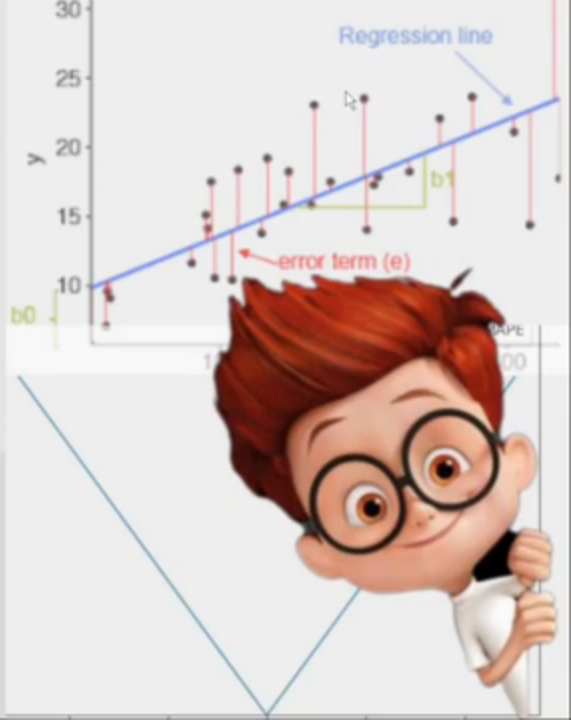
$$MBE = \frac{\sum_{i=1}^{n}(y_i - \hat{y}_i)}{n}$$

$$MAPE = \frac{1}{n}\sum \left|\frac{y_i - \hat{y}_i}{y_i}\right| \times 100\%$$

$$MAE = \frac{\sum_{i=1}^{n}|y_i - x_i|}{n}$$

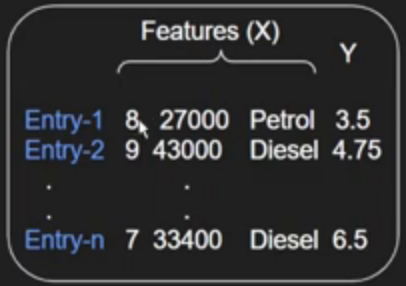
MAE
MAPE
MBE

Regression Losses

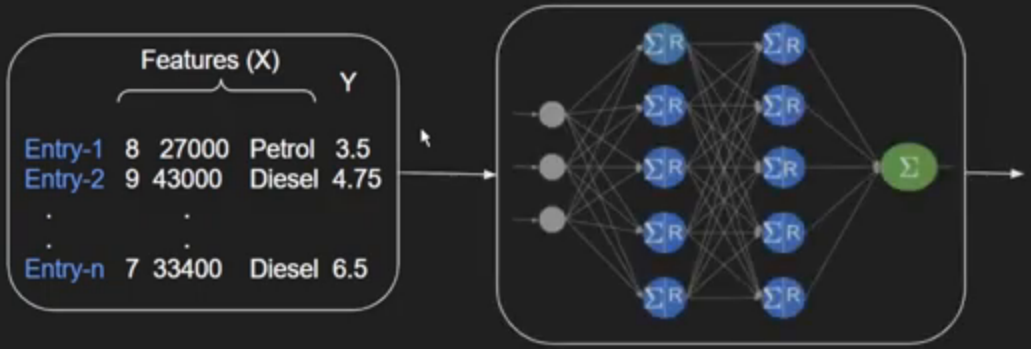


Context

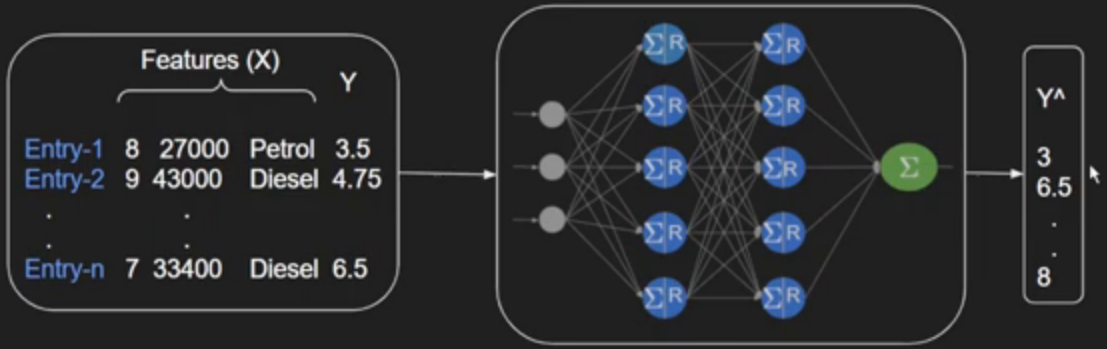
Context


Features (X)
Y
Entry-1 8 27000 Petrol 3.5
Entry-2 9 43000 Diesel 4.75
Entry-n 7 33400 Diesel 6.5

