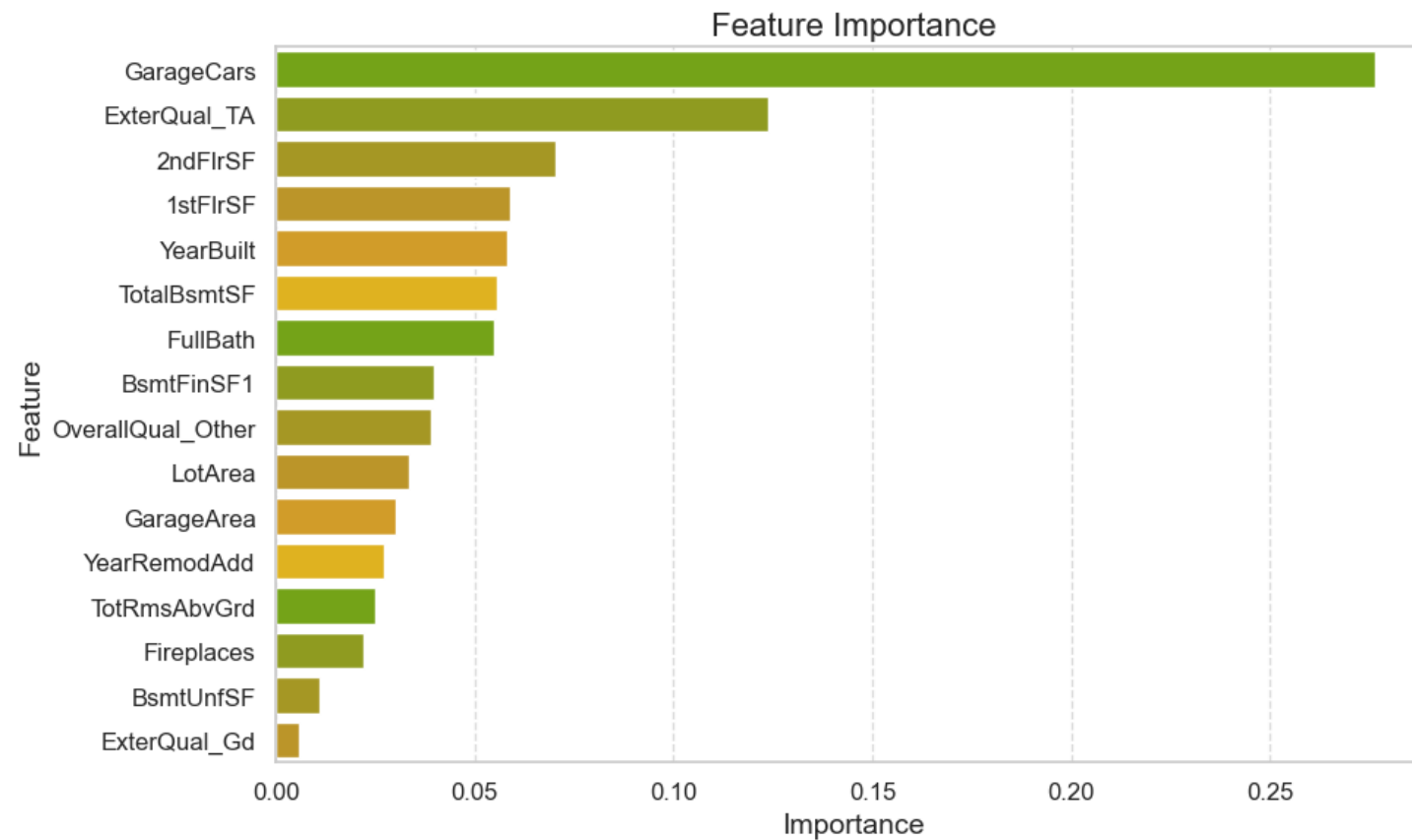


Feature Engineering

- Random Forest Regressor
- Split and Scale Data
- Feature Selection



Feature Engineering



Machine Learning Model

➤ Linear Regression

➤ Neural Network Model



Neural Network Model

➤ Initial Data

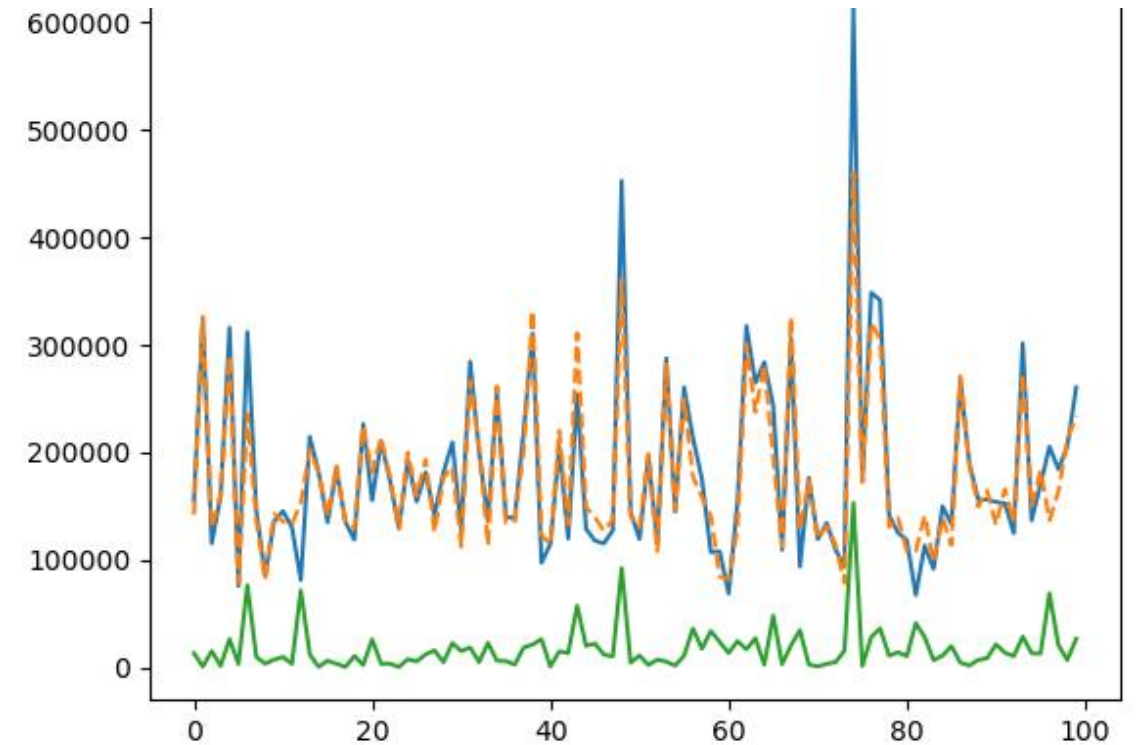
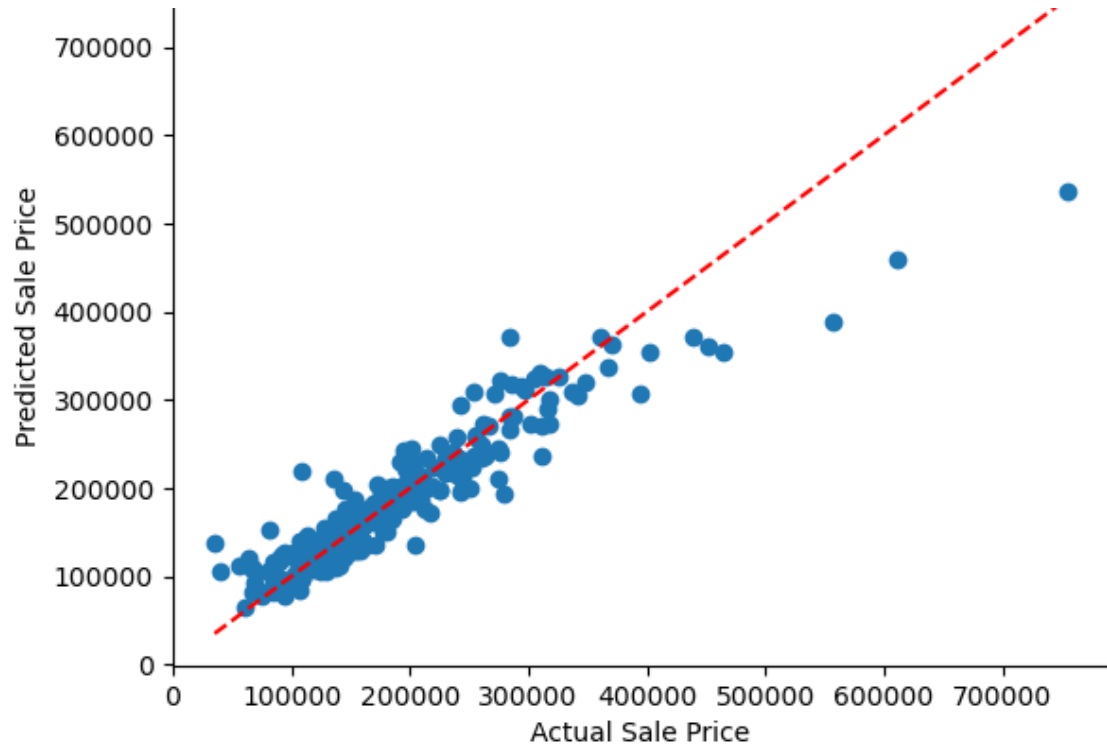
➤ Final Data (Selected Features)



		Final Data Neural Netwrok Model Results									
		No. of Neurons in Hidden Layers									
	No. of Neurons in Input Layer	First	Second	Third	Four	Five	No. of Neurons in Output Layer	Loss	Root Mean Squared Error	Mean Absolute Error	First Value of Delta
First Model	80	30					1	3098867200.0	55667.46875	44180.42969	72886.07031
Optimization Attempt 1	128	64	32	16			1	1533598848.0	39161.19141	26342.23438	24606.33594
Optimization Attempt 2	320	280	220	160	110	80	1	1174851200.0	34276.10156	22415.31641	21098.79688
Optimization Attempt 3	100	300	280	260	180	60	1	1075873280.0	32800.50781	20823.78516	12967.10938

		Initial Data Neural Netwrok Model Results									
		No. of Neurons in Hidden Layers									
	No. of Neurons in Input Layer	First	Second	Thirđ	Four	Five	No. of Neurons in Output Layer	Loss	Root Mean Squared Error	Mean Absolute Error	First Value of Delta
First Model	80	30					1	1808620928.0	42527.88281	26457.62109	6436.671875
Optimization Attempt 1	200	250	300	350			1	1365710336.0	36955.51953	23604.0332	19059.84375
Optimization Attempt 2	80	40					1	1801220480.0	42440.78906	26260.81445	5267.609375
Optimization Attempt 3	80	40	20	10			1	1766653440.0	42031.57813	27030.6582	364.234375

Actual Vs Predicted



Flask App





GitHub

Limitation

- Limited data till 2010
- Overfitting



Conclusion

