EE Department Seminar

January 7, 2013, Monday, 3 p.m.
Yorgo Istefanopulos Meeting Lounge (KB 217)

Learning Spatially-Smooth Mappings

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Non-rigid structure from motion (NRSFM) is a classical under-constrained problem in computer vision. A common approach to make this under-constrained problem more tractable is to constrain 3D shape deformation to be smooth over time. However, temporal smoothness cannot be enforced when the data lacks temporal ordering and its benefits are less evident when objects undergo abrupt deformations. We propose a new NRSFM method that addresses these problems by considering deformations as spatial variations in shape space and then enforcing spatial, rather than temporal, smoothness. Our Rotation Invariant Kernel-based mapping leads to another fundamental advantage of our approach: for a newly observed 2D shape, its 3D shape is recovered by simply evaluating the learned function. In other problems of vision, such as object recognition, one needs to extract features that are robust to local smooth deformations. We have addressed this problem with a system that extracts compact local features that are robust to perspective deformations and allow efficient recognition of the objects. Time permitting, I will sketch a multiple ranking algorithm for learning one or more human preferences on associating visual attributes to object classes.

Short Bio:
Onur C. Hamsici received the BS degree in Electrical and Electronics Engineering and a minor degree in Mechatronics in Mechanical Engineering both from Middle East Technical University, Ankara, Turkey in 2003. He received the MS and PhD degrees in Electrical and Computer Engineering from The Ohio State University (OSU), in 2005 and 2008, respectively. He was a Postdoctoral Researcher at OSU and Visiting Faculty at Qualcomm in 2009. He is currently a researcher at the Office of the Chief Scientist at Qualcomm Research, San Diego. His research interests are statistical pattern recognition, machine learning, and vision.