Zhili WANG

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Education

The Hong Kong University of Science and Technology — Hong Kong SAR, China
Ph.D. in Data Science and Analytics; GPA: 3.74/4.0; Supervisor: Lei CHEN — Sep. 2020 – Expected Nov. 2024

The Hong Kong University of Science and Technology — Hong Kong SAR, China
M.S. in Big Data and Technology; GPA: 3.70/4.0 — Sep. 2019 – Nov. 2020

University of Electronic Science and Technology of China — Chengdu, Sichuan, China
B.Eng. in Spatial Information and Digital Technology; GPA: 3.87/4.0 — Sep. 2015 – Jun. 2019

Research Interests

- Large Language Model (LLM) driven Automated Machine Learning (AutoML): system deisgn, knowledge retrieval.
- Neural Architecture Search (NAS): algorithm and model design.
- Graph Neural Network (GNN): data-centric algorithm on graph data.

Selected Publications

- Jialiang WANG, Shimin DI, Hanmo LIU, **Zhili WANG**, Jiachuan WANG, Lei CHEN, Xiaofang ZHOU. Computation-friendly Graph Neural Network Design by Accumulating Knowledge on Large Language Models. *@Preprint, arXiv:2408.06717*.
- **Zhili WANG**, Shimin DI, Lei CHEN, Xiaofang ZHOU. Search to Fine-tune Pre-trained Graph Neural Networks for Graph-level Tasks. *@ICDE 2024 (CCF-A), arXiv:2308.06960*.
- **Zhili WANG**, Shimin DI, Lei CHEN. A Message Passing Neural Network Space for Better Capturing Data-dependent Receptive Fields. *@SIGKDD 2023 (CCF-A), DOI:10.1145/3580305.3599243*.
- **Zhili WANG**, Shimin DI, Lei CHEN. AutoGEL: An Automated Graph Neural Network with Explicit Link Information. *@NeurIPS 2021 (CCF-A), arXiv:2112.01064*.

Works On-progress

- **Zhili WANG**, Shimin Di, Lei Chen, Xiaofang ZHOU. Automated Machine Learning Model via Knowledge Augmented Large Language Models. *Designing.*
- Shimin DI, Jialiang WANG, **Zhili WANG**, Jiachuan WANG, Hanmo LIU Lei CHEN, Xiaofang ZHOU. Large Language Models as a More Automated, User-Friendly Machine Learning Scientist: Potential, Opportunities, and the Future Directions. *To be submitted in Oct.*
- **Zhili WANG**, Shimin Di, Lei Chen, Xiaofang ZHOU. Universal Graph Neural Network Pre-training and Fine-tuning for Molecular Property Predictions. *To be submitted in Oct.*
- Yubo Wang, **Zhili WANG**, Shimin Di, Haoyang LI, Fei Teng, Hao Xin, Lei Chen. Understanding the Embedding Methods on Hyper-relational Knowledge Graph. *To be submitted soon.*

Selected Research Projects

Large Language Models enhanced Automated Machine Learning: A Survey — Mar. 2024 - Aug. 2024

- Explored the potential of LLMs to function as automated, user-friendly machine learning scientists, examining their capabilities, opportunities, and future implications for democratizing and accelerating AI research and development.

Search to Fine-tune Pre-trained Graph Neural Networks — Mar. 2023 - Dec. 2023

- Developed a GNN fine-tuning framework that supports automated fine-tuning strategy search in downstream.
- Proposed a novel and unified GNN fine-tuning search space to allow powerful strategies to be searched.
- Consistently boosted effectiveness of 10 famous pre-trained GNNs on 8 different downstream graph datasets.

A Space for Better Capturing Data-dependent Receptive Fields in GNNs — May 2022 - Feb. 2023

- Identified a critical flaw in GNNs: implicit reliance on assortative graph patterns and suboptimal receptive fields.
- Developed a novel search space to effectively address these issues, enhancing performances on 14 graph datasets.

An Automated Graph Neural Network with Explicit Link Information — Sep. 2020 - May 2021

- Presented a novel automated GNN (AutoGNN) framework to explicitly leverage rich link information in graphs.
- Consistently improved effectiveness on node-level, link-level, and graph-level tasks across 16 popular graph datasets.