
DECODING
DATA SCIENCE

# Mohammad Arshad

**Co-Founder , Decoding Data Science**

18+ years experienced Data professional worked in company like MAF, Accenture, HP and Dell. Helped 1000+ mentees get their Dream jobs

DECODING DATA SCIENCE

# Agenda

- Introduction
- Lightning talk
- Community Updates
- Winner Annoucemnts
- Next Steps

# Linear Regression

# Linear Regression

*Linear regression* is a statistical machine learning method you can use to quantify, and make predictions based on, relationships between numerical variables.

- Simple linear regression
- Multiple linear regression

DECODING DATA SCIENCE

# Linear Regression Use Cases

- Sales Forecasting
- Resource Consumption Forecasting
- Supply Cost Forecasting
- Telecom Services Lifecycle Forecasting

DECODING
DATA SCIENCE

# Linear Regression Assumption

- All variables are continuous numeric, not categorical
- Data is free of missing values and outliers
- There's a linear relationship between predictors and predictant
- All predictors are independent of each other
- Residuals (or prediction errors) are normally distributed

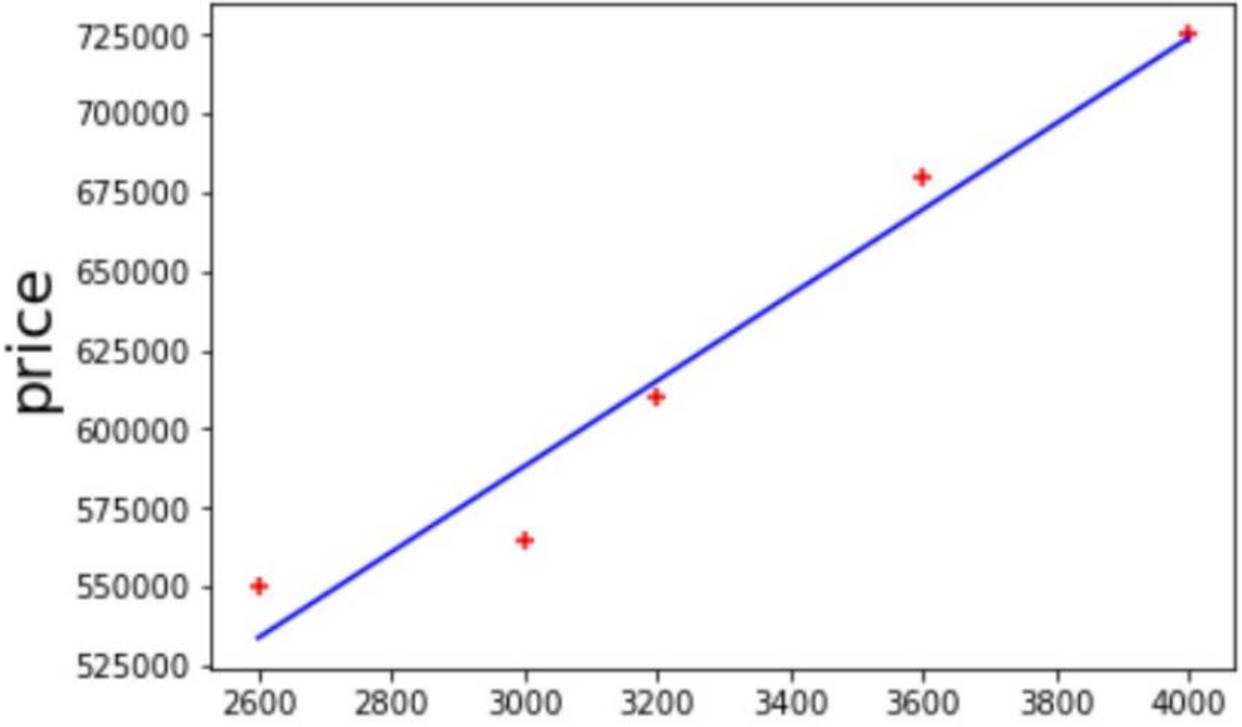
# Machine Learning With Python: Linear Regression With One Variable

Below table represents current home prices in Monroe township based on square feet area, New York

