

# LECHENG KONG

Researcher ~ Engineer

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## BIOGRAPHY

I am a **fifth-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)** and **Graph Foundation Model**. Both of their theoretical and practical sides fascinate me. I am also enthusiastic about real-life applications of my research, primarily in medical domains.

## EDUCATION

**Washington University in St. Louis**, St. Louis, MO, United States

Ph.D. Candidate in Computer Science

Advisor: Dr. Yixin Chen, GPA:3.87

2020.09 - Expected 2025

**Washington University in St. Louis**, St. Louis, MO, United States

B.S. / M.S. in Computer Science, GPA:3.84

2016.09 - 2020.05

## WORK EXPERIENCE

**Applied Scientist Intern**, Amazon

Conducted research on continual graph learning, minimizing training costs while maintaining high performance.  
Use the Sparse Mixture-of-Experts approach to develop a highly efficient continual learning method.

2024.05 - 2024.08

**Software Development Engineer Intern**, Google

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.

2019.05 - 2019.08

## SELECTED PROJECTS

**Generative One-For-All model**

Propose the first graph language modeling problem that jointly models the graph and language.  
Designed graph completion tasks facilitating large-scale pretraining on graph data.  
Using instruction tuning, the proposed model achieved significantly better performance than LLMs.  
The model generates free-form interpretable responses unobserved in any previous graph models.

2024.01 - Ongoing

**One-For-All Graph Neural Networks**

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.)

2023.03 - Ongoing

**Magnetic Graph Neural Networks**

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.

2022.11 - 2023.05

**Non-invasive Liver Fibrosis Detection**

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.

2023.05 - Ongoing

**Geodesic Graph Neural Network**

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.

2022.01 - 2022.05

## PUBLICATION

("\*" indicates equal contribution)

**Conference:**

a1 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." The Web Conference (**WWW**). 2024

a2 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." International Conference on Learning Representations (**ICLR Spotlight 5%**). 2024

- a3 **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)
- a4 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)
- a5 **L. Kong**, Y. Chen, M. Zhang, "Geodesic Graph Neural Network for Efficient Graph Representation Learning." Proc. Adv. Neural Inf. Process. Syst. (**NeurIPS**), 2022
- a6 J. Wu, A Estornell, **L. Kong**, Y. Vorobeychik, "Manipulating Elections by Changing Voter Perceptions." International Joint Conference on Artificial Intelligence. (**IJCAI**), 2022

#### **Preprint:**

- b1 **L. Kong**, J. Feng, H. Liu, C. Huang, J. Huang, Y. Chen, M. Zhang, "GOFA: A Generative One-For-All Model for Joint Graph Language Modeling." [arXiv: 2407.09709]
- b2 J. Feng, H. Liu, **L. Kong**, Y. Chen, M. Zhang, "TAGLAS: An atlas of text-attributed graph datasets in the era of large graph and language models." [arXiv: 2406.14683]
- b3 **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]
- 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**

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NeurIPS travel award, 2022/2023

Undergraduate Dean's List, Washington University in St. Louis, all semesters

## **TEACHING SERVICES**

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### **Washington University in St. Louis**

CSE 543 Non-linear Optimization. **Lecturer/Grader**

CSE 231 Parallel Computing. **Teaching Assistant/Grader**

## **PROFESSIONAL SERVICES**

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**Conference Reviewer:** The Conference and Workshop on Neural Information Processing Systems (**NeurIPS** 2023/2024), The Conference on Computer Vision and Pattern Recognition (**CVPR** 2023/2024), European Conference on Computer Vision (**ECCV** 2024), International Conference on Learning Representations (**ICLR** 2024/2025), ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD** 2024/2025), ACM Transactions on Computing for Healthcare