

# Neural Networks-Summary Sheet

ML@LSE

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## Abstract

**Objectives:** Understand the structure of feedforward neural networks. Understand how feedforward neural networks are trained using backpropagation.

**Requirements:** Introductory Bootcamp (you can read the slides if you didn't attend). Although not necessary, familiarity with partial derivatives, the chain rule and the gradient of a multivariate function may help.

**Keywords:** Perceptron, Weights, Biases, Activation function, Sigmoid activation function, Neural Network, Gradient descent, Backpropagation.

## A *THE STRUCTURE OF NEURAL NETWORKS*

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### A.1 An intuitive example to a Neural Network

- a Should I go to Brighton this weekend?
- b Framing this with a perceptron

### A.2 Feedforward Neural Network structure

- a The sigmoid function
- b FNN is a network of perceptrons

## B *FITTING THE NETWORK*

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### B.1 Minimizing the Cost Function

- a The Cost function of a network?
- b Gradient Descent

### B.2 Fitting the network using backpropagation

- a A closer look at the gradient
- b Backpropagation