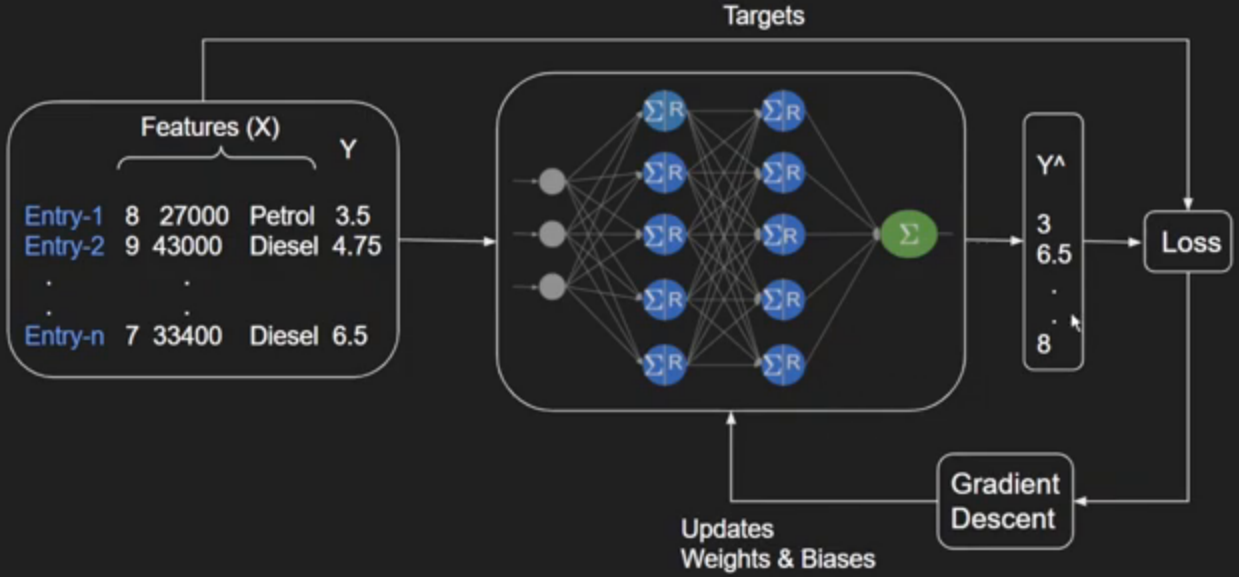
Context


Features (X)
Y
Entry-1 8 27000 Petrol 3.5
Entry-2 9 43000 Diesel 4.75
Entry-n 7 33400 Diesel 6.5
ΣR
Σ

Context


Features (X)
Y
Entry-1 8 27000 Petrol 3.5
Entry-2 9 43000 Diesel 4.75
Entry-n 7 33400 Diesel 6.5
ΣR
Σ
Y^
3
6.5
8

