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Data Science Seminar Series

In Collaboration with
The Department of Data Science

Knowledge Graph Reasoning and Its Applications: A Pathway Towards Neural-Symbolic AI

Hosted by Mengjia Xu

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Date: Tuesday, February 27, 2024
Time: 2:30 PM - 3:30 PM (Coffee served at 2:15 PM)
Location: GITC Building Room 4402 (4th floor Seminar Room)
Web Link: Zoom Meeting Link

Artificial intelligence (AI) has been transforming the way we interact with the world. Neural symbolic AI has emerged in recent years, promises more explainable, trustworthy, and versatile AI systems. The integration of symbolic knowledge and neural models is crucial for unleashing the full potential of neural-symbolic reasoning. Knowledge graphs, as a structured representation of knowledge that captures relationships between entities, provide a powerful tool for organizing real world information. In this talk, I will share my research which lies in knowledge graph reasoning and its applications, using both the traditional symbolic reasoning and neural reasoning methods and more importantly the intersection between the two. Different from previous research on knowledge graph reasoning which has primarily concentrated on reasoning for fixed and precise input queries, my goal is to enhance understanding and utilization of input queries, addressing the oversight of ambiguity and dynamism in previous research. By accurately modeling ambiguous and dynamic input queries, the research aims to exponentially advance the complexity, scale, and reasoning power of knowledge graph reasoning models, crucial for tackling real-world challenges. Towards the end of my talk, I will share my vision for the future work.

Lihui Liu is a Ph.D. student in the Department of Computer Science at the University of Illinois at Urbana-Champaign. His research focuses on large-scale data mining and machine learning, particularly on graphs, with an emphasis on knowledge graph reasoning. Lihui's research has been published at several major conferences and journals in data mining and artificial intelligence (e.g., KDD, NeuIPS, WWW, AAAI), and he has served as a reviewer and program committee member for top-tier data mining and artificial intelligence conferences and journals, including KDD, WWW, AAAI, IJCAI, and BigData. More information about Lihui can be found on his personal website at https://lihuiliullh.github.io/.