

## **Visit of Prof. Mubarak Shah at the Pervasive Computing group**

In July/August 2008 Mubarak Shah from the University of Central Florida worked as guest professor at the Pervasive Computing group. He collaborates in our cDrones Lakeside Labs project – a research project on developing a system for aerial imaging based on cooperating, wireless networked microdrones that can be used in disaster management applications..

Dr. Mubarak Shah, Agere Chair Professor of Computer Science, is the founding director of the Computer Visions Lab at UCF. He is a co-author of two books (Motion-Based Recognition (1997) and Video Registration (2003)) both by Kluwer Academic Publisher. Dr. Shah is a fellow of IEEE, IAPR and SPIE. In 2006, he was awarded a Pegasus Professor award, the highest award at UCF, given to a faculty member who has made a significant impact on the university, has made an extraordinary contribution to the university community, and has demonstrated excellence in teaching, research and service. He was an IEEE Distinguished Visitor speaker for 1997-2000 and received IEEE Outstanding Engineering Educator Award in 1997.

He received the Harris Corporation's Engineering Achievement Award in 1999, the TOKTEN awards from UNDP in 1995, 1997, and 2000; Teaching Incentive Program award in 1995 and 2003, Research Incentive Award in 2003, Millionaires' Club awards in 2005 and 2006, University Distinguished Researcher award in 2007, SANA award in 2007, an honorable mention for the ICCV 2005 Where Am I? Challenge Problem, and was nominated for the best paper award in ACM Multimedia Conference in 2005.



He is an editor of international book series on Video Computing; editor in chief of Machine Vision and Applications journal, and an associate editor of ACM Computing Surveys journal.

He was an associate editor of the IEEE Transactions on PAMI, and a guest editor of the special issue of International Journal of Computer Vision on Video Computing. He is the program co-chair of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2008.

(picture courtesy Barbara Maier, FA Wissenstransfer)

Talk "Video Surveillance and Monitoring"  
July 15, 2008



Recently, computer vision has gradually been making the transition away from understanding single images to analyzing image sequences, or video understanding. Video understanding deals with understanding video sequences, e.g., recognition of gestures, activities, and facial expressions. The main shift in the classic paradigm has been from the recognition of static objects in the scene to motion-based recognition of actions and events. Since most videos are about people, this work has mainly focused on analysis of human motion. In particular, there has been a significant interest in

the automated visual surveillance systems. Such systems have the advantage of providing continuous active warning capabilities and are especially useful in the areas of law enforcement, national defense, border control, and airport security. The main steps in video understanding are: detection of objects of interest in video (e.g. people, vehicles), tracking of those objects from frame to frame, and recognition of their activities and behavior. In this talk, I will present an overview of our work in video understanding.

## Pervasive Computing Group

The research of the Pervasive Computing Group is focused on theoretical and practical aspects of innovative pervasive and ubiquitous computing. Research topics include smart cameras, sensor networks, sensor fusion and embedded signal processing architectures. Our research is conducted in close cooperation with national and international partners both in academia as well as in industry. Our teaching activities cover fundamentals, technologies and applications of pervasive computing for students of Information Technology and Informatics. Dedicated lab courses help students to acquire practical experiences, and seminars address recent topics of pervasive computing research. At the graduate level, we currently offer courses on fundamentals and advanced topics on pervasive computing, digital signal processors and radio frequen-

cy identification (RFID). At the undergraduate level, we offer a lecture on digital system design and a lab course on fundamentals of ICT. Founded in March 2007 the group is lead by Prof. Bernhard Rinner.



## Collaborative Microdrones (cDrones)

Microdrones are small-scale unmanned aerial vehicles carrying payloads such as cameras and sensors. This project develops a system for aerial imaging based on cooperating, wireless networked microdrones. Several microdrones will fly in formation over the area of interest and deliver sensor data such as images. These images are fused on the ground, analyzed in real-time, and delivered to the user. The project will perform original research in the areas (i) flight formation and networked control, (ii) mission planning, and (iii) cooperative aerial imaging, and it will demonstrate a collaborative microdrone system for disaster management operations.



some impressions

