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Spring 2023 Colloquium

Department of Computer and Information Sciences

Toward Self-Supervised Learning and Explaining of Deep Models

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**Tuesday, March 21, 2PM
Room: SERC 306**

Abstract: Deep learning has shown exceptional performance on a wide range of data and tasks. Typical approaches train deep models in a supervised manner, which requires a large number of data and label pairs. However, supervised training becomes inapplicable in many real-world scenarios, such as drug discovery and biomedical imaging, where obtaining labels can be costly, limited, or even impossible. Self-supervised learning (SSL) offers a solution by allowing deep models to be trained on unlabeled data, eliminating the need for excessive annotations. When no labeled data is available, SSL can serve as a promising approach for learning representations and enabling explainability for unlabeled data. In this talk, we will present various theoretically-grounded SSL approaches for learning and explanation with image and graph data. Additionally, we will explore the potential of SSL for a wider range of scientific problems.



Bio: Yaochen Xie is a Ph.D. candidate advised by Dr. Shuiwang Ji in the Department of Computer Science & Engineering at Texas A&M University. He received his B.S. in Statistics from the School of Gifted Young at the University of Science and Technology of China. His research interests include machine learning, deep learning, graph mining, and AI4Science, with a focus on self-supervised learning, model explainability, graph neural networks, and bioinformatics. His work results in a series of publications in top-tier conferences and journals including NeurIPS, ICML, JMLR, TPAMI, and Nature Machine Intelligence.