

# Introduction to Deep Learning (Python)

Understand the basics of deep learning, from the mathematical fundamentals to modern applications, with hands-on practice.

## Mathematical and algorithmic fundamentals

Implement a simple multi-level perceptron training from scratch.

## Applications

Apply various architectures (convolutional, recurrent, transformers) to problems from the domains of computer vision and natural language processing.

## DL frameworks

Learn how to work with one of the popular DL frameworks in Python, utilizing the GPU and monitoring the process.

	Day 1	Day 2	Day 3	Day 4	Day 5
09:00	Introduction	Intro to DL libraries Model definition Loss functions Training loop Optimizers	Tensorboard, troubleshooting	RNN Concept LSTM GRU	Attention and the transformer architecture
	MLP math MLP formulation forward & back prop.		Convolutions	Language models	
	Practice session #1 MLP implementation from scratch	Practice session #2 DL library basics (Tensorflow + Keras / PyTorch)	Practice session #3 Convolutional NN	Practice session #4 NLP with DL	Practice session #5 Transformers
17:00					Closing remarks

### Prerequisites:

- Experience with the data science ecosystem in Python
- ML background
- Comfortable with linear algebra and calculus