Keynote Lectures

Big Visual Data for Dynamic Monitoring of Physical World
Prof. Jenq-Neng Hwang, University of Washington

Abstract: In this talk, I will present an automatic system which dynamically tracks human objects and create their 3-D visualization from big visual data, collected either from a single or an array of static/moving cameras. These cameras are continuously calibrated among one another in a fully unsupervised manner so that the tracking across multiple cameras can be effectively integrated and reconstructed via the 3D open map service such as Google Earth or Microsoft Virtual Earth. Finally, I will also present some systematic recognition of the actions performed by the tracked human independent of the viewing perspectives.

Speaker Biography

Dr. Jenq-Neng Hwang received the BS and MS degrees, both in electrical engineering from the National Taiwan University, Taipei, Taiwan, in 1981 and 1983 separately. He then received his Ph.D. degree from the University of Southern California. In the summer of 1989, Dr. Hwang joined the Department of Electrical Engineering of the University of Washington in Seattle, where he has been promoted to Full Professor since 1999. He is currently the Associate Chair for Research in the EE Department. He has written more than 300 journal, conference papers and book chapters in the areas of multimedia signal processing, and multimedia system integration and networking, including an authored textbook on "Multimedia Networking: from Theory to Practice," published by Cambridge University Press. Dr. Hwang has close working relationship with the industry on multimedia signal processing and multimedia networking.

Dr. Hwang received the 1995 IEEE Signal Processing Society's Best Journal Paper Award. He is a founding member of Multimedia Signal Processing Technical Committee of IEEE Signal Processing Society and was the Society's representative to IEEE Neural Network Council from 1996 to 2000. He is currently a member of Multimedia Technical Committee (MMTC) of IEEE Communication Society and also a member of Multimedia Signal Processing Technical Committee (MMSP TC) of IEEE Signal Processing Society. He served as associate editors for IEEE T-SP, T-NN and T-CSVT, T-IP and Signal Processing Magazine (SPM). He is currently on the editorial board of ETRI, IJDMB and JSPS journals. He was the Program Co-Chair of ICASSP 1998 and ISCAS 2009. Dr. Hwang is a fellow of IEEE since 2001.

Creating Cognitively-Aware Decision Support Technology
Prof. Cleotilde González, Carnegie Mellon Unviersity

Abstract : Creating Cognitively-Aware Decision Support Technology
Professor Cleotilde Gonzalez
Dynamic Decision Making Laboratory, Carnegie Mellon University

When using advanced technological systems, decision makers must deal with situations that are highly uncertain, dynamic, time constrained, and cognitive demanding. For example, a cybersecurity analyst attempting to protect a corporate network needs to detect criminal activity in the presence of large amounts of speedy information, distributed over time, with novel, and limited or no training. My interdisciplinary research program studies the challenges of human decision making in dynamic decision making tasks supported by technology, such as cybersecurity intrusion detection. We study human decision making through experiments and formalize these findings cognitive models that reproduce human behavior. Our theory of decisions from experience (i.e., Instance-Based Learning Theory, IBLT) demonstrates and explains how humans with limited information processing capabilities make decisions while interacting with a changing environment. Computational models derived from the formalizations of IBLT produce results that predict human decisions by accounting for the dynamic availability of information and for the characteristics of human memories for experienced outcomes. Current advance decision support systems can be greatly enhanced by accounting for the cognitive state of a decision maker. I will present my research program broadly, introducing IBLT and a series of selected applications that demonstrate the integration of my cognitive psychology research and decision support and automation to make accurate predictions of human decisions in technological systems.

Speaker Biography
Prof. Cleotilde Gonzalez is an Associate Research Professor at the Department of Social and Decision Sciences at Carnegie Mellon University. Her research work focuses on the study of human decision making in dynamic and complex environments. She has an extensive publication record in top journals in areas of psychology, computer science, and decision science. She is the founding director of the Dynamic Decision Making Laboratory (DDMLab: www.cmu.edu/ddmlab) where researchers conduct behavioral studies on dynamic decision making using Decision Making Games, and create technologies and cognitive computational models to support decision making and training. The DDMLab is a group fully funded by grants from research institutions such as National Science Foundation, Army Research Labs, Army Research Office, Defense Threat Reduction Agency and others. She is part of the editorial board of the Journal of Behavioral Decision Making, American Journal of Psychology, and Human Factors Journal; and Associate Editor of the Journal of Cognitive Engineering and

Decision Making and System Dynamics Review. She is chair and part of technical program committee of the annual meeting for the Human Factors and Ergonomics Society, and a Fellow of the same society.

The Use of FPGAs in Data Acquisition Systems

Dr. Sergio Vergara Limon
Facultad de Ciencias de la Electrónica, Benemérita Universidad Autónoma de Puebla

Abstract: In this talk we will show data acquisition systems based on FPGAs and their
applications in different areas of science and technology, in High Energy Physics (ALICE experiment at CERN), quantum optics, robotics, control, automation and even some developments have been made in medical instruments.

Speaker biography

DEGREE IN ELECTRONICS, School of Electronics , Autonomous University of Puebla.
MASTER OF SCIENCE (Specialty 0ptoelectrónica), Faculty of Physics and Mathematics, Autonomous University of Puebla.
Sciences (Specialty Optoelectronics) School of Physics and Mathematics, Autonomous University of Puebla.

Coordinator of the Master of Science in Electronics Automation option of the Faculty of Electronic Sciences , Head of the Academic Board for Robotics and Control, Full Professor at the Faculty of Electronic Sciences from 2005 to date.

Line (s) Current Research : Electronic Instrumentation specializes in the area of High Energy Physics , Robotics , Control , Automation , Health and quantum optics .

Research Development: International collaboration in the CERN experiment ALICE Collaboration with the Faculty of Sciences and the Institute of Nuclear Sciences , UNAM, Tribology Group and biomechanics CENIDET Department of Mechanics , School of Science UABJO .

Member of the National System of Researchers, Level I, Profile PROMEP lab session Instructor in 2013 ICFA .

Author of 85 articles indexed in the ISI Thompson , Director of 22 thesis and one PhD .