UNIVERSITY OF SOUTH FLORIDA

Defense of a Master's Thesis

Using Hyper-Dimensional Spanning Trees to Improve Structure Preservation during Dimensionality Reduction

by

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For the MSCS degree in Computer Science

Understanding relations in high-dimensional data is a prevalent problem, which is often approached by using dimensionality reduction. The structure preserved from the original data is often dependent on the type of dimension reduction algorithm used and can produce results that vary substantially from one another. Visualizing high-dimensional data helps to understand the data but presents a problem as our ways of visualization rely upon two, or maybe three-dimensional displays. Current dimension reduction methods, used to reduce high-dimensional data to low-dimensional data that we can visualize, often produce results that fail to preserve the structure as the complexity of the data increases. This reduction from high-dimensional data to a lower dimension, means algorithms must make choices and disregard certain information instead of others. In this thesis, we improve upon existing dimension reduction methods through the use of hyper-dimensional spanning trees to preserve additional information of the original data by creating an interactive program for our dimension reduction algorithm, which allows the user to fine-tune the outcome.

Monday, October 18th, 2021
1:00 PM
Online(Microsoft Teams)
Please email for more information
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THE PUBLIC IS INVITED

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