



# Analyzing Data

Much of modern research—from genome sequencing to digital surveys of outer space—generates tremendous amounts of multi-dimensional data. Unfortunately, visualizing dimensions higher than three is not easy, which makes analyzing and understanding the data difficult. Topology, a branch of mathematics concerned with the properties of geometrical structures, helps make sense of large data sets by providing a way of classifying the shapes of these sets. It's especially useful for locating groups of similar points called “clusters”, which can, for example, distinguish between distinct types of a given disease, each requiring its own treatment.

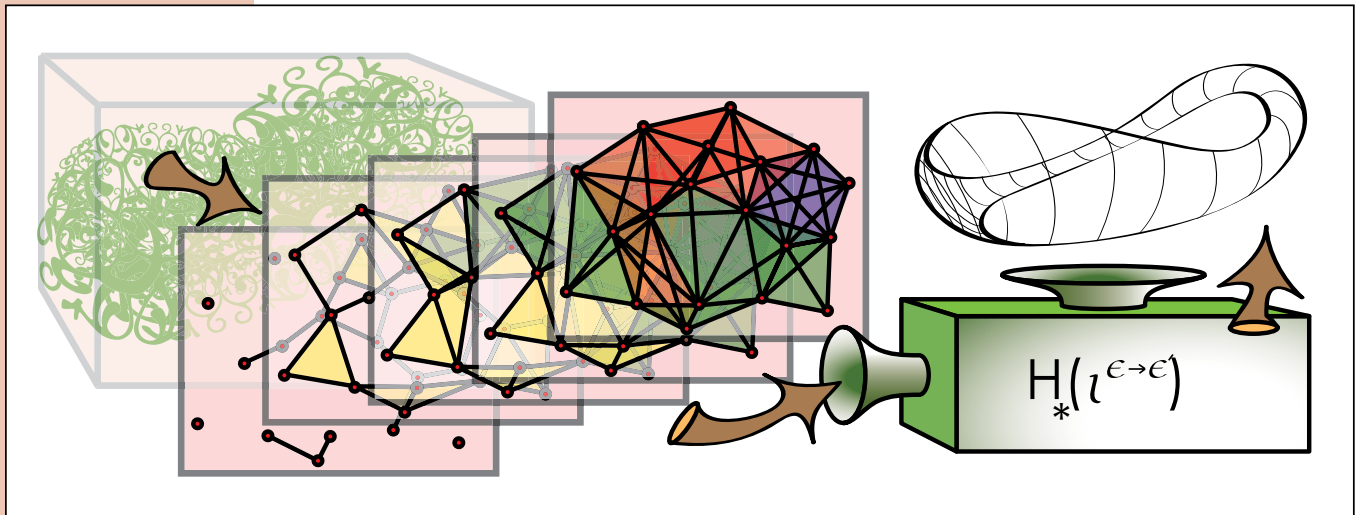


Image: Persistent homology of a simplicial approximation finds hidden structures in large data sets, courtesy of Robert Ghrist.