Modern NLP

Based on Deep Learning and Language models. Day 2 Morning

Alexandre Gazagnes

2nd Day

1. Morning (~ 2h)
    - Smallest remainder of Day 1
    - King – Man + Woman
    - Using advanced embedding techniques

2. Afternoon (~ 4h)
    - Gentle introduction to delivery API + front End
    - Transfert learning
    - Fine Tuning

First … Let’s Talk !

Alexandre Gazagnes

Small Remainder

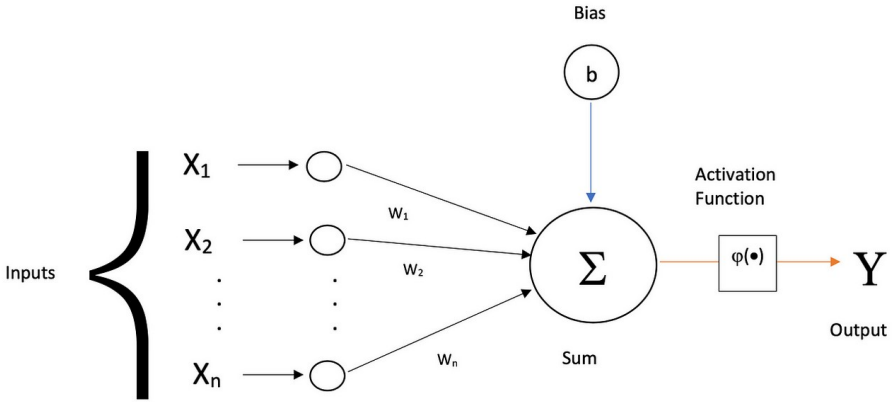
- *Project and goups*
- *VSCode / PyCharm*
- *Github Account*
- *OpenAI GPT API Key*
- *Exam*

What is a Deep Learning Neural Network ?

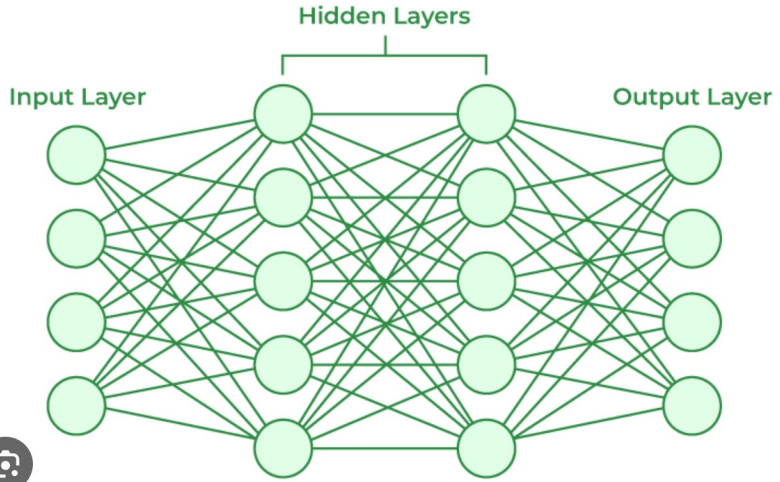
Deep learning is a subfield of machine learning that focuses on using **neural networks** with many layers—hence the term "deep."

Deep learning has been behind many recent advancements in areas like **computer vision, natural language processing**, and audio recognition.

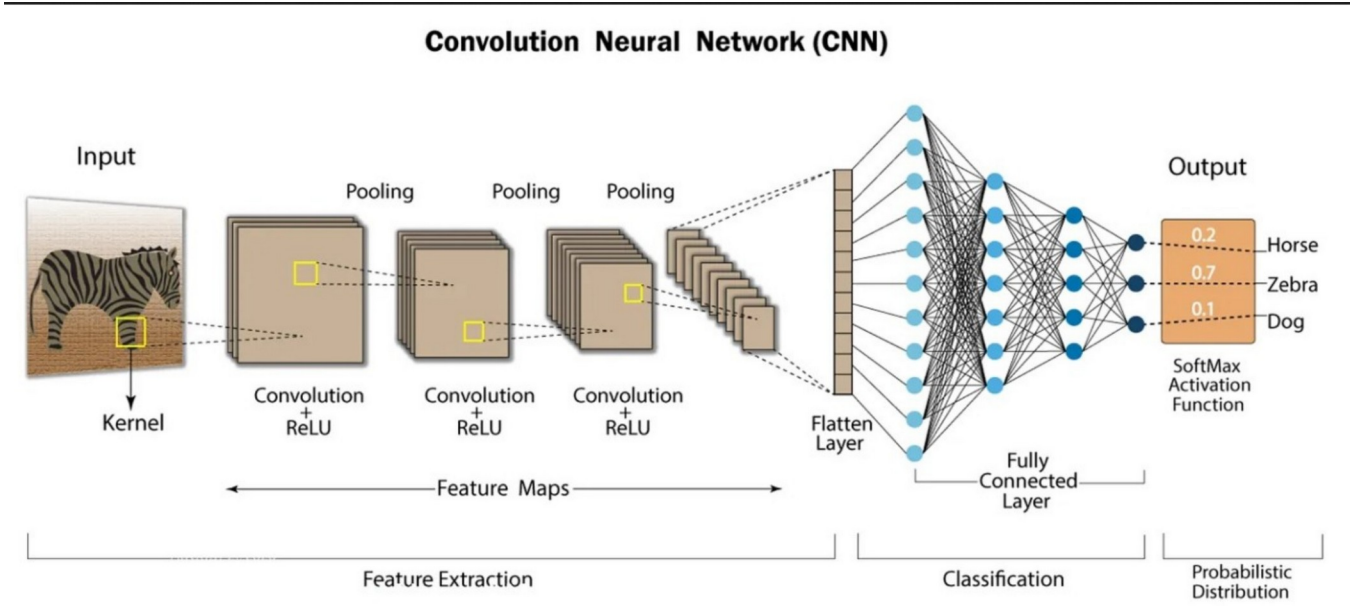
Differences between **Deep Learning** and Classical Machine Learning : Model Complexity / Feature Engineering / Handling Unstructured Data / S