Context

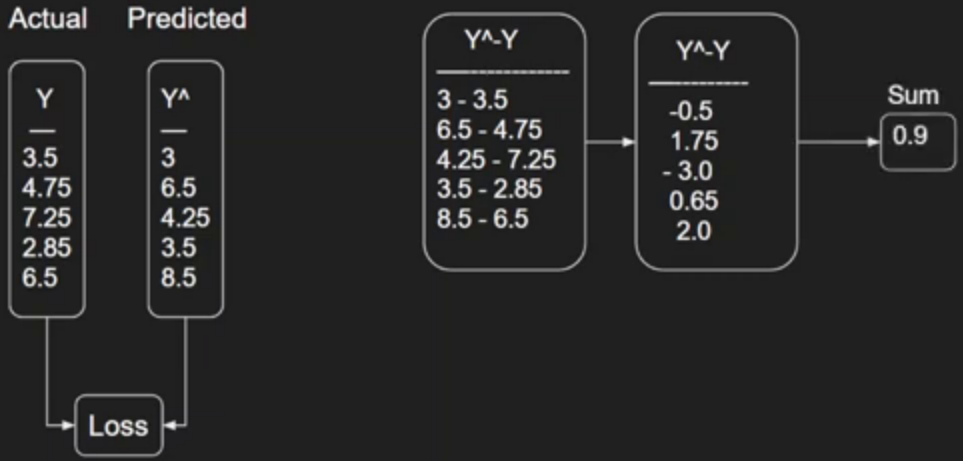

Targets
Features (X)
Y
Entry-1 8 27000 Petrol 3.5
Entry-2 9 43000 Diesel 4.75
Entry-n 7 33400 Diesel 6.5
ΣR
Σ
Y^
3
6.5
8
Loss
Gradient Descent
Updates
Weights & Biases

Loss

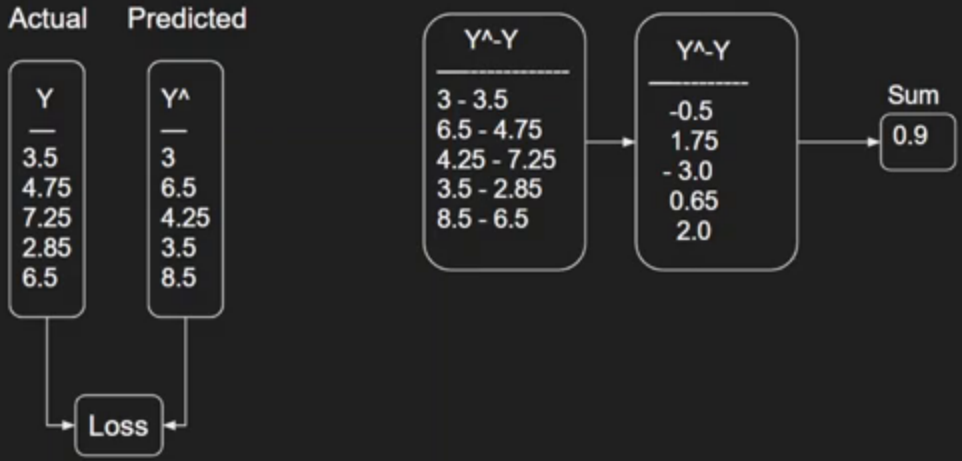
Actual	Predicted
Y	Y^
3.5	3
4.75	6.5
7.25	4.25
2.85	3.5
6.5	8.5

Loss

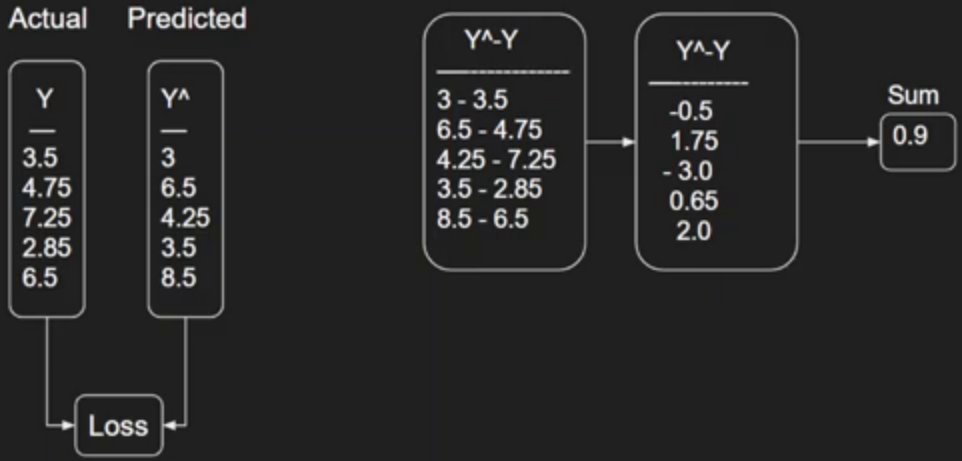
Loss


Actual
Predicted
Y
—
3.5
4.75
7.25
2.85
6.5
Y^
—
3
6.5
4.25
3.5
8.5
Loss
Y^-Y
3 - 3.5
6.5 - 4.75
4.25 - 7.25
3.5 - 2.85
8.5 - 6.5
Y^-Y
-0.5
1.75
- 3.0
0.65
2.0
Sum
0.9

