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Automatic
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The Department of Automatic Control & Systems Engineering
is pleased to announce the following seminar:

Micro-/Macro-Scale Crowd Modeling and Tracking in Surveillance Environments

Dr Harish Bhaskar

*Electrical and Computer Engineering
Khalifa University, U.A.E.*

Wednesday, 16th July 2014 at 14:00
LT02, Sir Henry Stephenson Building

Abstract

In this presentation, two contrast approaches for crowd modeling and tracking will be proposed. In the first approach (that is dubbed as a macro-modeling approach), we model crowd as a dynamic surface through a speeded up robust head detection technique using a multiple kernel trained classifier. We show that the combination of Histogram of Gradients (HOG) and Local Binary Patterns (LBP) features in the multiple kernel training of an SVM classifier produces the best head detection results even in dense crowds. Following this, a novel graphical model based shape matching algorithm is proposed to track the crowd surface in subsequent frames. On the other hand, in the second approach (called a micro-modeling approach), crowd is modeled as a group of individual targets belonging to the foreground; detected using a dynamic reverse analysis-based background modeling technique. The detected foreground objects are then tracked using an Eulerian-Lagrangian approach. Both the techniques are evaluated using a random testing mechanism involving a combination of 3 publicly available data sets and compared to some of the well-known state-of-the-algorithm.

Biography

Dr Harish Bhaskar is an Assistant Professor in the Department of Electrical and Computer Engineering at Khalifa University (KUSTAR), Abu Dhabi, U.A.E. Prior to rejoining KUSTAR earlier in 2014, Dr Bhaskar spent nearly a year as a Chief Engineer at Samsung Electronics, Noida, INDIA within the Advanced Software Group, Systems Team. Dr Bhaskar's transit to the industry came after completing 4 years as an Assistant Professor of Computing Engineering at KUSTAR, since 2009. During these years, Dr Bhaskar has been actively involved in teaching and research within computer vision and image processing. In addition, Dr Bhaskar also plays a key role in the Visual Signal Analysis and Processing (VSAP) research center that has been jointly established between KUSTAR and the University of Bristol, UK. Before moving to the U.A.E. for an academic career, Dr Bhaskar worked as a post-doctoral researcher at both the University of Manchester and Lancaster University, UK. Dr Bhaskar has been actively associated with several European research institutes and the Ministry of Defense UK. His primary research interests are in the field of computer vision, image processing, data mining, visual cryptography, medical imaging and robotics.

*Refreshments will be available following the seminar in the Foyer of
The Sir Henry Stephenson Building*