



Università
di Genova

DICCA DIPARTIMENTO
DI INGEGNERIA CIVILE, CHIMICA
E AMBIENTALE

DICCA SEMINAR SERIES 2022

MAURIZIO PORFIRI - New York University, Tandon School of Engineering

“When zebrafish met engineering”

Zebrafish are gaining momentum as the third millennium laboratory species for the investigation of several functional and dysfunctional biological processes in humans, including the fundamental mechanisms modulating emotional patterns, learning processes, and individual and social response to alcohol and drugs of abuse. Dynamical systems and robotics offer a powerful range of theoretical and experimental approaches that can advance our understanding of this animal model. In this talk, we report recent advances on: (i) the design of biomimetic robotic fish to elicit highly-controllable and customizable stimuli for laboratory experiments on zebrafish behavior; (ii) the formulation of a new data-driven modeling framework to study zebrafish behavior within unprecedented “in silico” experiments that can help reduce the number of animals in preclinical studies; and (iii) the integration of information-theoretic tools to unravel leader-follower interactions in groups of zebrafish and measure fear response to predators. The presentation is intended to expose neuroscientists to toolbox of methodological innovations that can enhance their experiments, while offering engineers an overview of fundamental mathematical and technological advancements that can find applications beyond the study of zebrafish.

10/06/2022 – 4pm (CET)

Villa Cambiaso - Salone Nobile, Via Montallegro 1 (GE)

School of Engineering, UNIGE

Streaming on Teams channel (CODE: wlp9vyt) or using this link:

<https://shorturl.at/dknxR>



**Università
di Genova**

DICCA DIPARTIMENTO
DI INGEGNERIA CIVILE, CHIMICA
E AMBIENTALE

DICCA SEMINAR SERIES 2022

MAURIZIO PORFIRI - New York University, Tandon School of Engineering

Short bio

Dr. Maurizio Porfiri is an Institute Professor at New York University Tandon School of Engineering, with appointments at the Center for Urban Science and Progress and the Departments of Mechanical and Aerospace Engineering, Biomedical Engineering, and Civil and Urban Engineering. He received M.Sc. and Ph.D. degrees in Engineering Mechanics from Virginia Tech, in 2000 and 2006; a "Laurea" in Electrical Engineering (with honors) and a Ph.D. in Theoretical and Applied Mechanics from Sapienza University of Rome and the University of Toulon (dual degree program), in 2001 and 2005, respectively. He has been on the faculty of the Mechanical and Aerospace Engineering Department since 2006, when he founded the Dynamical Systems Laboratory. Dr. Porfiri is a Fellow of the American Society of Mechanical Engineers (ASME) and the Institute of Electrical and Electronic Engineers (IEEE). He has served in the Editorial Board of ASME Journal of Dynamics systems, Measurements and Control, ASME Journal of Vibrations and Acoustics, Flow: Applications of Fluid Mechanics, IEEE Control Systems Letters, IEEE Transactions on Circuits and Systems I, Mathematics in Engineering, and Mechatronics. Dr. Porfiri is engaged in conducting and supervising research on complex systems, with applications from mechanics to behavior, public health, and robotics. He is the author of more than 350 journal publications, including papers in Nature, Nature Human Behaviour, and Physical Review Letters. He was included in the "Brilliant 10" list of Popular Science in 2010 and his research featured in major media outlets, such as CNN, NPR, Scientific American, and Discovery Channel. Other significant recognitions include National Science Foundation CAREER award; invitations to the Frontiers of Engineering Symposium and the Japan-America Frontiers of Engineering Symposium organized by National Academy of Engineering; invitation to the third and fourth World Laureate Forums; the Outstanding Young Alumnus award by the college of Engineering of Virginia Tech; the ASME Gary Anderson Early Achievement Award; the ASME DSCD Young Investigator Award; the ASME C.D. Mote, Jr. Early Career Award; and the Research Excellence Award from New York University Tandon School of Engineering.

10/06/2022 – 4pm (CET)

Villa Cambiaso - Salone Nobile, Via Montallegro 1 (GE)

School of Engineering, UNIGE

Streaming on Teams channel (CODE: wlp9vyt) or using this link:

<https://shorturl.at/dknxR>