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Metric Multidimensional Scaling for Large Data Sets

Metric multidimensional scaling is one of the classical methods for embedding data into low-dimensional Euclidean space. It creates the low-dimensional embedding by approximately preserving the pairwise distances between the input points. However, current state-of-the-art approaches only scale to a few thousand data points. For larger data sets, the running time becomes prohibitively large. Here, we provide an algorithm for solving the metric multidimensional scaling problem that is orders of magnitude faster than previous state-of-the-art approaches and hence, scales to data sets with up to a few million data points.