

Presents the Spring 2009

## EECS Seminar Series

### Martial Hebert

*Professor, Robotics Institute at Carnegie Mellon University*

**“Some steps in modeling and understanding a user’s environment from vision data”**

**Monday, April 20, 2009 \* 2:00 pm \* HEC (Harris Center) 101**

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Understanding the environment of a user from images involves estimating the user's location in the environments, recognizing the identity of the objects in the environment, and reconstructing the geometric structure of the environment. Roughly speaking, these vision tasks attempt to answer respectively: Where am I? Which objects are there? What is around me? Extensive work has been done in the past, but the resulting systems are still brittle. In this talk, I will review some of the computer vision projects that we have recently undertaken in those areas. I will show (hopefully) new approaches which enables to obtain higher performance than existing approaches or to addressed tasks that cannot be currently addressed. Insights used in these approaches include the use of reasoning techniques as a throwback to earlier days of computer vision, better use of 3D geometry, and use of "first-person" visual data in which the images are acquired from a user's perspective rather than from an outside perspective, as is the case in surveillance applications, for example. If time permits, I will show a preview of the next step in this work which is to not only understand the user's environment but also to predict what the user will do next.

The projects described in this talk are conducted jointly with students and faculty in the NSF "Quality of Life Technologies" Engineering Research Center ([www.golt.org](http://www.golt.org)).

### **Martial Hebert**

Martial Hebert is a Professor in the Robotics Institute at Carnegie Mellon University. His interest includes computer vision, especially recognition in images and video data, model building and object recognition from 3D data, and perception for mobile robots. His group has developed new approaches for object recognition and scene analysis in images and in video sequences. Current projects include the development of perception techniques for the NSF Quality of Life Technology Engineering Research Center, for unmanned ground vehicles as part of the ARL-funded Robotics Collaborative Alliance, and for several basic research projects in image and video understanding.