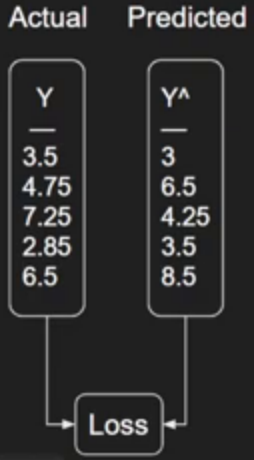
Loss


Actual
Predicted
Y
—
3.5
4.75
7.25
2.85
6.5
Y^
—
3
6.5
4.25
3.5
8.5
Loss
Y^-Y
3 - 3.5
6.5 - 4.75
4.25 - 7.25
3.5 - 2.85
8.5 - 6.5
Y^-Y
-0.5
1.75
- 3.0
0.65
2.0
Sum
0.9

Loss


Actual
Predicted
Y
—
3.5
4.75
7.25
2.85
6.5
Y^
—
3
6.5
4.25
3.5
8.5
Loss
Y^-Y
3 - 3.5
6.5 - 4.75
4.25 - 7.25
3.5 - 2.85
8.5 - 6.5
Y^-Y
-0.5
1.75
- 3.0
0.65
2.0
Sum
0.9

Loss



Y^-Y	Y^-Y
3 - 3.5	-0.5
6.5 - 4.75	1.75
4.25 - 7.25	- 3.0
3.5 - 2.85	0.65
8.5 - 6.5	2.0

Sum: 0.9

Mean: 0.18

$$\frac{1}{n}\sum_{i=1}^{n}(y_{i^p} - y_i)$$

Loss

$$\frac{1}{n}\sum_{i=1}^{n}(y_{i^p} - y_i)$$

Loss

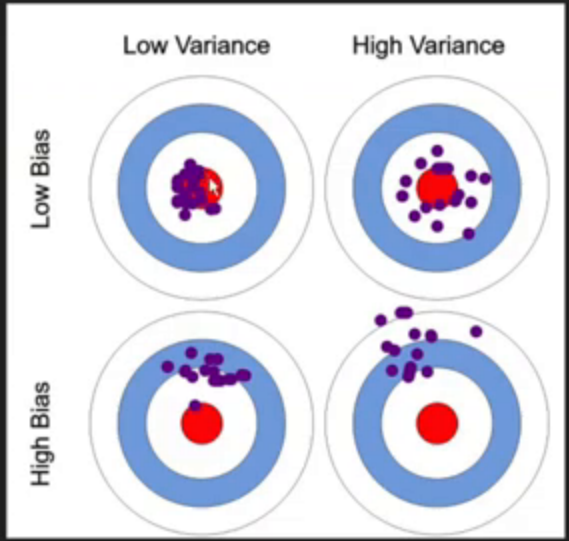
$$\frac{1}{n}\sum_{i=1}^{n}(y_{i^p} - y_i)$$

