UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Introduction to Deep Learning for Physicists

2122-86R-IntroDeepLAL

Titolo

Introduction to Deep Learning for Physicists

Docente(i)

dott. Cristiano De Nobili

Lingua

English

Breve descrizione

Deep Learning Intro (8 hours)

1. Information Theory Background for Machine Learning
2. Neural Networks Theory, non-linearity, learning through backpropagation and gradient descend
3. PyTorch Introduction
4. Building a feed-forward network from scratch with PyTorch
5. Overfitting and Underfitting a Neural Network for universal approximation. Dropout and regularizations.

An Advanced Example (6 hours)

1. Convolutional Neural Networks
2. Variational Auto-Encoder for image denoising
3. (OR in alternatively) Generative Adversarial Networks

Sustainable AI: an example (4 hours)

1. Motivation for energy efficient deep learning
2. Pruning Neural Networks and Lottery Ticket Hypothesis

CFU / Ore

18 hours/ 2 CFU

Periodo di erogazione

January 2022