LECHENG KONG

Researcher ~ Engineer

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BIOGRAPHY

I am a **fourth-year Ph.D. candidate** studying Computer Science at Washington University in St. Louis advised by **Dr. Yixin Chen**. I enjoy participating in research-oriented projects that develop new methodologies and put them into practice. My research topics include **Graph Neural Networks (GNNs)**, **contrastive learning**, and **multi-modality learning**. Both of their theoretical and practical sides fascinate me. I am also enthusiastic about real-life applications of my research, primarily in medical domains. I recently developed a strong interest in combining GNNs with Large Language Models.

EDUCATION

Washington University in St. Louis, St. Louis, MO, United States *2020.09 - Expected 2025*
Ph.D. Candidate in Computer Science
Advisor: Dr. Yixin Chen

Washington University in St. Louis, St. Louis, MO, United States *2016.09 - 2020.05*
B.S. / M.S. in Computer Science

WORK EXPERIENCE

Software Development Engineer Intern, Google *2019.05 - 2019.08*
Developed a pipeline supporting the Google Hotel website to produce a user data-generated tip.
Implemented an efficient map-reduce program to gather, process, and generate data sets.

SELECTED PROJECTS

One-For-All Graph Neural Networks *2023.03 - Ongoing*
Used Large Language Models to unify different graph data.
Developed the first graph model that works on all existing graph classification tasks.
Proposed unique graph prompting so a single graph model solves all tasks (zero-shot, graph-level, node-level, etc.)

Magnetic Graph Neural Networks *2022.11 - 2023.05*
Discovered unique graph properties and components that identify the graph topologies.
Developed the first model using Reinforcement Learning to locate the components.
Theoretically showed the efficiency and the superiority in expressivity of the proposed method.

Non-invasive Liver Fibrosis Detection *2023.05 - Ongoing*
Applied Vision Transformer to detect potential Liver Fibrosis using MRI images.
Adopted gradient-based methods to inject model explainability that helps clinicians understand the results.

Geodesic Graph Neural Network *2022.01 - 2022.05*
Developed efficient GNNs based on graph geodesics, significantly reducing the runtime of expressive GNNs.
Theoretically showed the comparable expressivity of the proposed method to more computationally complex GNNs.

PUBLICATION

('' indicates equal contribution)*

Conference:

a1 **L. Kong**, J. Feng, H. Liu, D. Tao, Y. Chen, M. Zhang, *"MAG-GNN: Reinforcement Learning Boosted Graph Neural Network."* Proc. Adv. Neural Inf. Process. Syst. (**NeurIPS**), 2023 *(To Appear)*

a2 J. Feng, **L. Kong**, H. Liu, D. Tao, F. Li, Y. Chen, M. Zhang, *"Extending the Design Space of Graph Neural Networks by Rethinking Folklore Weisfeiler-Lehman."* Proc. Adv. Neural Inf. Process. Syst. (**NeurIPS**), 2023 *(To Appear)*

a3 **L. Kong**, Y. Chen, M. Zhang, *"Geodesic Graph Neural Network for Efficient Graph Representation Learning."* Proc. Adv. Neural Inf. Process. Syst. (**NeurIPS**), 2022

a4 J. Wu, A Estornell, L. Kong, Y. Vorobeychik, *"Manipulating Elections by Changing Voter Perceptions."* International Joint Conference on Artificial Intelligence. (**IJCAI**), 2022

Preprint:

b1 H. Liu*, J. Feng*, **L. Kong***, N. Liang, D. Tao, Y. Chen, M. Zhang, *"One for All: Towards Training One Graph Model for All Classification Tasks."* [arXiv: 2310.00149]

b2 **L. Kong**, C. King, B. Fritz, Y. Chen, *"A Multi-View Joint Learning Framework for Embedding Clinical Codes and Text Using Graph Neural Networks."* [arXiv: 2301.11608]

b3 H. Liu, J. Feng, **L. Kong**, D. Tao, Y. Chen, M. Zhang, *"Graph Contrastive Learning Meets Graph Meta Learning: A Unified Method for Few-shot Node Tasks."* [arXiv: 2309.10376]

b4 H. Liu, M. Zhang, Z. Dong, **L. Kong**, Y. Chen, B. Fritz, C. King, *"Time Associated Meta Learning for Clinical Prediction."* [arXiv: 2303.02570]

AWARDS AND HONORS

NeurIPS travel award, 2022/2023
Undergraduate Dean's List, Washington University in St. Louis, all semesters

TEACHING SERVICES

Washington University in St. Louis
CSE 543 Non-linear Optimization. **Lecturer/Grader**
CSE 231 Parallel Computing. **Teaching Assistant/Grader**

PROFESSIONAL SERVICES

Conference Reviewer: The Conference and Workshop on Neural Information Processing Systems (**NeurIPS** 2023), The Conference on Computer Vision and Pattern Recognition (**CVPR** 2023/2024), International Conference on Learning Representations (**ICLR** 2024)