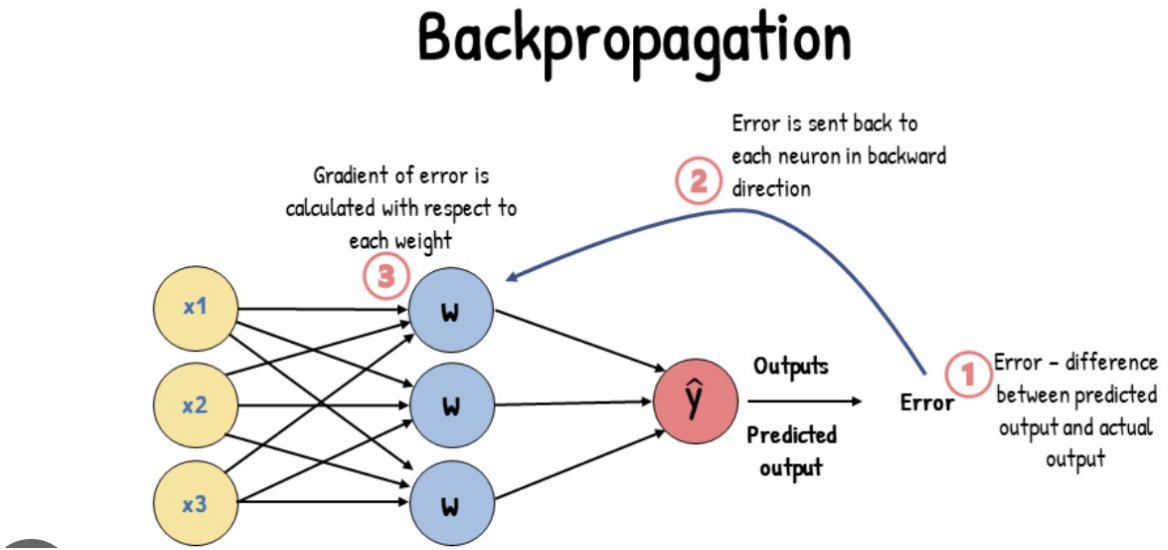
The Very First ‘not so deep’ Neural Network