Mean Bias Error

Bias and Variance

- Bias - Overall direction of error
- Bias - Historical average error

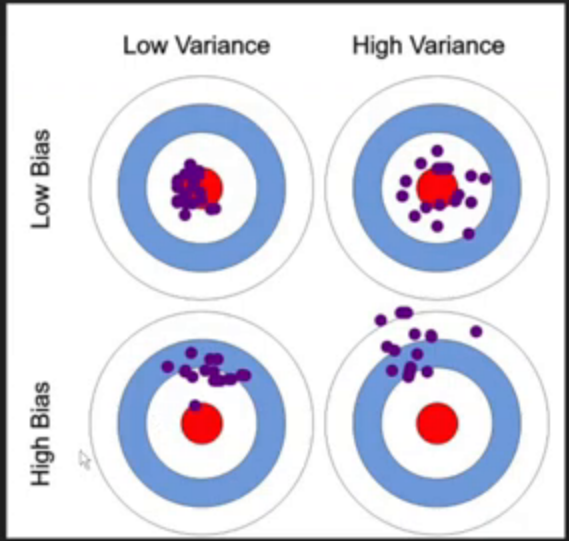
- Variance - Spread of predictions



Bias and Variance

- Bias - Overall direction of error
- Bias - Historical average error

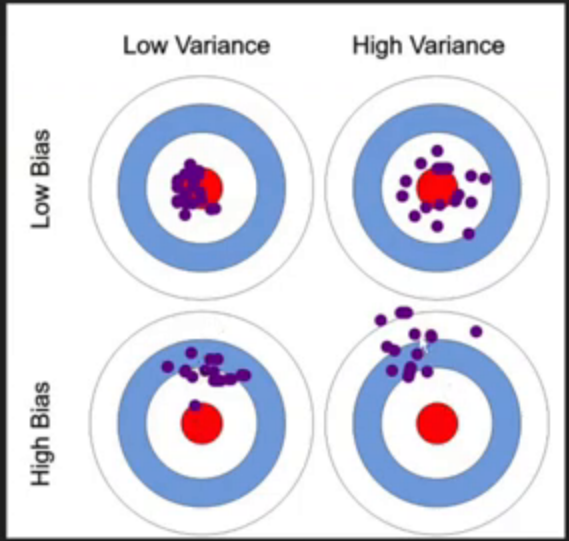
- Variance - Spread of predictions



Bias and Variance

- Bias - Overall direction of error
- Bias - Historical average error

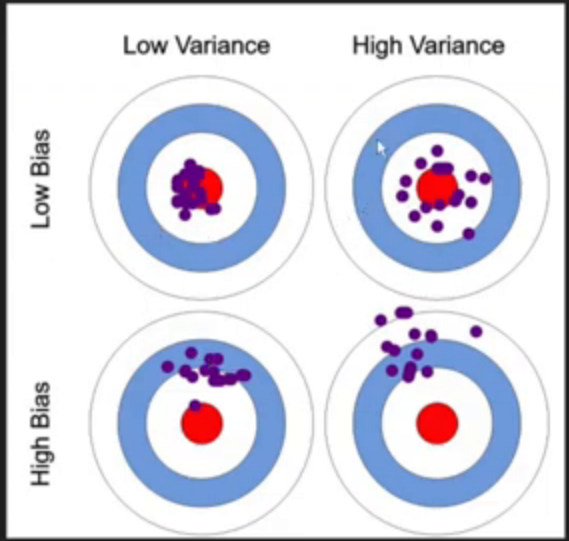
- Variance - Spread of predictions



Bias and Variance

- Bias - Overall direction of error
- Bias - Historical average error

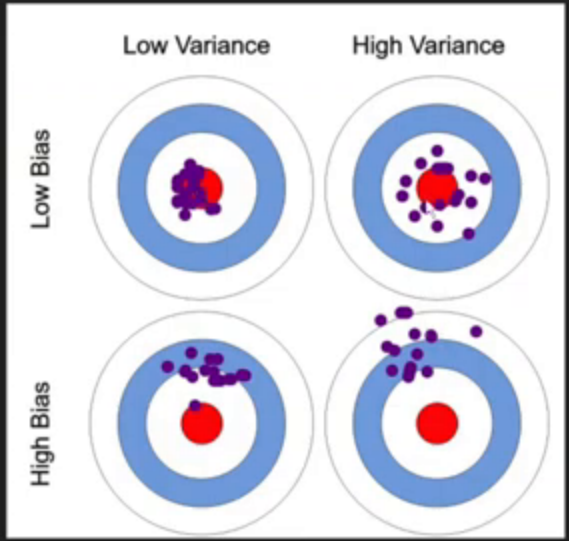
- Variance - Spread of predictions



Bias and Variance

- Bias - Overall direction of error
- Bias - Historical average error

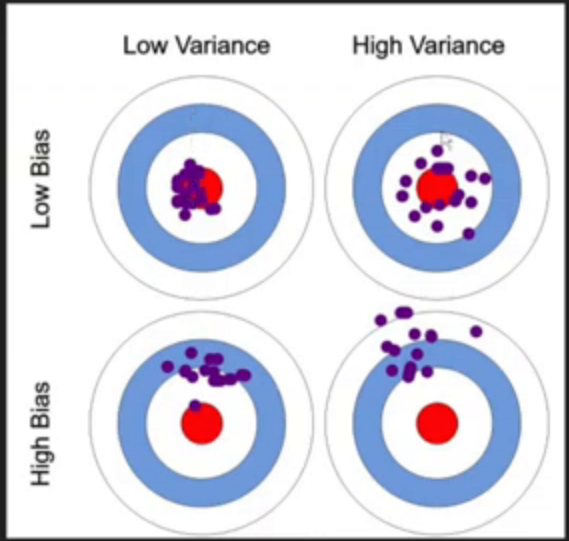
- Variance - Spread of predictions



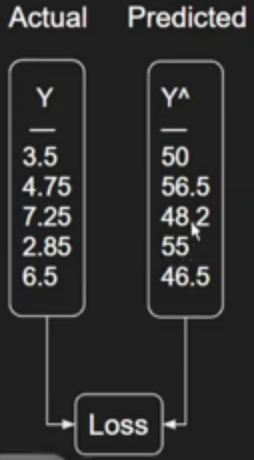
