Crash course in deep learning

GIOVANNI VOLPE & CARLO MANZO

September 16, 2024 to September 20, 2024

Mir-Puig Elements Room

The trainers will start by introducing basic dense neural networks and backpropagation?to progressively move toward deep learning using the standard neural network packages such as TensorFlow/Keras and PyTorch.?

They will describe several advanced deep-learning architectures for?different tasks, wit applications to real case studies.

Dates:

? Monday, September 16, 10:00 - 13:00 and 15-1

Tuesday, September 17, 10:00 - 13:00 and 15-

7 Wednesday, September 18, 10:00 - 13:00 and 15

17 Thursday, September 19, 10:00 - 13:00 and 1

-18 Friday, September 20,

Target group:??? ICFO researchers?

Available places: 12?

Training content:

Day 1: Neural Networks?for Classification

Day 2: Neural Networks?for Regression

Day 3: Convolutional Neural?Networks

Day?4: Encoders-Decoders

Day 5: U-Net?

Trainers:

? Prof. Giovanni Volp

Giovanni Volpe is a Full Professor at the Physics Department of the University of Gothenburg, where he leads the Soft?Matter Lab (http://softmatterlab.org) - and?an ICFO alumnus. His research interests include soft matter, optical trapping and manipulation, statistical?mechanics, brain connectivity, and machine learning. He has authored more than 100 articles and reviews on soft matter, statistical?physics, optics, physics of complex systems, brain network analysis, and machine learning. He co-authored the books "Optical?Tweezers: Principles and Applications" (Cambridge University Press, 2015) and

i¿½Simulation of Complex Systemsi¿½ (IOP Press,?2021). He has developed several soft are packages for optical tweezers (OTS - Optical Tweezers Software), b ain connectivity?(BRAPH-Brain Analysis Using Graph Theory), and microscopy enhanced by eep learning (DeepTrack

Prof. Carlo anzo Carlo Manzo is an Associate Professor at the Universitat de Vic (UVic-UCC), where h leads the Quantitative BioImaging lab (https://mon.uvic.cat/qubilab/). His research aims at providing a quantitative view of biophysical processes through the combination of single-molecule microscopy, machine learning, and statistical mechanics. He authored more than 50 articles in optics, biophysics, machine learning, and cell biology. He is the organizer of the Anomalous Diffusion challenge (AnDi, www.andi-challenge.org).?

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