Crash course in deep learning - Advanced module Generative Models: GANs and Diffusion Models for Image Synthesis

GIOVANNI VOLPE & CARLO MANZO

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Elements Room

This class explores Generative Adversarial Networks (GANs) and Diffusion Models, two cutting-edge approaches in generative deep learning. You'll learn how GANs revolutionized image synthesis, enabling applications like style transfer and inpainting. Additionally, you'll dive into Diffusion Models, the latest advancement in generative AI, known for their ability to produce highly realistic images, positioning them as a powerful alternative to traditional generative models.

Prof. Giovanni Volpe

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. Hi research interests include soft matter, optical trapping and manipulation statistical mechanics, brain connectivity, and machine learning. He has authored more th n 100 articles and reviews on soft matter, statistical physics, optics, physics of comp ex systems, brain network analysis, and machine learning. He co-authored the bo ks "Optical Tweezers: Principles and Applications" (Cambridge University Press, 2015) and i¿½Simulation of Complex Systemsi¿½ (IOP Press, 2021). He has developed several software packages for optical tweezers (OTS - Optical Tweezers Softwar), brain connectivity (BRAPH-Brain Analysis Using Graph Theory), and microscopy enhanc d by deep learning (D

Prof. Carlo Manzo

Carlo Manzo is an Associate Professor at the Universitat de Vic (UVic-UCC), where he 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).

Target group: ICFO researchers, with priority given to those who have attended the previou

module

Available places: 16

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