BORSA N. 8

DAUSY

D.M. 351/2022

Ambito: Pubblica Amministrazione
Tematica: "Learning and control of complex networks and financial systems"

Research theme title:

Learning and control of complex networks and financial systems

Contacts:

Prof. Giuseppe Calafiore

e-mail: giuseppe.calafiore@polito.it

Dr. Giulia Fracastoro

e-mail giulia.fracastoro@polito.it

Curriculum of DAUSY:

C2 AS for Smart Environments

Hosting University/Research Centre

Politecnico di Torino

Department:

Dipartimento di Elettronica e Telecomunicazioni

Corso Duca degli Abruzzi 24, 10129 Torino

https://www.det.polito.it/it/

Prospective Supervisors:

Giuseppe Calafiore (giuseppe.calafiore@polito.it)

Giulia Fracastoro (giulia.fracastoro@polito.it)

Description:

The core activities of this PhD will be centered on efficient techniques for the modeling and control of complex networked systems. From the methodological side, we shall explore linear and nonlinear techniques for identification/learning of complex models of interconnected systems from available observed data, and control techniques for influencing the system in order to obtain a desired behavior. These techniques will be applied to practical models such as pandemic evolution models and financial liability networks, and will inform public decision makers for designing appropriate crisis management policies.

Specific Information:

Good background is required in probability and statistics, system identification, systems and control theory and machine learning.

References:

[1].   Dynamic Planning of a Two-Dose Vaccination Campaign with Uncertain Supplies, European Journal of Operational Research, 2022
[2].   Age structure in SIRD models for the COVID-19 pandemic—A case study on Italy data and effects on mortality, Plos One, 2022
[3].   A time-varying SIRD model for the COVID-19 contagion in Italy, Annual Reviews in Control, 2020
[4].   On Optimal Clearing Payments in Financial Networks, 2021 60th IEEE Conference on Decision and Control (CDC)
[5].   Control of Dynamic Financial Networks (The Extended Version), arXiv preprint, 2022

Type of scholarship:

DM 351/2022 – Project on Public Administration

Study and research period outside the Hosting Institution:

DM 351/2022 – Project on Project on Public Administration

•   minimum 6, maximum 18 months of the study shall be performed at a company or research center or Public Administration. In particular, the PhD candidate, will spend 6 months in the research center of IEIIT-CNR, Torino. https://www.ieiit.cnr.it/it/
•   minimum 6, maximum 18 months of the study shall be performed as a study and research period abroad. In particular, the PhD candidate, will spend 6 months at the College of Engineering and Computer Science of VinUniversity in Hanoi, Vietnam. https://vinuni.edu.vn/college-of-engineering-computer-science/