

KEYNOTE TALK  
*Tuesday, July 30, 2013*  
1:30 PM – 2:30 PM / MEGAS ALEXANDROS

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## **Recognizing Actions, Events and Complex Activities in Large-Scale Video Datasets**

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### **Abstract**

The scale of video data is growing exponentially. In addition to huge growth in consumer video captured by mobile devices, surveillance cameras are becoming larger, more numerous and ubiquitous. Extracting the most interesting, salient content from all of these video types is of increasing importance as the data volume grows. At Kitware we have developed methods for detecting events, actions, complex activities and anomalies in various video domains. In surveillance video, we have focused on large-scale problems posed by aerial and ground video, including city-scale wide-area aerial video showing hundreds or thousands of simultaneous movers. We detect events, anomalies and complex activities efficiently in such video by detecting and tracking all movers, then characterizing their behavior using event-independent descriptors. Efficient inference is achieved through layered, approximate evaluation as model complexity increases. In addition, we recognize functional scene elements such as parking spots by analyzing behavior within and around them. In consumer video, we recognize complex events such as weddings through the fusion of semantic descriptors such as ObjectBank with low-level features. The talk will provide an overview of these methods, including how they are related across disparate video domains.



**Speaker Bio-Sketch:** Anthony Hoogs is the Senior Director of Computer Vision at Kitware, a small software R&D firm based on open source. Dr. Hoogs joined Kitware in August 2007 and founded the Computer Vision group, which now has more than 30 members including 12 PhDs. He has initiated and led more than two dozen contracts in video and motion analysis, involving more than 15 universities. At GE Global Research (1998-2007), Dr. Hoogs led a team of researchers in video and imagery analysis on projects sponsored by the US Government, Lockheed Martin and NBC Universal. For more than two decades, he has supervised and performed research in various areas of computer vision including: event, activity and behavior recognition; motion pattern learning and anomaly detection; tracking; visual semantics; image segmentation; object recognition; and content-based retrieval. Dr. Hoogs received a

Ph.D. in Computer and Information Science from the University of Pennsylvania in 1998; an M.S. from the University of Illinois at Urbana-Champaign in 1991; and a B.A. magna cum laude from Amherst College in 1989.