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Artificial Intelligence
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AImage Lab

GENDER *UN*BALANCED AI Seminars

Sala Eventi Tecnopolo (Building 52)
Engeneering Department 'Enzo Ferrari'
Via Vivarelli 10, 41125 Modena

Tuesday, November 22nd, 9:15 a.m.

Laura Toni
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Graph Signal Processing for Machine Learning: Challenges and Use-cases

ABSTRACT

The effective representation, processing, analysis, and visualization of large-scale structured data, especially those related to complex domains such as networks and graphs, are one of the key questions in modern machine learning. Graph signal processing (GSP), a vibrant branch of signal processing models and algorithms that aims at handling data supported on graphs, opens new paths of research to address this challenge. In this talk, we review a few important contributions made by GSP concepts and tools, such as graph filters and transforms, to the development of novel machine learning algorithms. We present this by proposing different research problems that are currently under investigation in our lab on decision making strategies (graph-based decision-making strategies) and computer vision (space-time priors for point cloud prediction).

Laura Toni is an associate professor in the Department of Electronic and Electrical Engineering at University College London (UCL). She received her PhD degree in electrical engineering in 2009 from the University of Bologna, Italy. She was a Post-Doc at the University of California at San Diego (UCSD) from 2011-2012 and at the Swiss Federal Institute of Technology (EPFL), Switzerland from 2012-2016. Her major contributions are in large-scale signal processing for machine learning, graph signal processing, decision-making strategies under uncertainty, and multimedia processing. She has (co)-authored over 60 high-impact publications, and she is co-inventor of 2 patents on low-delay video processing and streaming. She is significantly involved in scientific committees of world-leading conferences/journals (e.g., Program Chair of ACM MM 2021, general chair of ACM MMSys 2019). She recently received the UCL Future Leadership Award and Cisco Academic grant and online optimization on irregular domains with application to smart cities. She also received the Adobe System academic donation on graph-based processing for point clouds. Since at UCL (2016), she has been PI /Co-PI in over 5 projects sponsored by EPSRC, Royal Society, and industrial partners with cumulative funding for my research exceeding £500k as PI, all centred around media processing and online learning on irregular domains.

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