Bias and Variance

- Bias - Overall direction of error
- Bias - Historical average error

- Variance - Spread of predictions

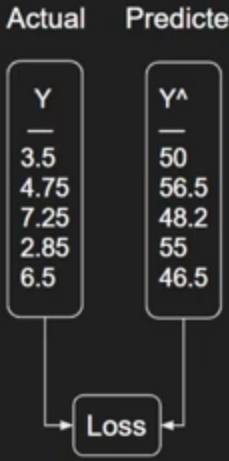


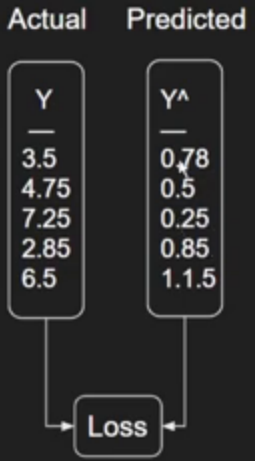
Bias



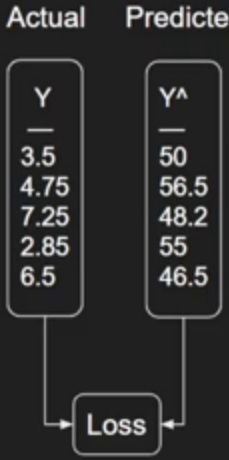
Bias

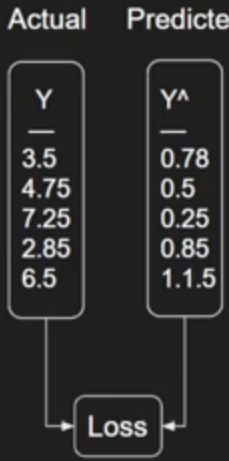
Bias


Actual
Predicted
Y
—
3.5
4.75
7.25
2.85
6.5
Y^
—
50
56.5
48.2
55
46.5
Loss


Actual
Predicted
Y
—
3.5
4.75
7.25
2.85
6.5
Y^
—
0.78
0.5
0.25
0.85
1.1.5
Loss

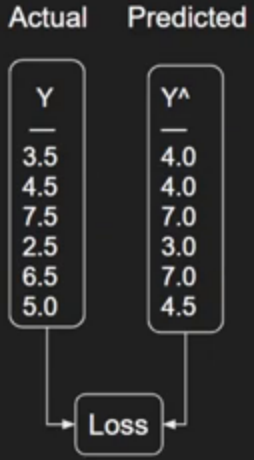
Bias





$$\frac{1}{n}\sum_{i=1}^{n}(y_{i^p} - y_i)$$

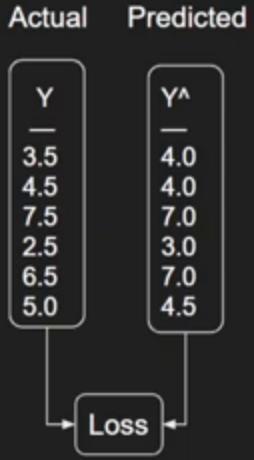
Drawback



MBE = ?

$$= \frac{(4.0 - 3.5) + (4.0 - 4.5) + (7.0 - 7.5) + (3.0 - 2.5) + (7.0 - 6.5) + (4.5 - 5.0)}{6}$$

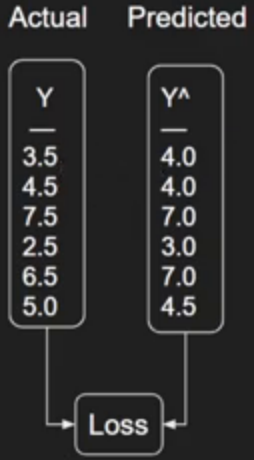
Drawback



MBE = ?

$$= \frac{(4.0 - 3.5) + (4.0 - 4.5) + (7.0 - 7.5) + (3.0 - 2.5) + (7.0 - 6.5) + (4.5 - 5.0)}{6} = 0$$

