

【CL4-1】

The Computation of the Erosion Distance

Brittany Terese Fasy¹, Amit Patel²

¹Montana State, ²Colorado State University

Persistence diagrams have been adopted by many mathematicians, computer scientists, statisticians, and data scientists as a convenient summary of a function over a topological space or of a point cloud. One of the bottlenecks currently in adoption of the persistence diagram as a standard data analysis tool is the computation of distances between persistence diagrams. In 2010, a new distance was introduced called the *Erosion Distance*, which takes a new view of the persistence diagram: instead of looking at a set of points in the extended plane, the erosion distance first takes a Möbius inversion of this point set, obtaining a function defined over the extended plane. This function is piecewise constant over a finite partition of the plane. We present an algorithm for computing the Erosion Distance that will take one step towards making the use of persistence diagrams more feasible for large data sets.

NOTE: This abstract is for a paper that we are currently writing. So, if accepted, I would likely want to submit a revised version of this abstract before it is publicly published.