



TOPIC	Distributed Fault Diagnosis and Cyber-attack Detection in Large-Scale Systems
ORGANIZERS	Student Leadership Council and Faculty of ACIT Institute and TECHLAV Center
AREA	Model based distributed fault detection and diagnosis
SPEAKER	Riccardo M.G. Ferrari
DATE	Friday November 10, 2017
TIME	3:00 – 4:00 P.M. (EST)
VENUE	Fort IRC 410, North Carolina A&T State University, UTSA and SIPI will be joining through video-conferencing
FEES	No Charge

SYNOPSIS

Critical infrastructures, such as smart grids, or autonomous robot formations, such as cooperative autonomous vehicles or UAVs, are examples of distributed systems which are expected to provide outstanding functionalities and positively influence our life and society. Unfortunately, threats to the safe operation of such distributed systems may come not only from external sources, such as changed or unfavorable environmental conditions or exogenous traffic and vehicles, but from internal sources as well. This last category includes faulty nodes, as the result of normal or accidental break down, or otherwise misbehaving ones, for instance due to malicious cyber-attacks directed at disrupting the service provided by the system.

While distributed control has been a topic extensively addressed in the literature, distributed fault diagnosis and cyber-attack detection received less attention. In this talk we will present the basics of model-based distributed fault (and attack) detection and show recent results aimed at improving the performance of detection thresholds via a probabilistic approach, and how to tackle specific classes of cyber-attack via a novel sensor-watermarking technique.

ABOUT THE SPEAKER



Riccardo M.G. Ferrari is a Marie Curie Fellow and Assistant Professor in Fault Tolerant Control at Delft University of Technology (The Netherlands). He received a Ph.D. in Information Engineering from the Univ. of Trieste (Italy) and worked for six years in industrial R&D at a researcher and executive manager level, developing instrumentation and control solutions, before coming back to academia. His present and future research interests include Fault Diagnosis and Cyber-attack Detection for Nonlinear Distributed Systems, with possible applications to Cooperative Autonomous Vehicles. He is the recipient of the 2005 Giacomini Award of the Italian Acoustic Society.