

ACMS Grad and Postdoc Seminar



Bing An
University of Notre Dame
Friday, Oct. 16, 2026
154 Hurley Hall
12:30 PM – 1:30 PM

Consensus Dimension Reduction via Multi-View Learning

A plethora of dimension reduction methods have been developed to visualize high-dimensional data in low dimensions. However, different dimension reduction methods often output different and possibly conflicting visualizations of the same data. This problem is further exacerbated by the choice of hyperparameters, which may substantially impact the resulting visualization. To obtain a more robust and trustworthy dimension reduction output, we advocate for a consensus approach, which summarizes multiple visualizations into a single consensus dimension reduction visualization. Here, we leverage ideas from multi-view learning in order to identify the patterns that are most stable or shared across the many different dimension reduction visualizations, or views, and subsequently visualize this shared structure in a single low-dimensional plot. We demonstrate that this consensus visualization effectively identifies and preserves the shared low-dimensional data structure through both simulated and real-world case studies. We further highlight our method's robustness to the choice of dimension reduction method and hyperparameters, a highly-desirable property when working towards trustworthy and reproducible data science.

The Department of Applied and Computational
Mathematics and Statistics
Please visit acms.nd.edu to view the full list of speakers.