

Persistence Landscapes and the Geometry of Data

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Persistent homology can be used to provide a summary of the "shape" of data. One form of this summary is a collection of intervals called a bar code. It is often said that in the bar code, the long bars correspond to the topology of the data, and the short bars to noise. I will present another viewpoint: the long bars may be noise, and the short bars correspond to the geometry of the data. I will give an introduction to persistent homology and persistence landscapes, a summary of persistent homology that is suitable for statistical analysis and machine learning. I will provide support for the thesis of this talk with both simulated and biological data.