UNC GREENSBORO | Department of Computer Science

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Colloquium Series

Flexible Modality Learning: Modeling Arbitrary Modality Combination via the Mixture-of-Experts Framework

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Date: Monday, Nov 4, 2024
Time: 11am-12pm
Location: Petty Building 219

Abstract:

While multimodal approaches are essential in understanding biological and disease behaviors, existing works primarily focus on single modalities such as imaging, genomics, or clinical data. Few recent studies attempt to integrate multiple modalities, and the lack of robust methods to handle missing modalities often limits the usability of such integrative approaches, forcing reliance on samples where the target modalities are available. Addressing this gap, we propose a novel multimodal learning framework, Flex-MoE (Flexible Mixture-of-Experts), which is flexible in incorporating diverse modalities in healthcare research while being resilient to missing modality scenarios through an advanced Sparse MoE design. This talk will illustrate the core idea of Flex-MoE and demonstrate its effectiveness in handling diverse missing modality scenarios.

Biography:

Dr. Tianlong Chen is an assistant professor in the Department of Computer Science at the University of North Carolina at Chapel Hill. He received his Ph.D. degree from ECE at UT Austin in 2023. His research focuses on efficient and reliable machine learning, graph learning, learning-augmented optimization, and AI4Science. His paper has received the Best Paper Award from the inaugural Learning on Graphs (LoG) Conference 2022. He has received the Cisco Faculty Award, AdvML Rising Star, and several PhD fellowships from various companies. His work has been cited more than 9,200 times with an h-index of 44. He has served as Area Chair for diverse top conferences like ICLR'25, EMNLP'24, ICIP, CPAL, etc.