

Yuntong Hu

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I am a PhD student at Emory University supervised by Prof. Liang Zhao. My research interest lies in the intersection between Graph Learning and Natural Language Processing. I have research experience in LLM Post-Training, Retrieval-Augmented Language Modeling, Agentic AI, and Spatio-Temporal Modeling.

Education

Ph.D. in Computer Science, Emory University Sep 2023 - May 2027 (expected)
B.E. in Network Engineering, Southwest University Sep 2019 - Jun 2023

Professional Experience

Applied Scientist Intern, AWS AI, Fundamental Research Team Oct. 2025 – Dec. 2025
Software Engineering Intern, ByteDance, Applied Machine Learning May 2025 – Aug. 2025

Research Experience

Agentic System May 2025 – Present

- Introduced an evolutionary configuration-space framework that automatically generates and refines executable multi-agent systems through feedback-conditioned mutation, crossover, and cross-query experience memory accumulation [ICML 2026].
- Developed a lexically anchored repository graph retrieval framework that progressively expands from grep-style lexical matches into confidence-filtered local graph neighborhoods within the agent's existing coding loop [Preprint].

Retrieval-Augmented Language Modeling & LLM Post-Training Mar 2024 – Present

- Introduced the Graph Retrieval-Augmented Generation (GRAG) framework and developed an efficient computational solution to enhance LLMs' ability to understand graph data [NAACL 2025, SIGIR 2025].
- Introduced Evolving Retrieval Memory (ERM), a training-free RAG framework that continuously updates the retrieval index using correctness-validated query expansion signals without retraining or inference-time overhead [ICML 2026].

Graph Representation for Spatio-Temporal Modeling Sep 2020 – Oct 2023

- Developed heterogeneous visibility graphs and the Multipolygon-GNN model for multipolygons, achieving a lossless, rotation- and translation-invariant geometric representation while effectively leveraging the spatial and semantic diversity within heterogeneous graphs [KDD 2024].
- Designed efficient graph representation methods for time series to capture underlying interactions between time points, enhancing accuracy in forecasting tasks [IEEE Trans. Fuzzy Syst], [Appl Soft Comput], [Chaos, Solitons & Fractals].

Selected Publications

- [ICML 2026] **Yuntong Hu**, Yuting Zhang, Matthew Trager, Yi Zhang, Shuo Yang, Wei Xia, Stefano Soatto. Evolutionary Generation of Multi-Agent Systems. arXiv preprint arXiv:2602.06511 (2026).
- [ICML 2026] **Yuntong Hu***, Sha Li*, Naren Ramakrishnan, Liang Zhao. RAG without Forgetting: Continual Query-Infused Key Memory. arXiv preprint arXiv:2602.05152 (2026).
- [SIGIR 2025] **Yuntong Hu**, Zhihan Lei, Zhongjie Dai, Allen Zhang, Abhinav Angirekula, Zheng Zhang, Liang Zhao. Cg-rag: Research question answering by citation graph retrieval-augmented llms. 2025.
- [NAACL 2025] **Yuntong Hu**, Zhihan Lei, Zheng Zhang, Bo Pan, Chen Ling and Liang Zhao. GRAG: Graph Retrieval-Augmented Generation. arXiv preprint arXiv:2405.16506 (2024).
- [WSDM 2026] **Yuntong Hu**, Junxiang Wang, and Liang Zhao. Network tomography with path-centric graph neural network. Proceedings of the Nineteenth ACM International Conference on Web Search and Data Mining. 2026.
- [IEEE Trans. Fuzzy Syst] **Yuntong Hu**, and Fuyuan Xiao. Time-Series Forecasting Based on Fuzzy Cognitive Visibility Graph and Weighted Multisubgraph Similarity. IEEE Transactions on Fuzzy Systems 31.4 (2022): 1281-1293.
- [KDD 2024] Dazhou Yu, **Yuntong Hu**, Yun Li and Liang Zhao. PolygonGNN: Representation Learning for Polygonal Geometries with Heterogeneous Visibility Graph. Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining. 2024.
- [NeurIPS 2024] Zhuofeng Li, Zixing Gou, Xiangnan Zhang, Zhongyuan Liu, Sirui Li, **Yuntong Hu**. Chen Ling, Zheng Zhang and Liang Zhao. TEG-DB: A Comprehensive Dataset and Benchmark of Textual-Edge Graphs. arXiv preprint arXiv:2406.10310 (2024).
- [SIGSPATIAL 2024] (Best Paper Candidate) Zheng Zhang, Hossein Amiri, Dazhou Yu, **Yuntong Hu**, Liang Zhao and Andreas Zufle. Transferable Unsupervised Outlier Detection Framework for Human Semantic Trajectories. arXiv preprint arXiv:2410.00054 (2024).