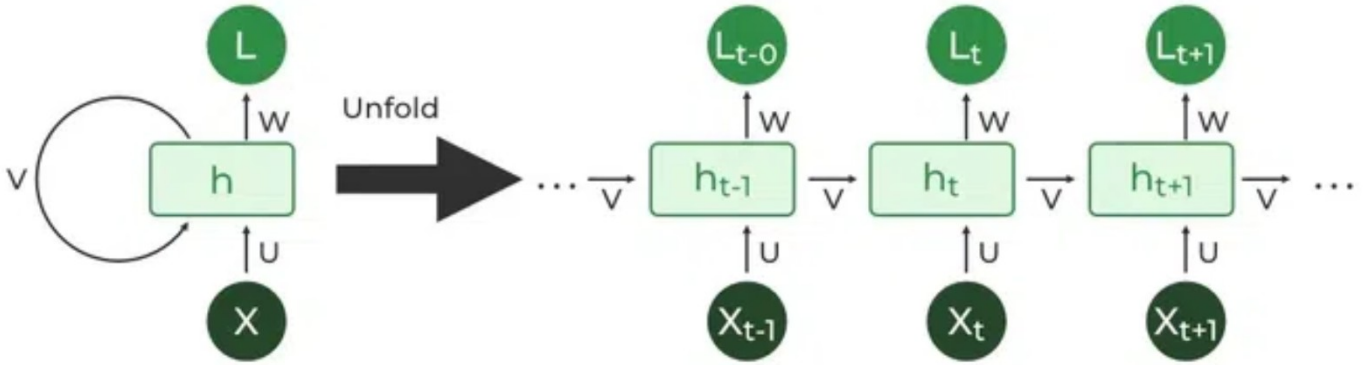
Most famous network : the CNN



Most important Feature in DL

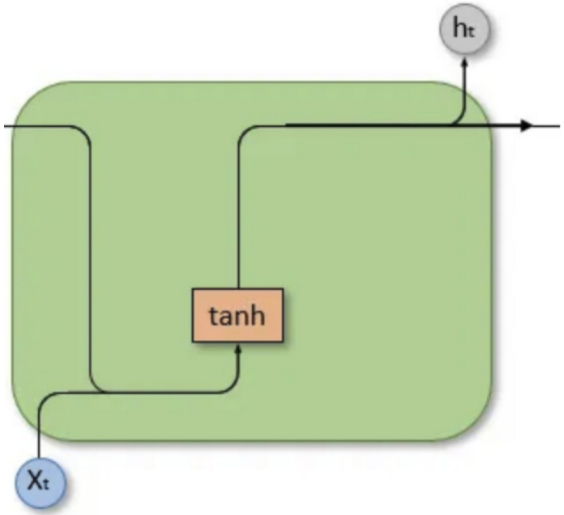


Better for NLP : The RNN

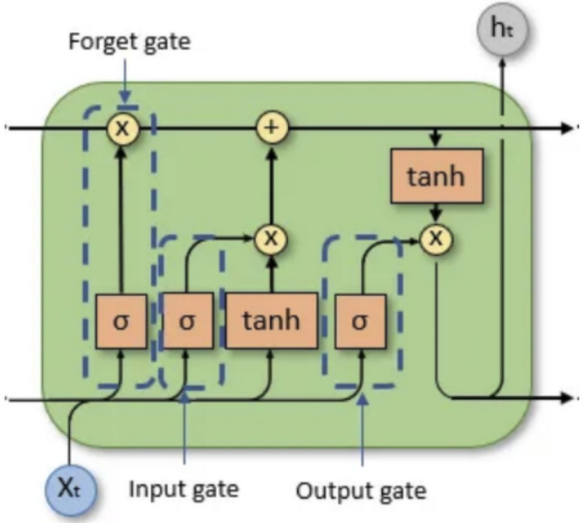


From RNN to LSTM

RNN



LSTM



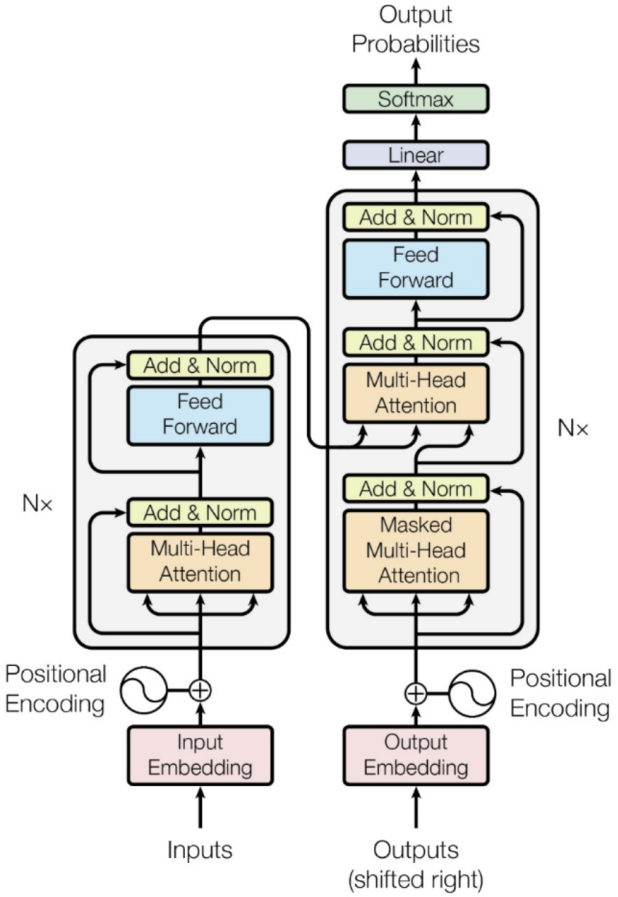
Alexandre Gazagnes

Transformers

From LSTM to...

Attention is All You Need

- Employs **self-attention** mechanisms to assign varying degrees of importance to different words in a sentence, independently of their positions within the sequence.
- Processes **entire sequences** of data in parallel, which significantly speeds up training and enhances the model's ability to handle long-range dependencies.
- Does **not use any recurrent** architecture (no data flow from one time step to the next), unlike LSTM.



Practice !

Annexes

About Deep Learning

- *https://www.fast.ai/*
- *https://www.youtube.com/@CNRS-FIDLE*
- *https://www.deeplearning.ai*
- *https://feedly.com/ (Intell)*