TEXAS STATE UNIVERSITY

Department of Mathematics Colloquium

An introduction to applied topology

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3:30 - 4:30pm
DERR 329

This talk is an introduction to computational topology, as applied to data analysis and to sensor networks. The shape of a dataset often reflects important patterns within. Two such datasets with interesting shapes are a space of 3x3 pixel patches from optical images, which can be well-modeled by a Klein bottle, and the conformation space of the cyclo-octane molecule, which is a Klein bottle glued to a 2-sphere along two circles. I will introduce topological tools (persistent homology) for visualizing and understanding high-dimensional datasets. As a second application, I will describe how topology has been applied to coverage problems in mobile sensor networks.