

Jiaying Lu

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Ph.D. Candidate, Emory University
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CAREER GOAL

I am a Ph.D. Candidate in *Computer Science and Informatics* with proven track records in Artificial Intelligence (AI), solid skills in handling multimodal health data (electronic health records, single-cell omics) and experiences in interdisciplinary research collaboration. In my research, I aspire to create state-of-the-art AI solutions, knowledge management tools, and data-driven systems in healthcare domains in alliance with nurses, physicians, and biostatisticians.

RESEARCH INTERESTS

AI for Healthcare, Large Foundation Models, Knowledge Representation & Reasoning, Multimodal Learning.

ACADEMIC BACKGROUNDS

Department of Computer Science, Emory University

Sep. 2019 – May 2024 (Expected)

Ph.D. in Computer Science, Research Assistant, Teaching Assistant

Atlanta, GA, US

Dissertation Advisor: Dr. [Carl Yang](#)

Research Interests: AI for Healthcare, Knowledge Graph, Large Language Models.

Grant Writing Experience:

- Helped in Dr. Carl Yang's submitted NSF Career proposal by contributing to two sub-aims of "KG-taxonomy co-construction & co-learning" and "knowledge enhanced health-related prediction".
- Helped to generate preliminary results for Dr. Carl Yang's recently granted NIH K25 Award *K25DK135913* (2023) and NSF NCS Foundations Award *2319449* (2023).

Honors:

- 2022 ACM International Conference on Information and Knowledge Management, Virtual Registration Award.
- 2022 SIGKDD Conference on Knowledge Discovery and Data Mining, Student Travel Award.

Active Perception Group, Arizona State University

Aug. 2018 – Jan. 2019

Visiting Student, Advisor: Dr. [Yezhou Yang](#)

Phoenix, AZ, US

Research Interests: Visual Question Answering, Multimodal Learning

Beijing University of Posts and Telecommunications

Sep. 2010 – Mar. 2017

B.Sc, M.Eng in Electronics Engineering

Beijing, China

PUBLICATIONS

Journal Papers

[12] Wenjing Ma, [Jiaying Lu](#), Hao Wu. "Cellcano: supervised cell type identification for single cell ATAC-seq data." *Nature Communications*. 2023.

[11] [Jiaying Lu](#), Xiangjue Dong, Carl Yang. "Weakly Supervised Concept Map Generation through Task-Guided Graph Translation." *IEEE Transactions on Knowledge and Data Engineering (TKDE)*. 2023.

Conference Papers

[10] [Jiaying Lu](#), Yongchen Qian, Shifan Zhao, Yuanzhe Xi, Carl Yang. "MuG: A Mutlimodal Classification Benchmark on Game Data With Tabular, Textual, and Visual Fields." *Findings of the Association for Computational Linguistics: EMNLP 2023 (Findings-EMNLP)*. 2023.

[9] Hejie Cui, [Jiaying Lu](#), Shiyu Wang, Ran Xu, Wenjing Ma, Shaojun Yu, Yue Yu, Xuan Kan, Tianfan Fu, Chen Ling, Joyce Ho, Fei Wang, Carl Yang. "A Survey on Knowledge Graphs for Healthcare: Resources, Application Progress, and Promise.." *ICML 3rd Workshop on Interpretable Machine Learning in Healthcare (IMLH)*. 2023.

- [8] **Jiaying Lu**, Jiaming Shen, Bo Xiong, Wenjing Ma, Steffen Staab, Carl Yang. "HiPrompt: Few-shot Biomedical Knowledge Fusion via Hierarchy-Oriented Prompting." *46th International ACM SIGIR Conference on Research and Development in Information Retrieval – short paper (SIGIR)*. 2023.
- [7] Xiangjue Dong, **Jiaying Lu**, Jianling Wang, James Caverlee. "Closed-book Question Generation via Contrastive Learning." *17th Conference of the European Chapter of the Association for Computational Linguistics (EACL)*. 2023.
- [6] **Jiaying Lu**, Carl Yang. "Open-World Taxonomy and Knowledge Graph Co-Learning." *4th Conference on Automated Knowledge Base Construction (AKBC)*. 2022.
- [5] **Jiaying Lu**, Xin Ye, Yi Ren, Yezhou Yang. "Good, better, best: Textual distractors generation for multi-choice VQA via policy gradient." *CVPR Workshop on Open-Domain Retrieval Under a Multi-Modal Setting*. 2022.
- [4] Hejie Cui, **Jiaying Lu**, Yao Ge, Carl Yang. "How Can Graph Neural Networks Help Document Retrieval: A Case Study on CORD19 with Concept Map Generation." *44th European Conference on Information Retrieval – short paper (ECIR)*. 2022.
- [3] **Jiaying Lu**, Jinho D. Choi. "Evaluation of Unsupervised Entity and Event Salience Estimation." *34th International FLAIRS Conference Proceedings*. 2021.

