Frontier of Artificial Network

Department of Data Science
香港城市大學
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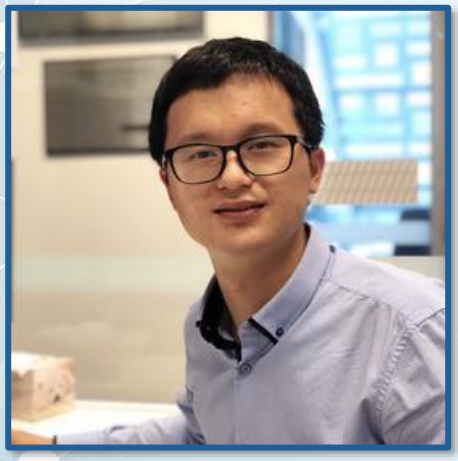
Boosting Large Language Model Reasoning with Knowledge Graphs



Invited Speaker
Shirui Pan
Griffith University

Date: May 28, 2026 (Thu)
Time: 10:00am (HKT)
Zoom Meeting: 801 137 0362

Biography

Shirui Pan received his Ph.D. in Computer Science from the University of Technology Sydney (UTS) and is a Professor in the School of Information and Communication Technology at Griffith University, Australia. His research focuses on data mining and machine learning and has been published in top venues, including Nature Machine Intelligence, KDD, and ICLR, among others. He has received several prestigious awards, including the 2024 IEEE CIS TNNLS Outstanding Paper Award, the 2020 IEEE ICDM Best Student Paper Award, the 2024 AI's 10 to Watch recognition, and the 2024 IEEE ICDM Tao Li Award. He is also an Australian Research Council Future Fellow.

Abstract

Large language models (LLMs) such as ChatGPT and Gemini have gained significant attention due to their emergent abilities and generalizability. However, as black-box models, they face limitations in capturing and accessing factual knowledge. In contrast, knowledge graphs (KGs) provide rich factual information in a structured format, enhancing LLMs' inference and interpretability. In this talk, I will present some recent research on integrating KGs and LLMs for faithful reasoning. Specifically, I will introduce a KG-enhanced LLM approach, Reasoning on Graphs (ROG), which leverages knowledge graphs to enable faithful and interpretable LLM reasoning. ROG follows a planning-retrieval-reasoning paradigm: first, it enables LLMs to generate a plan to retrieve the most relevant knowledge from knowledge graphs; based on the retrieved information, LLMs can then perform faithful reasoning. To further enhance performance, we also develop a graph foundation model that can be applied to new domains, enabling zero-shot reasoning. I will conclude with a brief discussion of future directions in this exciting field.