3. val_loss

This is the validation loss.

After generalizing well or just memorizingion set (the split you gave with validation_data=...) and calculates the loss on that unseen data.

This tells you whether your model is generalizing well or just memorizing the training data.

4. val_accuracy

This is the validation accuracy.

It's the percentage of correct predictions on the validation set.

If accuracy is high but val_accuracy is low → your model is probably overfitting (memorizing training but failing on new data).

Where to pay attention

- **loss & accuracy = how well model is doing on training data.**
- **val_loss & val_accuracy = how well model is doing on new unseen data.**

Always pay more attention to validation metrics because that shows how the model will behave in the real world.

2000 ⟶ 2010

Loss functions

Regression

↓

MSE (Mean Squared error)

MAE (Mean Absolute error)

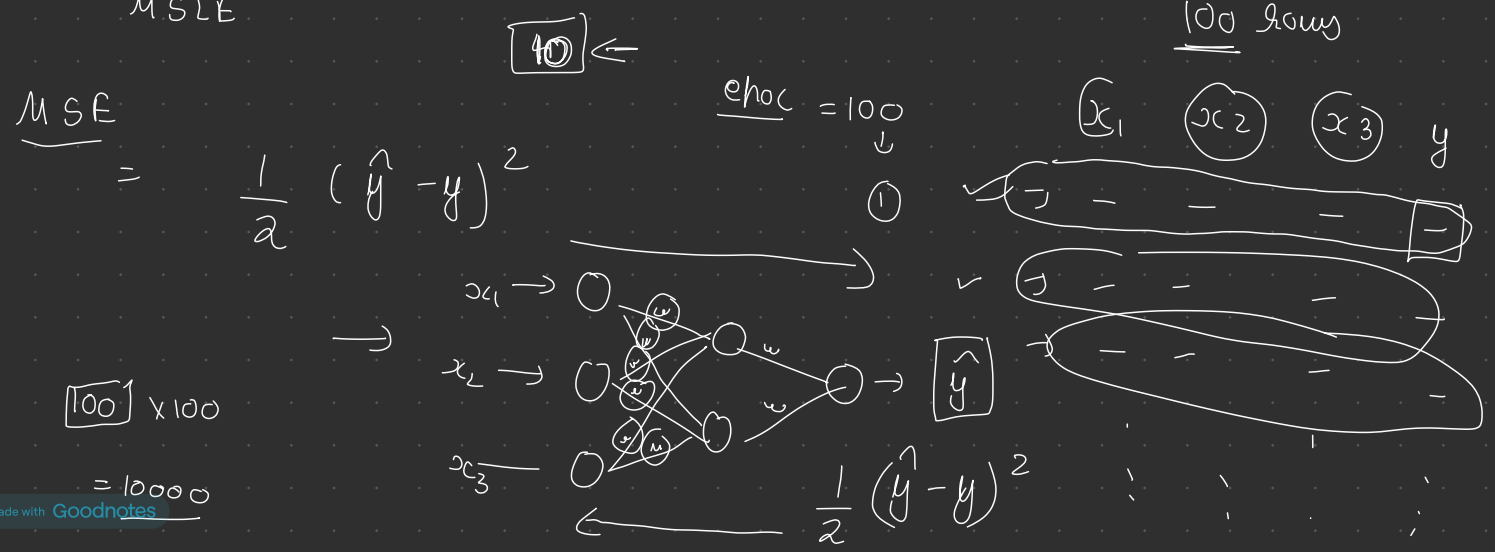
huber loss

MSLE

classification

Binary cross entropy

classification cross entropy



cost function = $\frac{1}{2} \sum_{i=1}^{n} (\hat{y} - y)^2$

10×100
$= 1000$

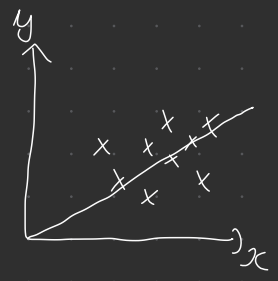
Pros

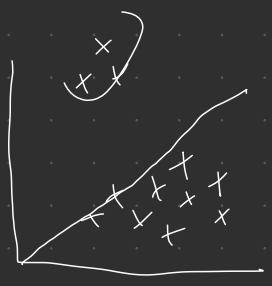
→ very common

→ Penalizes the Big error

5K $ ⟷ 100K $

(95K $)





Cons

MAE $= \frac{1}{N} \sum_{i=1}^{N} (y - \hat{y})$

Pros

→ More Robust to outliers

→ Each error contributes equally

Cons

→ Doesn't Punish large errors

huber loss

Small error → MSE

Large errors → MAE

MSE

Classification loss function

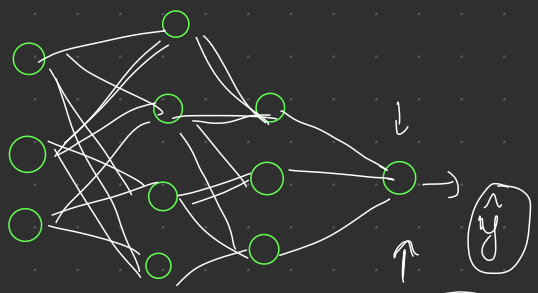
one hot encoding

x_1, x_2, x_3	Animal
	0
	1
	1
	0
	0
	1
	$\hat{y}$

Animal	cat	Dog	horse
cat	1	0	0
Dog	0	1	0
horse	0	0	1
cat	1	0	0
horse	0	0	1
Dog	0	1	0
:			
	$\hat{y}$		

Animal
0
1
2
1
3
4
5
1
2
$\hat{y}$

Binary cross entropy



Sigmoid

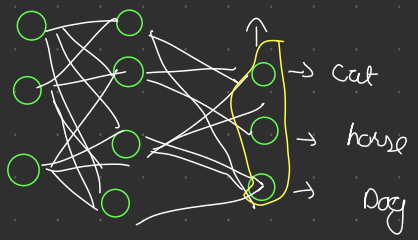
0 --- 1

Loss

Binary cross entropy → Activation Sigmoid

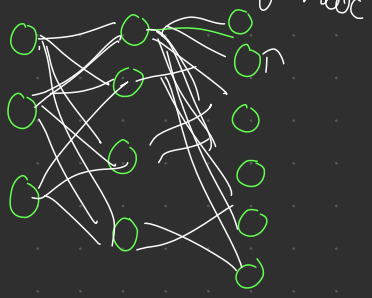
0, 1

Softmax



Categorical cross entropy

Softmax



Sparse_categorical_cross entropy