

Presents the Spring 2012 EECS Seminar Series

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“Mosaicing, Segmentation and Categorization of Dynamic Scenes”
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ABSTRACT

Non-rigid dynamical objects are common in our day to day life. Some examples include waves rippling on the surface of a lake, a flag fluttering in the wind, a moving person, etc. The categorization of videos of such scenes is incredibly challenging, because their appearance constantly changes as a function of time. Most existing video categorization algorithms are not useful for such objects as they either consider the object to be rigid or do not account for changes in scale, illumination and viewpoint.

In this talk, I will describe our recent work on modeling, segmentation and categorization of video sequences of non-rigid dynamical objects. We model the video as the output of a linear dynamical system and use features extracted from the model parameters to perform both segmentation and categorization of non-rigid dynamical objects with invariance to changes in scale, illumination and viewpoint. We demonstrate the performance of our categorization algorithms on several datasets and show that it outperforms the state of the art.

BIOGRAPHY

Professor Vidal received his B.S. degree in Electrical Engineering (highest honors) from the Pontificia Universidad Catolica de Chile in 1997 and his M.S. and Ph.D. degrees in Electrical Engineering and Computer Sciences from the University of California at Berkeley in 2000 and 2003, respectively. He was a research fellow at the National ICT Australia in 2003 and joined The Johns Hopkins University in 2004 as a faculty member in the Department of Biomedical Engineering and the Center for Imaging Science. Dr. Vidal was co-editor (with Anders Heyden and Yi Ma) of the book “Dynamical Vision” and has co-authored more than 140 articles in biomedical image analysis, computer vision, machine learning, hybrid systems, and robotics. Dr. Vidal is Associate Editor of the SIAM Journal on Imaging Sciences and the Journal of Mathematical Imaging and Vision. He will be program chair for ICCV 2015 and CVPR 2014 and was a program chair for WMVC 2009, PSIVT 2007. He was also area chair for CVPR 2005, ICCV 2007 and ICCV 2011. Dr. Vidal is recipient of the 2009 ONR Young Investigator Award, the 2009 Sloan Research Fellowship, the 2005 NSF CAREER Award and the 2004 Best Paper Award Honorable Mention (with Prof. Yi Ma) for his work on “A Unified Algebraic Approach to 2-D and 3-D Motion Segmentation” presented at the European Conference on Computer Vision. He also received the 2004 Sakrison Memorial Prize for “completing an exceptionally documented piece of research”, the 2003 Eli Jury award for “outstanding achievement in the area of Systems, Communications, Control, or Signal Processing”, the 2002 Student Continuation Award from NASA Ames, the 1998 Marcos Orrego Puelma Award from the Institute of Engineers of Chile, and the 1997 Award of the School of Engineering of the Pontificia Universidad Catolica de Chile to the best graduating student of the school. He is a member of the IEEE, ACM and SIAM.