S

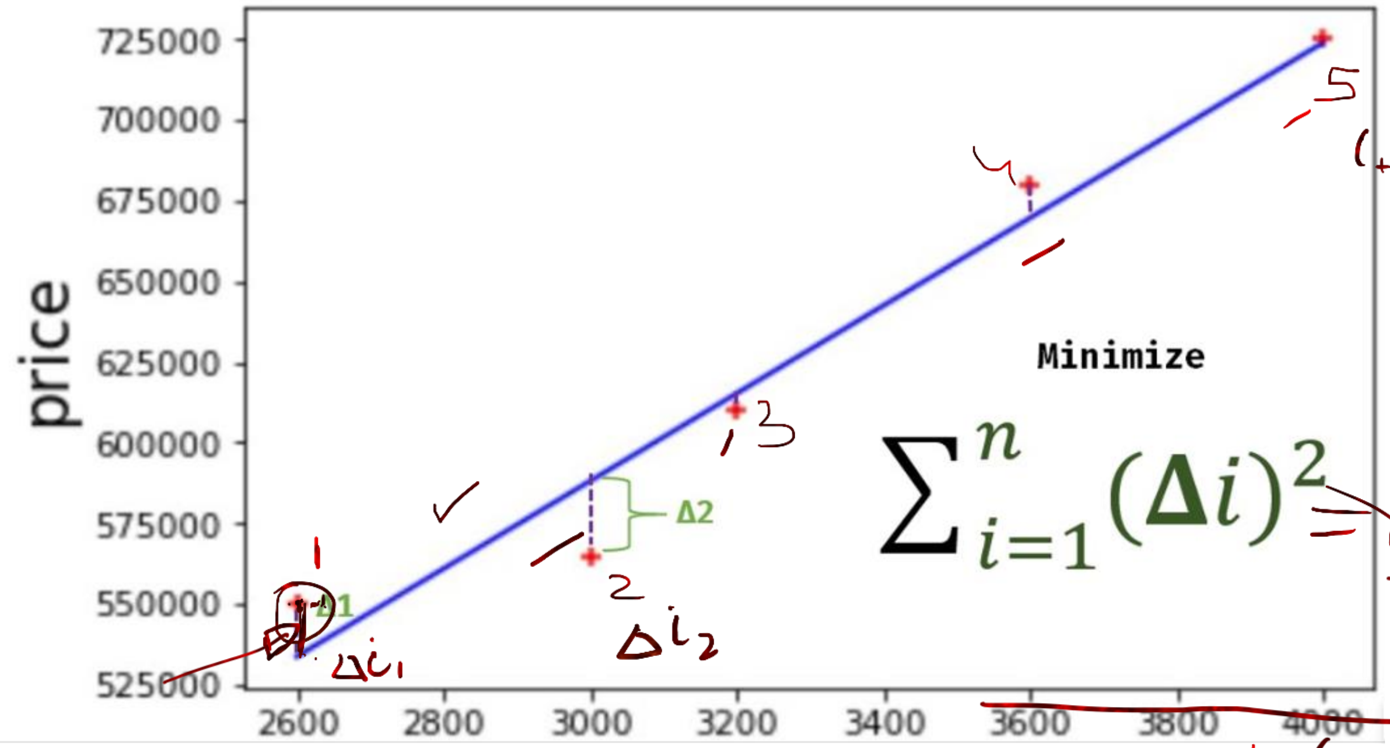
| area Input | price |
|---|---|
| 2600 | 550000 |
| 3000 | 565000 |
| 3200 | 610000 |
| 3600 | 680000 |
| 4000 | 725000 |

You can represent values in above table as a scatter plot (values are shown in red markers). After that one can draw a straight line that best fits values on chart.




DECODING DATA SCIENCE

# You can draw multiple lines like this but we choose the one where total sum of error is minimum




| area | price |
|---|---|
| 2600 | 550000 |
| 3000 | 565000 |
| 3200 | 610000 |
| 3600 | 680000 |
| 4000 | 725000 |

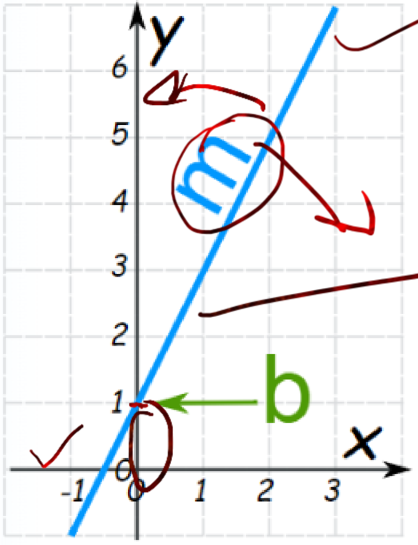
**Minimize**

$$\sum_{i=1}^{n}(\Delta i)^2$$

= Cost function

DECODING DATA SCIENCE

# Equation




best fit

Straight

```
price = m * area + b
```

$$y = mx + b$$

Slope (or Gradient) Y Intercept

DECODING DATA SCIENCE

**connect@decodingdatascience.com**


DECODING
DATA SCIENCE