UNIVERSITÀ DEGLI STUDI DI TORINO

ID

VP118_DIP_FIS

Visiting Professor Program
Academic year 2022/2023

TEACHING COMMITMENT: 16 hours

COURSE TITLE

Introduction to Data Analysis for Natural and Social Sciences - MachIne learning tools for large-scale biological datasets

TEACHING PERIOD
2nd term

SCIENTIFIC AREA
Theoretical Physics

LANGUAGE USED TO TEACH
English

COURSE SUMMARY
The course is intended to present the tools to perform a complete systems biology analysis of a biological question, from the collection of data to the construction and analysis of the corresponding mathematical model. It is organized in three parts, each one of 16 hours.
1st module : Analysis of large-scale datasets
→ Introduce concepts and methods to manipulate large-scale datasets
→ Develop strategies to extract relevant information and interpret results
→ Open source tools used by data scientists to visualize big data
2nd module : Knowledge organization
→ Organize knowledge / information in the form of a network
→ Build in silico dynamic models to simulate in vivo / in vitro experiments
→ Get familiar with existing tools to provide models to clinical applications
3rd module : Machne learning tools for large-scale biological datasets
→ Introduction to machine learning methods for large-scale biological datasets
→ Discussion of a few existing tools for dimensional reduction and data clustering
This position refers to the 3rd module

LEARNING OBJECTIVES

Provide an overview of the most recent tools in the context of Data Analysis
- Discuss a few topical applications both in a bio-medical context;
- Introduce a few of the most recent computational tools for data analysis and inference.

TUTORSHIP ACTIVITIES

N/A

LAB ACTIVITIES

N/A

OTHER ACTIVITIES BESIDES THE COURSE

N/A

VISITING PROFESSOR PROFILE

Expertise in machine learning applied to large-scale biological datasets.

CONTACT PERSON AT THE DEPARTMENT

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