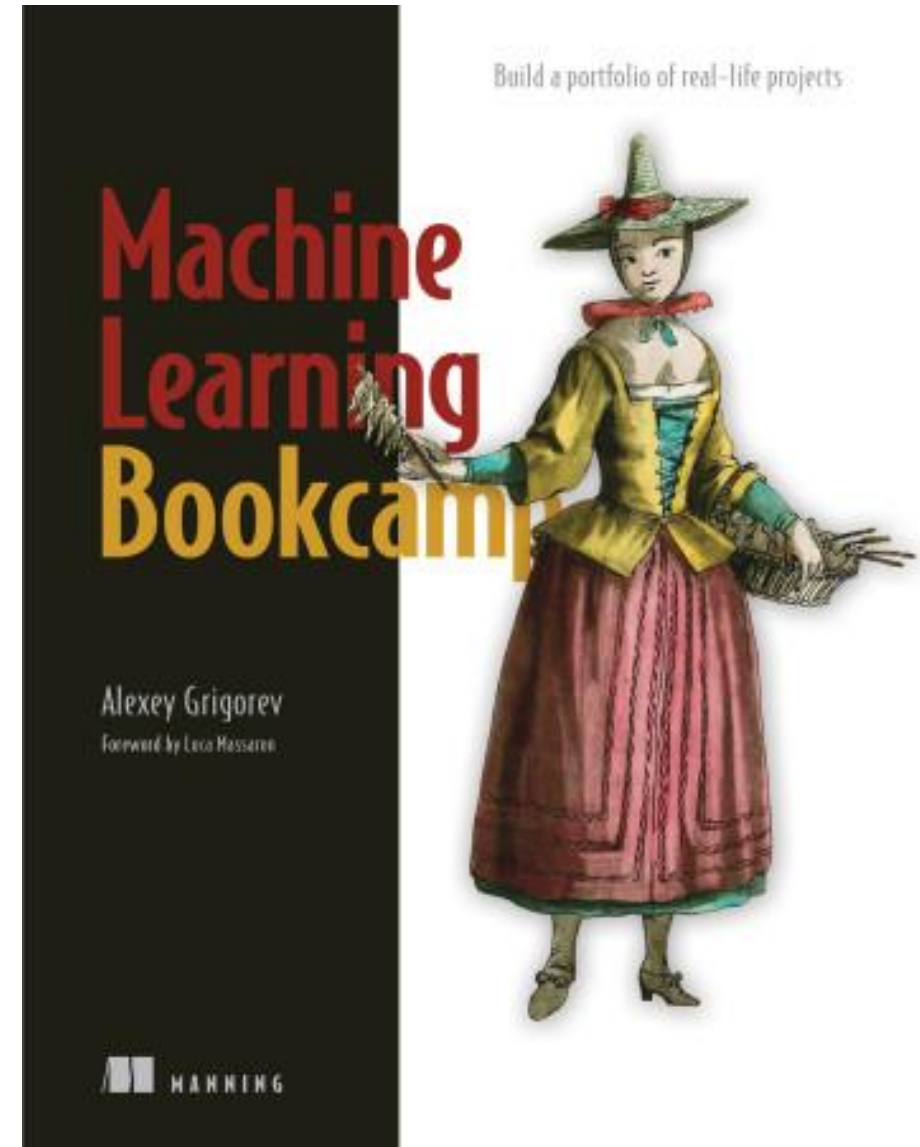


# Car Price Prediction

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# Our Reference



# Follow a process



# Intro



Problem Understanding



Machine Learning vs.  
Traditional Programming



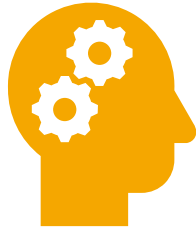
# Machine Learning

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- Type of ML Algorithm
- Supervised vs. Unsupervised Learning
- Regression vs. Classification



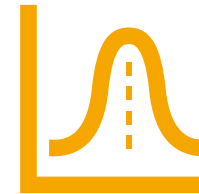
# Data Analysis



Data Understanding



Data Visualization



Data Distribution





# Data Preprocessing

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- Transformation of Skewed Data
- Outliers Handling
- Missing Values Handling
- Categorical Data Handling
- Feature Scaling
- Feature Engineering



