UNIVERSITÀ DI TORINO

ID

VP082_NEU

Visiting Professor Program
Academic Year 2023/2024

TEACHING COMMITMENT: 12 hours

COURSE TITLE
Computer Vision

TEACHING PERIOD
2nd term

SCIENTIFIC AREA
Human Anatomy, Information Processing System

LANGUAGE USED TO TEACH
English

COURSE SUMMARY
The Computer Vision course will be especially dedicated to the investigation of the brain using 3D Electron microscopy. Special emphasis will be given on visual inspection of EM brain data, and how to recognize cellular processes. This is key for the classification of the different cell types (neurons, glia), their processes (e.g. synapses), and intracellular organelles. Being able to distinguish different cells and different domains will allow to use 3D segmentation algorithms, in particular machine-learning based, to select structures of interest to be segmented and reconstructed.

LEARNING OBJECTIVES
The student will be able to recognize the microscopic neuroanatomy and cellular ultrastructure, by efficiently reading electron micrographs. Moreover, the student will be able to familiarize with manual, semi-automated and automated image segmentation platform, and understand the difference between image-based analysis and volume-based analysis.

TUTORSHIP ACTIVITIES
N/A

LAB ACTIVITIES
Practical workshops using Machine Learning tools and basic developers SDKs based on Python scripts for image processing and segmentation.

OTHER ACTIVITIES BESIDES THE COURSE
Lectures from international experts on AI and Machine Learning will be provided.

VISITING PROFESSOR PROFILE
The candidate must have a PhD in Computer Science or related disciplines. He/she must hold a position as Assistant Professor at least, with 3 or more years of experience in teaching. He/she must have a collaborative experience with clinicians or biologists, to understand the nature and caveats of working with biological data.

CONTACT REFERENT
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