



# Fall 2010 Colloquium

## Temple University

### Computer and Information Sciences

#### *Nonparametric Data-Driven Techniques for Visual Detection and Tracking*

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**Tuesday 12/14, 11am, Tech Center 111**

#### **Abstract**

In many computer vision problems, data obtained from various imaging sensors are often mixed with noise and outliers due to unfavorable acquisition or environmental conditions. In this talk, I will present our work on nonparametric techniques for robust estimation and inference. Based on kernel density estimation, we developed a novel technique for mode identification and mode-based representation to reveal stable structures from unorganized data distributions. This technique has led to new algorithms for robust detection and tracking of moving objects in complex dynamic scenes as well as a continuous density propagation framework for Bayesian filtering. Several applications will be shown in the context of advanced driver assistance and motion management in interventional imaging.

#### **Bio**

Dr. Ying Zhu received a Ph.D. degree in Electrical Engineering from Princeton University. She has been a research scientist with Siemens Corporate Research (SCR) since 2003, and currently holds a project manager position in the Interventional Imaging Program. Her research interests include computer vision, statistical learning and inference, robust nonparametric techniques, object detection and tracking, motion analysis, sensor fusion and medical imaging. At SCR, she led a team of research scientists and developed machine vision technologies for Advanced Driver Assistance Systems (ADAS). She has served on the organizing and program committees for several workshops on machine vision for intelligent vehicles and autonomous driving, and currently serves on the editorial board for the Open Transportation Journal. Her most recent work involves motion management for image-guided medical interventions.