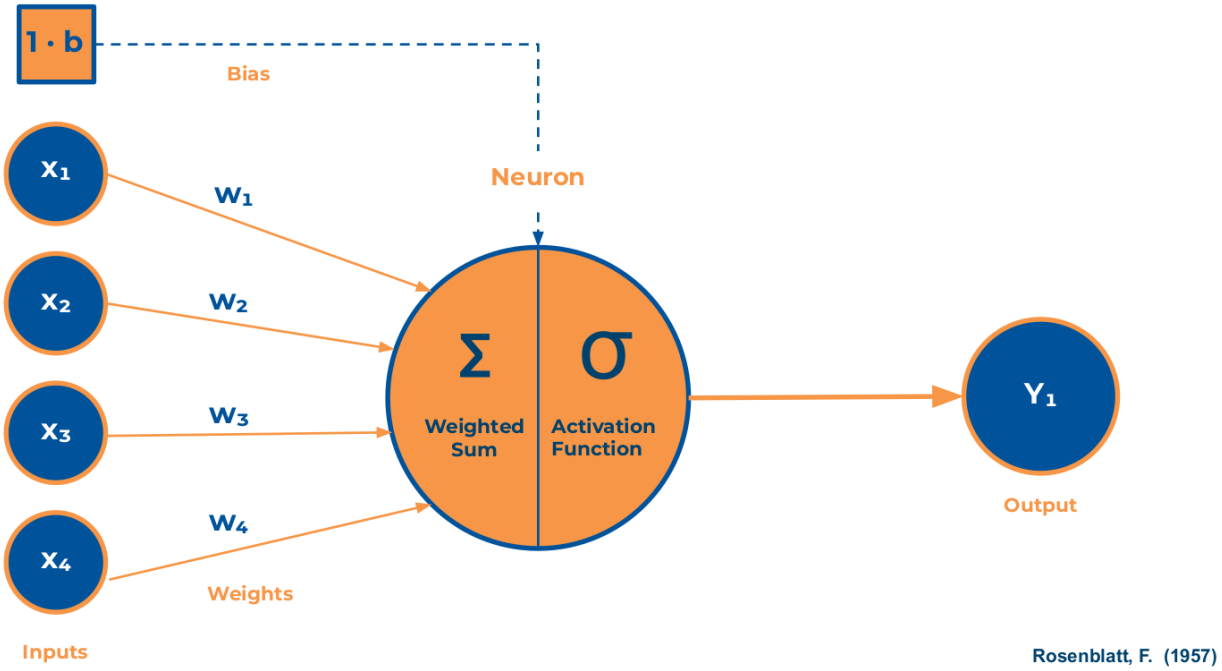
#5 NN & Gradient Descent



In this part of the course we take for granted that the definition of Machine Learning and its main real-world applications and the landscape of most frequently used algorithms are already known. We will focus on Deep Learning by applying Artificial Neural Networks.

And these are this week's objectives:

- What is Deep Learning?
- The Neuron and perceptron
- Gradient Descent
- Activation functions
- Backpropagation
- Normalization, Loss Function, Learning rate, Transfer Learning
- Basic Hard Model

As a guide for this week, we have left a series of videos to understand what neural networks are and are not, and what are their most basic concepts.

Neural Networks:

Supporting Code *to follow the videos*

https://youtu.be/bxe2T-V8XRs
https://youtu.be/UJwK6jAStmg
https://youtu.be/5u0jaA3qAGk
https://youtu.be/GlcnxUlrtek
https://youtu.be/pHMzNW8Agq4
https://youtu.be/9KM9Td6RVgQ
https://youtu.be/S4ZUwgesjS8

Hard:

On the other hand, we encourage you to build your first neural network in Keras, and to learn how to solve the MNIST dataset problem with DL

- Create your first neural network from 0
- Introduction to Keras https://medium.com/neuron4/introducci%C3%B3n-al-deep-learning-con-keras-b51c47560565
- https://nbviewer.jupyter.org/github/Yorko/mlcourse.ai/blob/master/jupyter_english/tutorials/Keras_easy_way_to_construct_the_Neural_Networks_fixed.ipynb

Further Reading:

Highly recommended reading

- https://medium.com/free-code-camp/want-to-know-how-deep-learning-works-heres-a-quick-guide-for-everyone-1aedeca88076

#5 Challenge!

Tutorial Support https://elitedatascience.com/keras-tutorial-deep-learning-in-python

Step-by-Step first Keras model https://machinelearningmastery.com/tutorial-first-neural-network-python-keras/

Advanced https://blogs.oracle.com/meena/simple-neural-network-model-using-keras-and-grid-search-hyperparameterstuning

RESOURCES

AISaturdays_ChallengeSession5 .ipynb

mitbih_train.csv

AISaturdays_ChallengeSession5_solution.ipynb