

## ex 22

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a) The loss function describes the difference between the predicted values and the actual values of data.

It's values can be used to determine how good or bad an algorithm is at analysing the given data.

example: classification algorithm

→ value of loss function  $\Leftrightarrow$  value of information loss  
because everytime a wrong decision is made, some amount of data is lost

b) A common way of minimizing the loss function is to search for a minimum by varying its parameters.

In other words, looking at its gradient and following the direction towards the smallest possible loss value will give a solution for the optimal set of parameters.

c) The purpose of activation functions is to add non-linearity into the neural network. This solves the problem of the network otherwise not being able to solve more complex, non-linear tasks.

d) A neuron is a node in a neural network which has it's associated weight and activation function.

activation function.

The neuron receives one or multiple weighted inputs, these inputs are then transformed via the activation function and we get a single output.

e) 3 examples:

1. image recognition (image to text)
2. image creation (text to image)
3. game A.I. (playing complex video games)

→ All these applications require a lot of flexibility in learning, which the neural network can provide thanks to its large amount of parameters.