Deep learning

ECTS : 2

Volume horaire : 18

Description du contenu de l'enseignement :

1/ Deep learning: major applications, key references, general background
2/ Types of approaches: supervised, reinforcement, unsupervised
3/ Neural networks: presentation of the main components—neurons, operations, loss function, optimization, architecture
4/ Focus on stochastic optimization algorithms, convergence proof of SGD
5/ Convolutional neural networks (CNNs): filters, layers, architectures
6/ Techniques: backpropagation, regularization, hyperparameters
7/ Networks for sequences: RNN, LSTM, Attention, Transformer
8/ Generative networks (GAN, VAE)
9/ Programming environments for neural networks: TensorFlow, Keras, PyTorch, and hands-on work with the examples covered in class
10/ Stable Diffusion, LLMs
11/ Ethical and alignment perspectives

Compétence à acquérir :

introduction to deep learning

Bibliographie, lectures recommandées :

https://turinici.com