Junming Liu

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Education

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

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

- GPA: 90.0/100
- 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: 84.0/100

Publications

* Equal Contribution † Corresponding Author

[1] **Junming Liu**, Siyuan Meng, Yanting Gao, *et al. Aligning Vision to Language: Annotation-Free Multimodal Knowledge Graph Construction for Enhanced LLMs Reasoning*. ICCV 2025 (Accepted).
[2] **Junming Liu**, Yifei Sun, Weihuang Cheng, *et al. ReBrain: Brain MRI Reconstruction from Sparse CT slice via Retrieval-Augmented Diffusion*. WACV 2026 (Accepted).
[3] Aoqi Wu*, **Junming Liu***, Yuwei Zhang, *et al. AMID: Model-Agnostic Dataset Distillation by Adversarial Mutual Information Minimization*. WWW 2026 (Accepted).
[4] Yujin Kang*, **Junming Liu***, Haiyan Cui†. *AI-Driven Assessment of Lip Volume Improvement Using Hyaluronic Acid Fillers: A Comprehensive Analysis*. Aesthetic Plastic Surgery (Accepted).
[5] Pei Liu, Xin Liu, Ruoyu Yao, **Junming Liu**, *et al. HM-RAG: Hierarchical Multi-Agent Multimodal Retrieval Augmented Generation*. ACM MM 2025 (Accepted).
[6] Yanting Gao, Yepeng Liu, **Junming Liu**, *et al. Boosting Adversarial Transferability via Commonality-Oriented Gradient Optimization*. PRCV 2025 (Accepted).
[7] **Junming Liu**, Yanting Gao, Yifei Sun, *et al. FedRecon: Missing Modality Reconstruction in Heterogeneous Distributed Environments*. IEEE Transactions on Multimedia (Under Review).
[8] **Junming Liu**, Yanting Gao, Siyuan Meng, *et al. Mosaic: Data-Free Knowledge Distillation via Mixture-of-Experts for Heterogeneous Distributed Environments*. Pattern Recognition (Under Review).
[9] Siyuan Meng*, **Junming Liu***, Yirong Chen, *et al. From Ranking to Selection: A Simple but Efficient Dynamic Passage Selector for Retrieval Augmented Generation*. SIGIR 2026 (Under Review).
[10] Yifei Sun, **Junming Liu**, Yirong Chen, *et al. TimeMKG: Knowledge-Infused Causal Reasoning for Multivariate Time Series Modeling*. Expert Systems with Applications (Under Review).
[11] **Junming Liu***, Yifei Sun*, Weihua Cheng, *et al. MemVerse: Multimodal Memory for Lifelong Learning Agents*. CVPR 2026 (Under Review).
[12] **Junming Liu***, Yuqi Li*, Mengyue Dai, *et al. L-APO: Enhancing Long-Context Retrieval-Augmented Generation via Adversarial Preference Optimization*. ACL 2026 (Under Review).
[13] **Junming Liu**, Yuqi Li, Shiping Wen, *et al. ReCross: Recovering Cross-Modal Specificity Beyond Alignment*. ICML 2026 (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
- **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"*.
- **Vision-Language Models for Medical Imaging** **Tongji University**
  Advisor: Prof. Guosun Zeng *Sept. 2023 – Dec. 2025*
  - **Motivation:** Brain medical images contain complex structures that are difficult to interpret reliably, motivating the use of VLMs to enable structured and interpretable reasoning.
  - **Methods:** Used DDPM with ControlNet to perform high-fidelity reconstruction that preserves anatomical consistency across modalities, fine-tuned VLMs for brain abnormality detection and segmentation with traceable and interpretable reasoning, and incorporated privacy-preserving, distributed techniques for efficient lightweight collaboration of large models across heterogeneous hospitals.
  - **Results:** Achieved improved modality-aligned reconstruction and enhanced brain tumor detection and segmentation on SynthRAD2023, BraTS, etc., demonstrating strong robustness even under Non-IID data distributions. Some of this work has been accepted or submitted to top-tier conferences.
- **Multimodal Large Language Model Reasoning** **Shanghai Artificial Intelligence Laboratory**
  Advisor: Dr. Ding Wang *Jan. 2025 – Present*
  - **Motivation:** Explore efficient and interpretable reasoning methods for MLLMs.
  - **Methods:** Developed an annotation-free multimodal knowledge graph module to enhance reasoning, designed a long-context prompt comprehension framework to guide outputs and align responses with input semantics, studied partial alignment of different modalities to preserve shared and modality-specific information, and built an agent-memory mechanism for multi-turn interaction.
  - **Results:** Achieved improved performance and robustness across multimodal benchmarks, with some work accepted to ICCV 2025 and ACM MM 2025, and others submitted to ACL 2026 and CVPR 2026.

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.
- **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 large language models.

Skills

- Language: Chinese (native), English (IELTS: 7.0), Japanese, Germany
- Programming: C, C++, Python, Java, Go, SQL, Rust, MPI, NCCL, DeepSpeed, DDP, FSDP

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*