# Data Splitting



Training



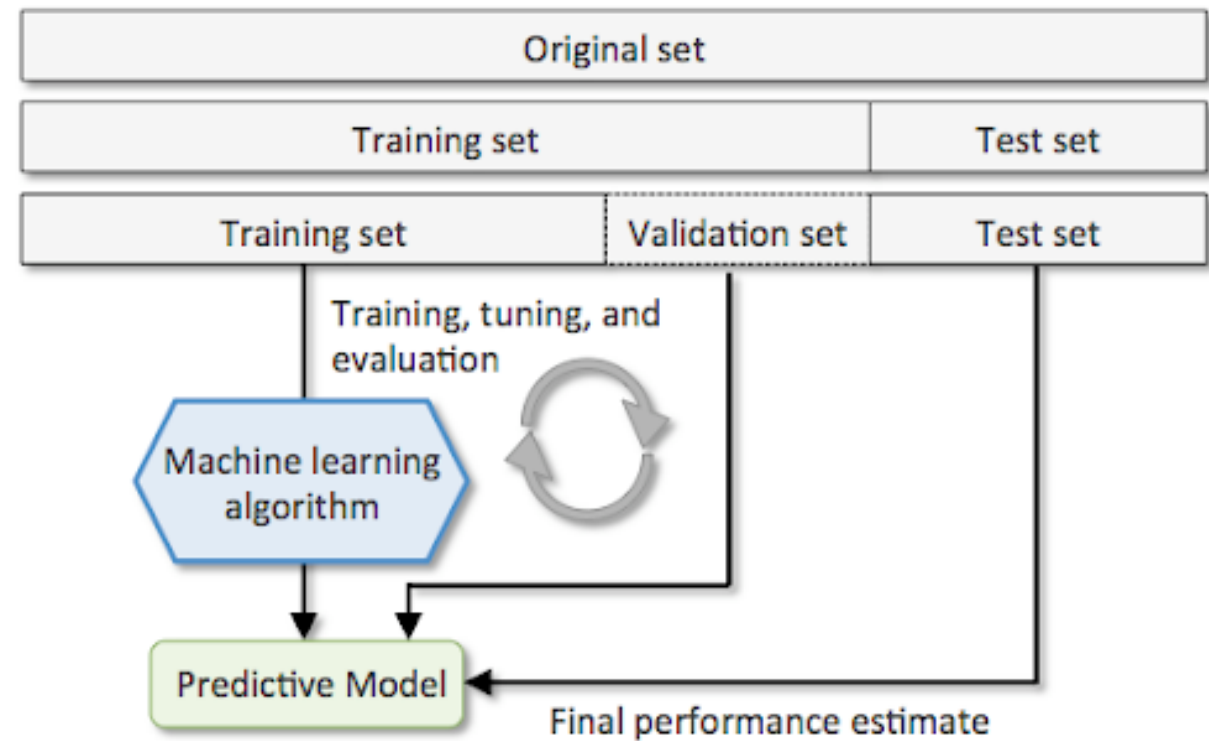
Validation



Testing



Evaluation  
Method





# Machine Learning Algorithm

- Linear Regression

$$g(x_i) = g(x_{i1}, x_{i2}, x_{i3}) = w_0 + \sum_{j=1}^3 x_{ij}w_j = w_0 + x_{i1}w_1 + x_{i2}w_2 + x_{i3}w_3$$

- Normal Equation

$$\Theta = (X^T X)^{-1} X^T y$$

[Step by step Derivation](#)



# Machine Learning Algorithm

- Base Solution
- Enhanced Solutions
- Regularization
- Evaluation on Validation Data
- Final Evaluation on Testing Data