Preprint Papers

- [2] Chen Ling, Xujiang Zhao, **Jiaying Lu**, Chengyuan Deng, Can Zheng, Junxiang Wang, Tanmoy Chowdhury, Yun Li, Hejie Cui, Tianjiao Zhao, Amit Panalkar, Wei Cheng, Haoyu Wang, Yanchi Liu, Zhengzhang Chen, Haifeng Chen, Chris White, Quanquan Gu, Carl Yang, Liang Zhao. "Beyond One-Model-Fits-All: A Survey of Domain Specialization for Large Language Models." *Under Submission*. 2023.
- [1] **Jiaying Lu**, Jinneng Rao, Kezhen Chen, Xiaoyuan Guo, Yawen Zhang, Baochen Sun, Carl Yang, Jie Yang. "Evaluation and Mitigation of Agnosia in Multimodal Large Language Models." *Under Submission*. 2023.

PATENTS

- [1] Jinneng Rao, **Jiaying Lu**, Kezhen Chen, Jie Yang, Yawen Zhang, Xiaoyuan Guo. "A Simulation-Feedback Framework to Mitigate Hallucinations in Multimodal Generative Models". Filed 2023. X-52882-00-US.

TEACHING EXPERIENCES

Teaching Assistant, CS570 Data Mining, Emory University, 2021.

Teaching Assistant, CS253 Data Structure and Algorithms, Emory University, 2020.

Teaching Assistant, CS170 Introduction to Computer Science I, Emory University, 2020.

INDUSTRY EXPERIENCES

Research Team, Mineral.ai – A Google X company Research Intern, Supervisors: Dr. <i>Jinneng Rao</i> , Dr. <i>Kezhen Chen</i> Build safe, robust and reliable multimodal large language models.	May 2023 – Sept. 2023 Mountain View, CA, US
Auto Machine Learning Team, Amazon.com Applied Scientist Inter, Supervisors: Dr. <i>Andrew Borthwick</i> , <i>Nick Erickson</i> Multi-modal automated machine learning for large-scale product binary classification problems.	May 2022 – Aug. 2022 Sunnyvale, CA, US
Search Engine Group, Xiaomi NLP Engineer Word segmentation, named entity recognition, unsupervised synonym pairs mining.	Jan. 2018 – Jul. 2018 Beijing, China
Search Advertising Group, Baidu NLP Engineer Ads content generation, Query-Ads matching.	Apr. 2017 – Dec. 2017 Beijing, China

SERVICES AND ACTIVITIES

Event Organizations

[Web Developer Student Lead](#), The ACM International Conference on Knowledge Discovery and Data Mining (**KDD**), 2022.

Journal Reviews

The IEEE Transactions on Neural Networks and Learning Systems (**TNNLS**), since 2022.

The Journal of Agricultural, Biological and Environmental Statistics (**JABES**), 2023.

The IEEE Transactions on Knowledge and Data Engineering (**TKDE**), 2021.

The IEEE Transactions on Big Data (**TBD**), 2021.

Conference Reviews

The ACM Special Interest Group on Information Retrieval (**SIGIR**), 2023.

The Conference on Empirical Methods in Natural Language Processing (**EMNLP**), 2021, 2023.

The IEEE International Conference on Data Mining (**ICDM**), 2023

The IEEE International Conference on Bioinformatics and Biomedicine (**BIBM**), 2023.

The Conference on Machine Learning for Health (**ML4H**), 2023.

The International World Wide Web Conference (**WWW**), since 2022.

The ACM Conference on Knowledge Discovery and Data Mining (**KDD**), 2022.

The AAAI Conference on Artificial Intelligence (**AAAI**), 2022.

The ACM International Conference on Information and Knowledge Management (**CIKM**), 2021.

The International Joint Conferences on Artificial Intelligence (**IJCAI**), 2020.

The IEEE International Conference on Robotics and Automation (**ICRA**), 2019, 2023.

The International Joint Conference on Natural Language Processing (**IJCNLP**), 2021.

NeurIPS Workshop on Socially Responsible Language Modelling Research (**SoLaR**), 2023.

ICLR Workshop on Trustworthy Machine Learning for Healthcare (**TML4H**), 2023.

ACL SIGEDU Workshop on Innovative Use of NLP for Building Educational Applications (**BEA**), 2023.

ICML Workshop on Interpretable Machine Learning in Healthcare (**IMLH**), since 2021.

ICCV Workshop on Computer Vision for Automated Medical Diagnosis (**CVAMD**), since 2021.

Research Seminars

Doctoral Symposium Participant, [2023 Conference on Health, Inference, and Learning](#), Boston, USA, Jun. 24, 2023.

Data Science Forum, School of Data Science, The Chinese University of Hong Kong, Palo Alto, USA, Dec. 17, 2022.