Junming Liu

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Education

Tongji University, Shanghai, China *Setp. 2023 – Present*

Master student in Computer Science (CS), expected March 2026

- GPA: 89.5/100
- Research Interests: Multimodal Retrieval and Generation, Multimodal Large Language Models, Multi-Agent Interaction in Distributed Environments

Dalian Maritime University, Dalian, China *Sept. 2019 – July 2023*

B.S. in Intelligent Science and Technology (IST)

- GPA: 83.9/100

Publications

* Equal Contribution † Corresponding Author

[1] **Junming Liu**, Siyuan Meng, Yanting Gao, Song Mao, Pinlong Cai, Guohang Yan, Yirong Chen, Zilin Bian, Ding Wang†, Botian Shi. *Aligning Vision to Language: Annotation-Free Multimodal Knowledge Graph Construction for Enhanced LLMs Reasoning*. ICCV 2025 (Accepted).
[2] Pei Liu, Xin Liu, Ruoyu Yao, **Junming Liu**, Siyuan Meng, Ding Wang†, Jun Ma†. *HM-RAG: Hierarchical Multi-Agent Multimodal Retrieval Augmented Generation*. ACM MM 2025 (Accepted).
[3] Yujin Kang*, **Junming Liu***, Haiyan Cui†. *AI-Driven Assessment of Lip Volume Improvement Using Hyaluronic Acid Fillers: A Comprehensive Analysis*. Aesthetic Plastic Surgery (Accepted).
[4] Yanting Gao, Yepeng Liu, **Junming Liu**, Qi Zhang, Hongyun Zhang, Duoqian Miao†, Cairong Zhao. *Boosting Adversarial Transferability via Commonality-Oriented Gradient Optimization*. PRCV 2025 (Accepted).
[5] **Junming Liu**, Yifei Sun, Weihuang Cheng, Yujin Kang, Yirong Chen, Ding Wang†, Guosun Zeng†. *ReBrain: Brain MRI Reconstruction from Sparse CT slice via Retrieval-Augmented Diffusion*. WACV 2026 (Under Review).
[6] Aoqi Wu*, **Junming Liu***, Evelyn Zhang, Weiquan Huang, Yifan Yang, Jiaxing Miao, Qi Zhang, Lai Zhong Yuan, Liang Hu†. *AMID: Model-Agnostic Dataset Distillation by Adversarial Mutual Information Minimization*. AAAI 2026 (Under Review).
[7] **Junming Liu**, Yanting Gao, Yifei Sun, Yirong Chen, Ding Wang. *FedRecon: Missing Modality Reconstruction in Heterogeneous Distributed Environments*. EUROGRAPHICS 2026 (Under Review).
[8] **Junming Liu**, Yanting Gao, Siyuan Meng, Yifei Sun, Yirong Chen, Ding Wang†, Guosun Zeng†. *Mosaic: Data-Free Knowledge Distillation via Mixture-of-Experts for Heterogeneous Distributed Environments*. SIGMETRICS 2026 (Under Review).
[9] Siyuan Meng*, **Junming Liu***, Yirong Chen, Song Mao, Pinlong Cai, Guohang Yan, Ding Wang†. *From Ranking to Selection: A Simple but Efficient Dynamic Passage Selector for Retrieval Augmented Generation*. EDBT 2026 (Under Review).
[10] Yifei Sun, **Junming Liu**, Yirong Chen, Ding Wang†, Xuefeng Yan†. *TimeMKG: Knowledge-Infused Causal Reasoning for Multivariate Time Series Modeling*. Engineering Applications of Artificial Intelligence (Under Review).

Honors and Awards

- **Leadership and Communication Scholarship** *Sept. 2020*
  Dalian Maritime University
- **Excellent Student Scholarship (10%)** *Sept. 2021*
  Dalian Maritime University
- **Excellent Student Scholarship (10%)** *Sept. 2022*
  Dalian Maritime University
- **Undergraduate Innovation and Entrepreneurship Training Program, First Prize (10%)** *Oct. 2022*
  Dalian Maritime University

- **National College Mathematics Competition, National First Prize (1%)** *Dec. 2022*
  Chinese Mathematical Society

Research Experience

- **Text Sentiment Analysis Based on BERT Model** **Dalian Maritime University**
  Advisor: Prof. Yijia Zhang *Sept. 2021 – May. 2022*
  - **Motivation:** Investigate public opinion tendencies on social media during the COVID-19 pandemic.
  - **Methods:** Enhanced BERT by integrating LDA topic modeling and fine-tuned the combined model for text sentiment analysis.
  - **Results:** Achieved 95% accuracy in analyzing public sentiment on social media posts and submitted a patent titled *"Text Review Sentiment Classification Method Based on Topic-Fused BERT and Medium"*.
- **Multimodal Federated Learning for Medical Imaging** **Tongji University**
  Advisor: Prof. Guosun Zeng *Sept. 2023 – May. 2025*
  - **Motivation:** Medical institutions cannot share patient data due to privacy laws, making federated methods essential for enabling cross-modal generalization across hospitals.
  - **Methods:** Employed data-free knowledge distillation and modality reconstruction balancing techniques. These methods effectively mitigate data, model, and modality heterogeneity.
  - **Results:** Submitted three papers, Mosaic [5], ReBrain [6] and FedRecon [9]. The work enables brain multimodal generation and abnormality detection under a heterogeneous distributed system.
- **Multimodal Foundation Model Inference** **Shanghai Artificail Intelligence Laboratory**
  Advisor: Dr. Ding Wang *Jan. 2025 – Present*
  - **Motivation:** Explore efficient inference methods for large-scale multimodal foundation models.
  - **Methods:** Enhanced LLM inference by retrieving high-quality knowledge or applying PEFT to efficiently adapt multimodal large models.
  - **Results:** (1) Leveraged Multimodal Knowledge Graphs (MMKGs) to boost LLM inference accuracy by 10%+ on multiple benchmarks; (2) Identified and mitigated modality-induced biases in Vision-Language Models (VLMs); (3) Proposed a PEFT framework to adapt VLMs with minimal compute. One related work, VaLiK [1], has been accepted to ICCV 2025.

Internship Experience

- **Shanghai NIO Automobile Co., Ltd.** *June. 2023 – Sept. 2023*
  - Developed embedded control programs based on STM32, handling low-level signal acquisition and execution control.
  - Controlled steering and braking systems under tire blowout scenarios using image and radar data to prevent rollover and loss of control.
  - Built real-time data pipelines using the SpeedGoat platform.
- **Beijing Jinxixin Network Technology Co., Ltd.** *Oct. 2024 – Dec. 2024*
  - Constructed and trained vertical domain large models for maritime law scenarios, enabling intelligent understanding and application of specialized legal texts.
- **Shanghai Artificial Intelligence Laboratory** *Jan. 2025 – Present*
  - Conducted research on multimodal knowledge graphs and multimodal large models.

Skills

- Language: Chinese, English (IELTS: 7.0), Japanese, Germany

Campus Experience

- Member of the Art Troupe, School of Information Science and Technology, Dalian Maritime University *Sept. 2019 – June. 2022*
- Member of the Student Union, School of Electronics and Information Engineering, Tongji University *Sept. 2023 – June. 2024*