

SE&T Colloquium Series-Fall 2019

Speaker	<p>Dr. Josh Mike Department of Computational Mathematics, Science and Engineering, Michigan State University</p> <p>Host: Dr. Grace McClurkin</p>
Title	<p><i>A Topological Approach to Data Analysis: Topologically Inspired Mappings</i></p>
Abstract	<p>Data Science is a rapidly growing field with roots in mathematics, computer programming, engineering, and more. In this talk we are most concerned with unsupervised learning; that is, obtaining useful features or views of a dataset without using task-specific information. One natural approach is to utilize the geometric structure of the data, such as its distribution or shape. We will motivate the value of a topological approach which utilizes general shape characteristics such as dimension, loops, voids, or twists. We will build our understanding from classical dimensionality reduction such as principal components analysis and explore some notions on how to quantify and utilize topological features.</p> <p>Our story will be motivated by plenty of examples, especially those arising from natural images which are related to encoding vision. Within such datasets, topological features naturally arise. Indeed, we will see that the various topological spaces encountered include the Mobius band, projective space, the Klein Bottle, and even more complex spaces. Despite the topological background for our methods, the talk will be made accessible without a technical knowledge of the subject.</p>
Date	<p>Tuesday, November 5</p>
Time	<p>4:10-5:00pm</p>
Place	<p>Pioneer 240</p> <p>Refreshments will be served at 4:00pm.</p>