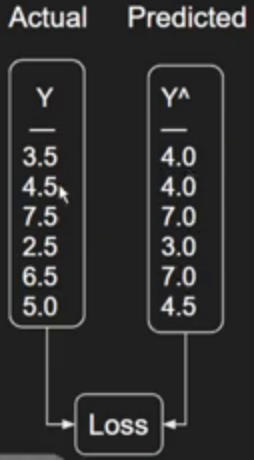
Drawback



MBE = ?

$$= \frac{(4.0 - 3.5) + (4.0 - 4.5) + (7.0 - 7.5) + (3.0 - 2.5) + (7.0 - 6.5) + (4.5 - 5.0)}{6} = 0$$

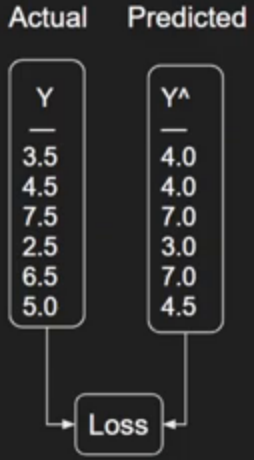
Drawback



MBE = ?

$$= \frac{(4.0 - 3.5) + (4.0 - 4.5) + (7.0 - 7.5) + (3.0 - 2.5) + (7.0 - 6.5) + (4.5 - 5.0)}{6} = 0$$

Drawback



$$MBE = ?$$

$$= \frac{(4.0 - 3.5) + (4.0 - 4.5) + (7.0 - 7.5) + (3.0 - 2.5) + (7.0 - 6.5) + (4.5 - 5.0)}{6} = 0$$

