

# Seminar Talk

Ms. Shao-Hui (Natalie) Chuang  
Ph.D. Student  
Electrical and Computer Engineering  
Old Dominion University

**Friday, October 10, 2014**  
**3:00 p.m. KH 224**

**Title:**

Hybrid Optical Molecule Process of Prostate Cancer Image

**Abstract:**

Prostate cancer is the second most common type of cancer among men in the U.S. Traditionally, prostate cancer diagnosis is made by the analysis of prostate-specific antigen (PSA) levels and histopathological images of biopsy samples under microscopes. Proteomic biomarkers can improve upon these methods. MALDI molecular spectra imaging is used to visualize protein/ peptide concentrations across biopsy samples to search for biomarker candidates. Unfortunately, traditional processing methods require histopathological examination on one slice of a biopsy sample while the adjacent slice is subjected to the tissue destroying desorption and ionization processes of MALDI. The highest confidence tumor regions gained from the histopathological analysis are then mapped to the MALDI spectra data to estimate the regions for biomarker identification from the MALDI imaging. This research will describes a process to provide a significantly better estimate of the cancer tumor to be mapped onto the MALDI imaging spectra coordinates using the high confidence region to predict the true area of the tumor on the adjacent MALDI imaged slice. The research aims to develop a hybrid method to predict the true PCa boundary by fusing the prediction given by a texture analysis technique based on the adjacent histological biopsy slice image and the prediction given by analyzing the MALDI spectra data. The overall objective of this study is to achieve a highly accurate true PCa boundary estimate that is optimized to assist biomarker identification from MALDI spectra data and also classify the level of Gleason score.

**Bio sketch:**

Natalie Chuang received the B.S. and M.S. degree in Electrical and Computer Engineering from Old Dominion University in 2008 and 2009, respectively. She is currently a PhD student with Medical Imaging, Diagnosis and Analysis (MIDA) laboratory at ODU. Her current research interests include medical image analysis and texture recognition.