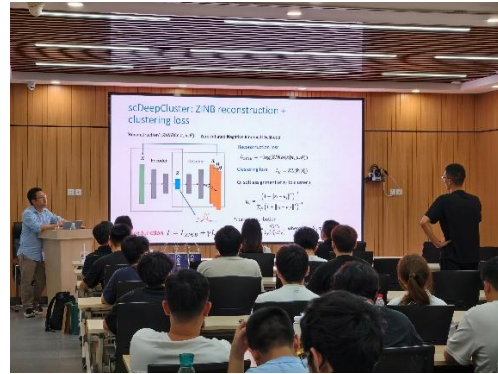


Summary of distinguished lecture of Zhi Wei

Professor Zhi Wei, Distinguished Professor of Computer Science at the New Jersey Institute of Technology and Fellow of IEEE, AAAS, AAIS, and AIIA, delivered a distinguished lecture on July 3, 2026 at Xi'an Jiaotong University. The event was hosted by the IEEE Xian Section SMC2/CS23 Joint Chapter.



In his talk, Professor Wei addressed a common but critical issue in high-dimensional scientific machine learning. In many applications, feature selection and clustering are performed sequentially. Features are chosen first based on some criterion, and then clustering is applied on the selected subset. This decoupled strategy is often suboptimal because the preselected features may not be the most informative for the actual clustering objective.

To solve this problem, Professor Wei presented his unified framework called FSSC. This method integrates three components into a single optimization process. It uses a probabilistic autoencoder to model the distribution of sparse count data, applies a group Lasso penalty to select a compact and relevant set of features, and introduces a clustering-oriented loss to preserve the latent cluster structure. By optimizing these parts together, FSSC learns a low-dimensional representation while simultaneously identifying features that directly contribute to cluster separation.

The framework was demonstrated on single-cell RNA sequencing data, where it outperformed several state-of-the-art methods in clustering accuracy. It also produced compact and interpretable feature sets that corresponded to known biological marker genes. More broadly, the talk showed how task-aware feature selection can be effectively combined with deep representation learning to improve unsupervised discovery in challenging high-dimensional datasets.

The lecture attracted a large audience and generated active discussion, reflecting the strong interest of the SMC community in data-driven methods for biomedical and other scientific applications.

