

KEYNOTE TALK
Wednesday, July 31, 2013
8:30 AM – 9:30 AM / MEGAS ALEXANDROS

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Deformable Models, Learning and Sparse Methods for Human Behavioral Analysis and Medical Applications

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Abstract

Many of our cognitive abilities, communication and intentions are based on our nonverbal behaviors. Over the past 20 years we have pioneered stochastic deformable modeling methods for the 3D facial and human body based nonverbal communication analysis. In the first part of the talk we will present a general framework for nonverbal behavior recognition that is based on facial and body movement analysis. We will then present the use of these methods in various important applications such as deception detection, emotion recognition, sign language and crowd behavior. In the second part of the talk we will present recent extensions of our framework based on novel sparse learning formulations and in particular structured sparsity, which is an extension of the sparsity concept in statistical learning and compressive sensing. We will show how this new and important concept can be incorporated in deformable models and result in new and efficient ways to cope with complex segmentation, big-data learning, behaviors and medical application



Speaker Bio-Sketch: Dr. Dimitris Metaxas is a Distinguished Professor and Chair of the Computer Science Department at Rutgers University. He is directing the Center for Computational Biomedicine, Imaging and Modeling (CBIM). From September 1992 to September 2001 he was a tenured faculty member in the Computer and Information Science Department of the University of Pennsylvania and Director of the VAST Lab. Prof. Metaxas received a Diploma in Electrical Engineering from the National Technical University of Athens Greece in 1986, an M.Sc. in Computer Science from the University of Maryland, College Park in 1988, and a Ph.D. in Computer Science from the University of Toronto, Ontario, Canada in 1992. Dr. Metaxas has been conducting research towards the development of formal methods upon which both computer vision, computer graphics and medical imaging can advance synergistically.

In computer vision, he works on the simultaneous segmentation and fitting of complex objects, shape representation, deterministic and statistical object tracking, sparse methods for segmentation and restoration, learning and ASL, gesture recognition and human activity analysis. Dr. Metaxas has published over 400 research articles in these areas and has graduated 35 PhD students. The above research has been funded by NSF, NIH, ONR, AFOSR, DARPA, HSARPA and the ARO. Dr. Metaxas research has received several best paper awards and he has 7 patents. He was awarded a Fulbright Fellowship in 1986, is a recipient of an NSF Research Initiation and Career awards, an ONR YIP, and is a Fellow of the American Institute of Medical and Biological Engineers. He has been involved with the organization of several top conferences in vision and medical image analysis such as ICCV 2007, ICCV 2011, MICCAI 2008 and CVPR 2014.