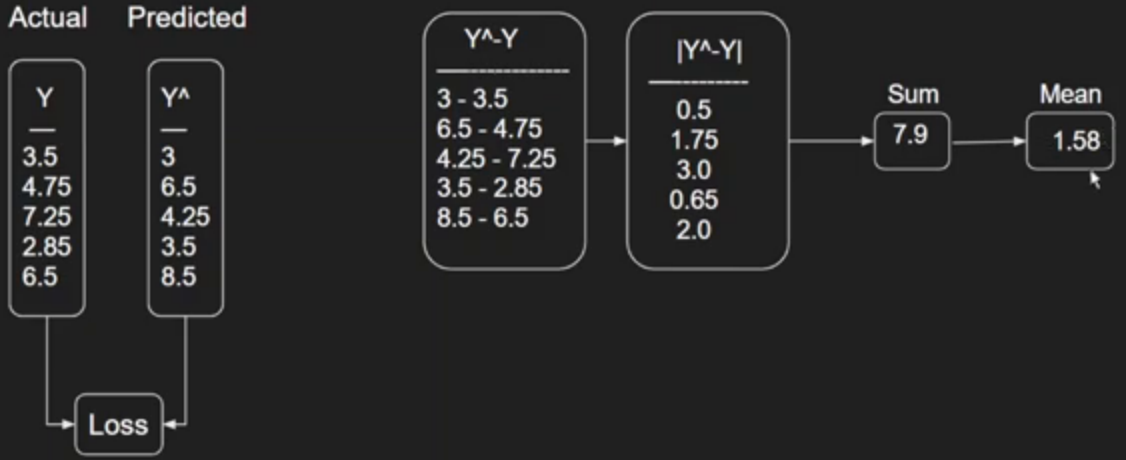
Mean Absolute Error

Mean Absolute Error

$$\text{MAE} = \frac{1}{n}\sum_{i=1}^{n}|y_{i\hat{}} - y_i|$$

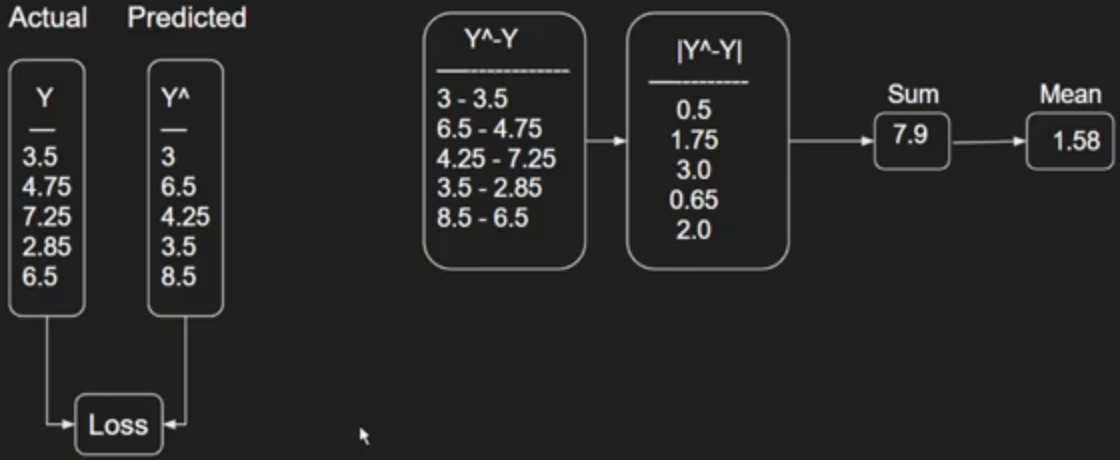
Mean Absolute Error

$$MAE = \frac{1}{n}\sum_{i=1}^{n}|y_{i^p} - y_i|$$



Mean Absolute Error

$$MAE = \frac{1}{n}\sum_{i=1}^{n}|y_{ip} - y_i|$$



Mean Absolute Percentage Error

Mean Absolute Percentage Error

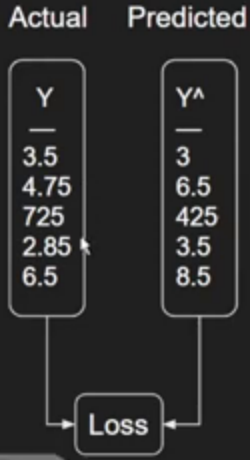
$$\text{MAPE} = \frac{1}{n}\sum_{i=1}^{n}\frac{|y_{ip} - y_i|}{y_i}$$

Mean Absolute Percentage Error

$$\text{MAPE} = \frac{1}{n}\sum_{i=1}^{n}\frac{|y_{ip} - y_i|}{y_i}$$

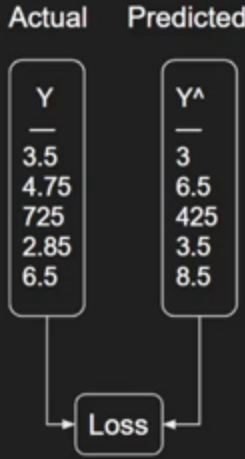
Mean Absolute Percentage Error

$$\text{MAPE} = \frac{1}{n}\sum_{i=1}^{n}\frac{|y_{ip} - y_i|}{y_i}$$



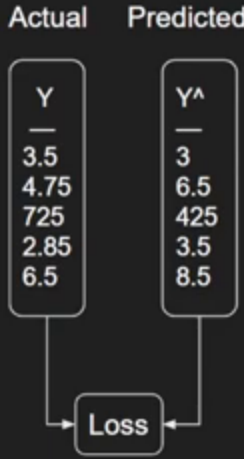
Mean Absolute Percentage Error

$$\text{MAPE} = \frac{1}{n}\sum_{i=1}^{n}\frac{|y_{ip} - y_i|}{y_i}$$



Mean Absolute Percentage Error

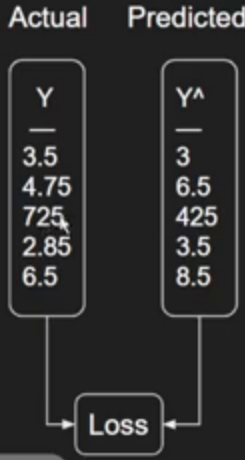
$$\text{MAPE} = \frac{1}{n}\sum_{i=1}^{n}\frac{|y_{ip} - y_i|}{y_i}$$



MAE = 60.98

Mean Absolute Percentage Error

$$\text{MAPE} = \frac{1}{n}\sum_{i=1}^{n}\frac{|y_{ip} - y_i|}{y_i}$$

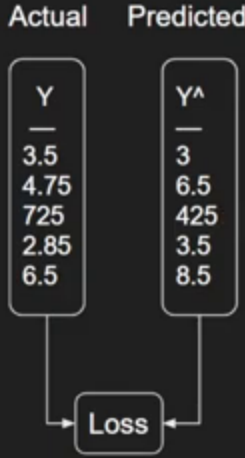


MAE = 60.98

MAPE = 0.2918

Mean Absolute Percentage Error

$$\text{MAPE} = \frac{1}{n}\sum_{i=1}^{n}\frac{|y_{ip} - y_i|}{y_i}$$



MAE = 60.98

MAPE = 0.2918