Reading:


Questions:

1. Describe the cost function Sammon used in his algorithm in detail for dimensionality reduction, and explain why it leads to a nonlinear mapping from high-dimensional to low-dimensional space.

2. Minimizing the cost function in question leads to a nonlinear MDS algorithm, named after Sammon. For a $N$-dimensional data set mapped onto $M$-dimensional space ($M < N$), present the detailed Sammon algorithm in pseudo code.

Reading:


Questions:

1. Describe the main cost functions used in ISOMAP, and explain what roles they play in ISOMAP learning, respectively.

2. Summarize the ISOMAP learning algorithm and explain the potential problem(s) in each step that could affect the performance of ISOMAP learning.

3. Describe main practical issues when one uses the ISOMAP for visualization.

Reading:


Questions:

1. Describe the main cost functions used in LLE, and explain what roles they play in LLE learning, respectively.

2. Explain how the LLE works in a “think-globally-fit-locally” way for nonlinear dimensionality reduction.

3. Describe main practical issues when one uses the LLE algorithm for visualization.