



UNIVERSITA' CAMPUS BIO-MEDICO DI ROMA

Corso di Laurea Magistrale in Ingegneria Biomedica
Unità di Ricerca in Automatica

Finite-Time Distributed Algorithms for Balancing and Consensus

Dr. Apostolos I. Rikos

KIOS Research and Innovation
Centre of Excellence, University of Cyprus

ABSTRACT:

Distributed systems (i.e., networks of interconnected entities that cooperate on a local basis in order to accomplish complex, global tasks) are becoming widespread in several domains, ranging from IoT to Smart Grids and from Mobile Robotics to Disaster Recovery.

In this context, two major tasks are consensus (e.g., reaching a shared estimation in sensor networks or a common location in robotic swarms) and weight/flow balancing (e.g., water distribution networks or flexible manufacturing systems).

However, the major limitations of classical algorithms are their asymptotic convergence and the inability to cope with quantization errors or packet drops.

In this seminar, I will present novel distributed algorithms for weight balancing and average consensus which guarantee finite-time convergence over directed networks.

Specifically, I will present algorithms that are able to handle quantization (e.g., integer weights or values) delays and packet drops in the communication links.

Finally, I will also present event-based algorithms in which each entity autonomously decides when communication and control updates should occur.



BIOGRAPHY

Apostolos I. Rikos received the B.Sc., M.Sc and Ph.D. degrees in Electrical Engineering from the Department of Electrical and Computer Engineering, University of Cyprus in 2010, 2012 and 2018 respectively.

Since November 2018, he has been working as a Special Scientist in KIOS Research and Innovation Centre of Excellence, Cyprus. His research interests are in the area of distributed systems, coordination and control of networks of autonomous agents, sensor networks, stochastic processes, optimization and graph theory.

Martedì 11 giugno 2019 - ore 15:00

Aula T12 - Trapezio

Università Campus Bio-Medico di Roma

Via Álvaro del Portillo, 21

Info: s.ott@unicampus.it

Seminar