

*Department of Mathematics,
University of California San Diego*

Food For Thought Seminar

David Lenz

UCSD

A Quick Foray into Topological Data Analysis

Abstract:

Topological data analysis (TDA) emerged as a branch of applied topology about twenty years ago and has produced some of the most valuable tools for the study of Big Data since then. TDA can be used to detect topologically significant features (holes, connected components, etc) of high-dimensional data sets, without any a priori knowledge of the data. Its even been used to analyze basketball games, and found that basketball players displayed thirteen statistically distinct playing styles, despite there being only five official positions.

In this talk I will introduce the basics of persistent homology, a fundamental tool for TDA, and describe some of the recent achievements in this field. I'll also touch on some current areas of active research and why people like NASA are trying to get in on the action.

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