Masters Final Oral Defense
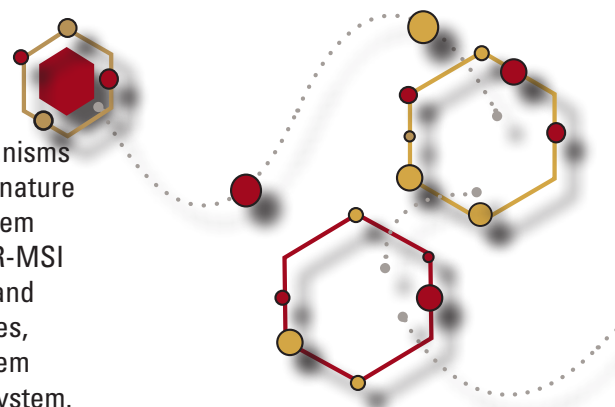
Wednesday, May 2, 2018
223 Atanasoff Hall at 12:00 PM
Ananth Radhakrishnan

Major Professors:
David Fernadez-Baca
Eve Syrkin Wurtele

PMR-MSI: A novel, light-weight web-based visualization system for mass spectrometry imaging

Mass spectrometry Imaging (MSI) plays a vital role in understanding organisms by visualizing the spatial distribution of metabolites present in them. The complex nature of the samples prepared from the experiments leads to the need for a flexible system that can customize image visualization depending upon the requirement. The PMR-MSI Visualization System is a novel, light-weight visualization system to submit, store and manage MSI data which compares mass spectrometry imaging data across studies, samples, species, and metabolites levels. The size of samples involved in the system calls for optimization and efficiency in computations and storage involved in the system. MSI data is converted to PMR-MSI format, a text file, introduced to effectively store MSI data to the database. Global and local peak finding methods are utilized for reduction in MSI file sizes, which result in 100 percent decrease compared to the size of original MSI files. PySpark, Apache Spark's Python library, is employed in local peak finding for parallelizing the tasks involved in this study.

Committee Member:

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