

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II
DOTTORATO DI RICERCA / PhD PROGRAM IN
INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING

Seminar announcement

Part I: Tuesday December 13th 2022 Time: 8:30 - 10:00

Part: II Tuesday December 13th 2022, Time: 10:30 - 12:00

Room Seminar, Floor 1, Building 3, DIETI - Via Claudio, 21 – NAPOLI



Prof. Leonardo Badia

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Game Theory for Information Engineering

Abstract: Game theory is the study of multi-agent multi-objective problems, originally developed in economic or social sciences to face problems where a multitude of players try exploiting a shared system.

Thanks to the progress of digital technologies where smart devices possess some form of intelligence (e.g., through machine learning or optimized control), and game theory has become popular also for engineers to achieve an efficient distributed management of pervasive equipment.

In the first part of the talk, we will review basic concepts of static games of complete information and fundamental results. We will hint at what happens if

this scenario is complicated by time dynamics and/or uncertainty about the other players' preferences.

In the second part, we will see some research applications to engineering, namely:

- autonomous vehicles interacting in smart cities
- model interpretability of machine learning, e.g., for medical applications
- IoT and sensing applications with age of information
- physical layer security issues such as jamming and blocking with mobile nodes
- industry 4.0 and low-complexity distributed monitoring through smart agents

Lecturer short bio: *Leonardo Badia graduated from the University of Ferrara, Italy. In 2011, he joined the faculty of the University of Padova, Italy, where he is presently Associate Professor. His research interests are in the broad area of mathematical optimization for communication networks, including analysis of transmission protocols via Markov models, cross-layer optimization of resource allocation; Age-of-Information; models for energy harvesting; applications of game theory to telecommunications.*

PhD students abroad who intend to attend the course via Teams are requested to send by Dec 12th an e-mail to the organizer for receiving the Teams code

For information: Prof. Marcello Caleffi (DIETI, UniNA) – marcello.caleffi@unina.it (organizer)