$$\text{RMSE} = \sqrt{\frac{1}{m} \sum_{i=1}^m (g(x_i) - y_i)^2}$$

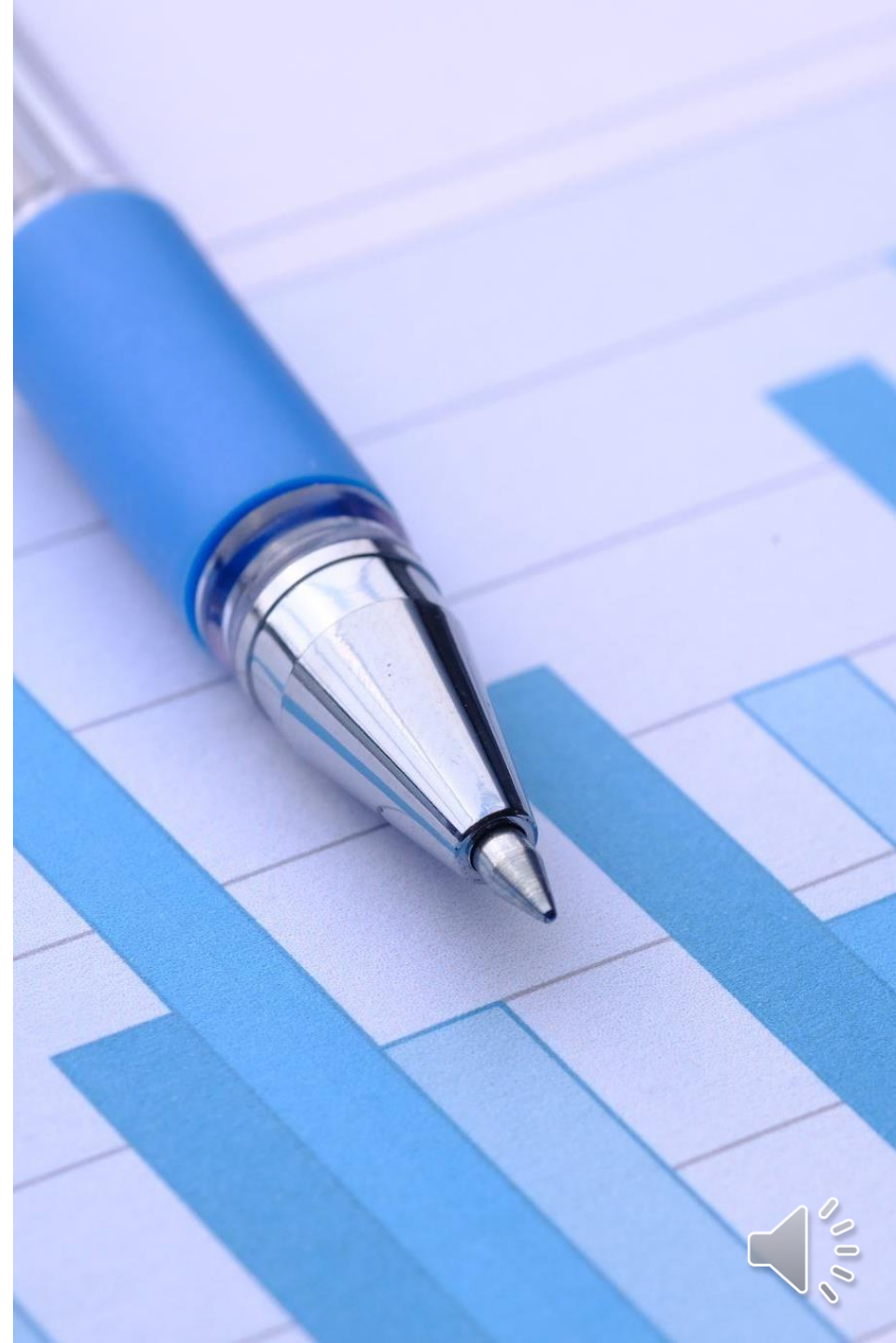




# Final Word

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- There are other methods to handle Skewed Data
- There are other methods to handle Missing Values
- There are other methods to handle categorical Data
- There is Gradient Descent Solution for Linear Regression
- There are many Other ML Models
- There are other methods for ML Model Evaluation



# Additional Resources

- [Top 3 Methods for Handling Skewed Data](#)
- [5 Ways To Handle Missing Values In Machine Learning Datasets](#)
- [A Complete Guide to Categorical Data Encoding](#)
- [Gradient Descent in Linear Regression](#)
- [Introduction to Polynomial Regression](#)
- [3 Best metrics to evaluate Regression Model](#)



# Zero Grad

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