

Computational Science Seminar Series - Fall 2017

WHEN: THURSDAY, SEPTEMBER 28th, 2017
WHERE: PGH 216, PHILIP GUTHRIE HALL BLD#547
TIME: 12:00 PM – 1 PM

SPEAKER: DR. DAVID MAYERICH
UH Assistant Professor

Host: Dr. Andrea Prosperetti

TITLE: MULTI-MODAL INFRARED SPECTROSCOPIC IMAGING FOR HISTOLOGICAL DIAGNOSIS

ABSTRACT: Analysis of thin tissue sections plays a crucial role in disease diagnosis. Biologists and clinicians rely on chemical stains and dyes to label tissue components, such as tumor cells. However, these labels are non-quantitative and prone to artifacts. In addition, specialized expertise is required to interpret staining patterns, making histology difficult to automate. Infrared (IR) spectroscopic imaging provides an alternative approach for tissue analysis by measuring chemical composition directly. In addition to providing quantitative measurements of the sample, IR techniques are non-destructive and therefore usable on precious samples. However, these data sets come with a unique set of computational challenges. In particular, spectroscopic images are large and require specialized processing and machine learning methods. In addition, current IR imaging systems are too slow to be practical in a clinical environment. In this talk, I will be discussing new methods for applying IR imaging to histological diagnosis. Finally, I will discuss preliminary techniques that we believe may make IR imaging faster and more clinically viable.

BIO: David Mayerich is an Assistant Professor in the Electrical and Computer Engineering Department at the University of Houston. He received his PhD from Texas A&M University, where his work focused on large-scale 3-dimensional imaging methods. He was also a Beckman Postdoctoral Fellow at the University of Illinois at Urbana-Champaign, where he studied data processing methods for applying IR imaging to cancer diagnosis. Since arriving at UH, Dr. Mayerich has been awarded an NIH K99/R00 Pathway to Independence Award from the National Library of Medicine, and is a Cancer Prevention and Research Institute of Texas (CPRIT) Scholar.