GRADUATE SEMINAR

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Analyzing distributions, using a systematic programmable approach as persistent homology

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Date: 21 November 2023
Time: 11:30 a.m.
Location: ED 438

Abstract: Persistent homology is a tool in mathematics used for analyzing data topologically. This analysis is made possible through one of its components called the filtered simplicial complex, which is a sequence of nested simplicial complexes. With this, persistent homology can measure the number of connected components (clusters) and get its persistent π_0 (gaps). This project focuses on the comparison of three fundamental probability distributions which are the Normal distribution, Uniform distribution, and Exponential distribution; using a Python code to derive persistent π_0 and to form a filtration from the analysis. One of the main essences of this comparison is to enable us to categorize any random data into a distinct distribution after analyzing its behavior with the Python code. This project provides worthwhile insights into the behavior and characteristics of the three fundamental distributions through the spectacles of topology.

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Mathematics and Statistics