

EE Department Seminars

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Yorgo Istefanopulos Meeting Lounge (KB 217)

Challenges of human activity analysis in very crowded environments

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In this talk, we will address the challenges of human activity analysis in very crowded environments, especially in train stations. With increasing security measures in public places the cameras are playing a more important role. Converting the existing camera systems in public places into "smart cameras", without replacing the current cameras due to cost issues, is a challenging problem. During our research and development phases for real-time smart camera applications we faced several challenges. The main goal is to develop a high performance and cost effective system design for real-time processing by overcoming challenges due to occlusion, changing camera characteristics that vary from unit to unit, changing lighting (low/high light levels, high contrast, flicker effect due to fluorescent light, shadow, automatic exposure correction, abrupt changes), camera motion (due to pan-tilt-zoom, shaking due to wind or another object, e.g. train), perspective change, camera calibration and reflection. Results of the current test system that is installed in several train stations will be discussed in this talk. We will also present a system that is installed in Kogashima, Japan, for early detection of mud-flow and flooding by using video cameras and show some preliminary results.

***Short Bio:** Burak Ozer received his B.Sc. degree in Electronics and Telecommunications Engineering in 1993 from Istanbul Technical University, his M.Sc. degree in Electrical Engineering in 1995 from Bogazici University and his Ph.D. degree in Electrical Engineering in 2000 from New Jersey Institute of Technology. He worked as a research staff member at the Department of Electrical Engineering, Princeton University where he was a member of the Embedded Systems Group and developed the prototype smart camera system. Dr. Ozer co-founded Verificon Corporation, as a start-up company from Princeton University in 2003. He developed algorithms of smart camera systems for real-time surveillance applications, worked on commercializing Verificon's technology in a joint project for Japanese market and led software team developing the embedded system for analyzing human activities in very crowded environments. Besides his duties at Verificon, Dr. Ozer works on the design and development of natural disaster early detection systems in Japan. He has numerous publications and patents on computer vision. He is a member of the IEEE and serves as a committee member in the IEEE Workshop on Embedded Computer Vision.*