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Game-Theoretic Methods in Computer Vision

SPEAKER | **Prof Marcello Pelillo**

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DATE 13 November 2017(Monday)

TIME 2:00 pm - 3:00 pm

VENUE CS Seminar Room, Y6405
6th Floor, Yellow Zone
Yeung Kin Man Academic Building
City University of Hong Kong
83 Tat Chee Avenue
Kowloon Tong

ABSTRACT

The development of game theory in the early 1940's by John von Neumann was a reaction against the then dominant view that problems in economic theory can be formulated using standard methods from optimization theory. Indeed, most real-world economic problems typically involve conflicting interactions among decision-making agents that cannot be adequately captured by a single (global) objective function, thereby requiring a different, more sophisticated treatment. Accordingly, the main point made by game theorists is to shift the emphasis from optimality criteria to equilibrium conditions. As it provides an abstract theoretically-founded framework to elegantly model complex scenarios, game theory has found a variety of applications not only in economics and, more generally, social sciences but also in different fields of engineering and information technologies. In particular, in the past there have been various attempts aimed at formulating problems in computer vision, pattern recognition and machine learning from a game-theoretic perspective and, with the recent development of algorithmic game theory, the interest in these communities around game-theoretic models and algorithms is growing at a fast pace. The goal of this lecture is to offer an introduction to the basic concepts of game theory and to provide a critical overview of its main applications in computer vision and pattern recognition. We shall assume no pre-existing knowledge of game theory by the audience, thereby making the tutorial self-contained and understandable by a non-expert.

BIOGRAPHY

Marcello Pelillo is a Full Professor of Computer Science at Ca' Foscari University in Venice, Italy, where he directs the European Centre for Living Technology (ECLT) and leads the Computer Vision and Pattern Recognition group which he established in 1995. He held visiting research positions at Yale University, McGill University, the University of Vienna, York University (UK), the University College London, and the National ICT Australia (NICTA). He has published more than 200 technical papers in refereed journals, handbooks, and conference proceedings in the areas of pattern recognition, machine learning and computer vision.

He has initiated several conference series, including EMMCVPR in 1997 (Energy Minimization Methods in Computer Vision and Pattern Recognition), IWCV in 2008 (International Workshop on Computer Vision), SIMBAD in 2011 (Similarity-Based Pattern Analysis and Recognition), and he chairs the EMMCVPR and SIMBAD steering committees. He has organized several workshops as Program Chair, including workshops at NIPS (1999, 2011) and ICML (2010). He is (has been) General Chair for ICCV 2017, Track Chair for ICPR 2018, Area Chair for ICPR 2014 and ICIAP 2015, Program Chair for S+SSPR 2014, and Publicity Chair for ECCV 2012. He has been tutorial lecturer at CVPR (2011), ECCV (2012), ICPR (2010, 2014), ICIAP (2011), and is invited regularly as keynote speaker in workshops, conferences and summer schools of his area (most recently, MCS'15, GbR'15, ICPRAM'15, VSS'14, VISMAC'14, ICMLC'13, IWCSN'13, etc.).

He serves (has served) on the Editorial Boards of the journals IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), IET Computer Vision, Pattern Recognition, Frontiers in Computer Image Analysis, Brain Informatics, and he serves on the Advisory Board of the International Journal of Machine Learning and Cybernetics. He has served (serves) as Guest Editor for various special issues of IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), IEEE Transactions on Neural Networks and Learning Systems (TNNLS), Pattern Recognition, Pattern Recognition Letters, and is regularly on the program committees of the major international conferences and workshops in his area.

He is (or has been) scientific coordinator of several research projects, including SIMBAD, an EUFP7 project devoted to similarity-based pattern analysis and recognition whose activity is described in a recently published Springer book, and he has recently won an award from the Samsung Global Research Outreach (GRO) program.

Prof Pelillo has been elected Fellow of the IEEE in 2013 and Fellow of the IAPR in 2008 "for his contributions to graph-theoretic and optimization-based approaches in pattern recognition and computer vision."

All are welcome!