JIATENG LIU

217-974-9178 ⋄ jiateng5@illinois.edu ⋄ jiateng0104@gmail.com

Homepage: https://lumos-jiateng.github.io/

Semantic scholar: https://www.semanticscholar.org/author/Jiateng-Liu/33456794

RESEARCH INTEREST

Natural Language Processing, Computer Vision, Deep Learning
Multi-modal representation learning, Knowledge + LLMs & VLMs, (Multi-modal) LLM agents.

RESEARCH STATEMENT

My research focuses on the development of large multi-modal models, particularly Large Language Models (LLMs) and Vision Language Models (VLMs). I am committed to creating expansive systems that continually learn from real-world multimedia signals, achieving excellence in fine-grained multi-modality alignment, interaction, and synergy. Additionally, my work involves exploring the physics of multi-modal foundational models, aiming to construct a unified paradigm for jointly modeling different modalities and deriving a stable scaling law for these models. My research also emphasizes the internal knowledge management of these models to ensure their consistency and currency. This holistic approach utilizes multi-modal technologies to establish reliable knowledge bases and intelligent agents, designed to meet rigorous standards for real-world applications.

EDUCATION

University of Illinois Urbana Champaign   *August 2023 - Present*
Master of Science (M.S.) in Computer Science   *Instructor: Prof. Heng Ji*

Zhejiang University   *September 2019- June 2023*
Bachelor of Science, Computer Science.   *Instructor: Prof. Mingli Song*
Overall GPA: 3.94/4.0

PUBLICATIONS

[1] Motion-centric Multi-level Video Representations
Ongoing project
Jiateng Liu, Zhenhailong Wang, Srinivasakumar Vignesh, Jiaxin Qin, Shoubin Yu, Mohit Bansal, Heng Ji

[2] On-demand Video Representation for Better Long video Question Answering
Ongoing project
Jiateng Liu*, Zheyu Fan*, May Fung, Manling Li, Heng Ji

[3] A Language First Approach for Procedure Planning
Accepted by ACL 2023
Jiateng Liu*, Sha Li*, Zhenhailong Wang, Manling Li, Heng Ji

[4] PropaInsight: Toward Deeper Understanding of Propaganda on Techniques, Appeals, and Intents
Accepted by COLING 2025
Jiateng Liu*, Lin Ai, Gary Liu, Hui Zheng, Payam Karisani, May Fung, Preslav Nakov, Julia hirschberg, Heng Ji

[5] EVEDIT: Event-based Knowledge Editing with Deductive Editing Boundaries
Accepted by EMNLP 2024
Jiateng Liu*, Pengfei Yu*, Yuji Zhang, Sha Li, Zixuan Zhang, Heng Ji

[6] If LLM Is the Wizard, Then Code Is the Wand: A Survey on How Code Empowers Large Language Models to Serve as Intelligent Agents
Accepted by ICLR 2024 Workshop
Ke Yang*, **Jiateng Liu***, John Wu, Chaoqi Yang, Yi R. Fung, Sha Li, Zixuan Huang, Xu Cao, Xingyao Wang, Yiquan Wang, Heng Ji, Chengxiang Zhai

[7] MINT: Evaluating LLMs in Multi-turn Interaction with Tools and Language Feedback
Accepted by ICLR 2024
Xingyao Wang*, Zihan Wang*, **Jiateng Liu**, Yangyi Chen, Lifan Yuan, Hao Peng, Heng Ji

[8] CurveCloudNet: Processing Point Clouds with 1D Structure
Accepted by CVPR 2024
Colton Stearns, Alex Fu, **Jiateng Liu**, Jeong Joon Park, Davis Rempe, Despoina Paschalidou, Leonidas Guibas

[9] Knowledge Overshadowing Causes Amalgamated Hallucination in Language Models
Arxiv Preprint
Yuji Zhang, Sha Li, **Jiateng Liu**, Pengfei Yu, Yi R. Fung, Jing Li, Manling Li, Heng Ji

[10] Automating Financial Statement Audits with Large Language Models
AAAI Workshop
Rushi Wang*, **Jiateng Liu***, Weijie Zhao, Shenglan Li, Denghui Zhang

WORK EXPERIENCE

Teaching assistant at UIUC   *Champaign,IL*
Siebel School of Computing and Data Science   *August 2023 - December 2023*
Advised by: Prof. Margaret M. Fleck

- Teaching CS440 (Artificial Intelligence), designing problem sets, tutoring students.

Research assistant at UIUC   *Champaign,IL*
Siebel School of Computing and Data Science   *December 2023 - present*
Advised by: Prof. Heng Ji

- **Project: ECOLE Visual Analytics**
- Design a new video representation for a better understanding of low-level object interactions.
- Designed a novel architecture to process videos and object-level representation.
- Apply tracklets using SAM2 to obtain motion tokens for objects.
- Collect new video instruction tuning datasets for learning actions.

- **Project: Semafor Open Characterization**

- With a focus on real-world propaganda usage, training LLMs to detect misinformation.

- Rooted in established social science works, provide a new framework representing propaganda.

- Design a partially controlled pipeline for generating synthetic data.

- Use Label Studio to manually annotate data, collaborated with Kitware.Inc.

RESEARCH INTERN EXPERIENCE

Summer Internship at Stanford University   *August 2022 - December 2022*
3D Reconstruction from Curve Data   *Advisors: Prof. Leonidas Guibas and Prof. Yanchao Yang*

- Focused on developing CurveNet, a novel approach for 3D reconstruction leveraging curve data to enhance geometric detail and accuracy in generated models. Collaborated with a team to integrate this technology with existing 3D imaging systems.

Summer Internship at University of Illinois Urbana-Champaign *June 2023 - November 2023*
Research on Large Language Model (LLM) Agents   *Advisor: Prof. Heng Ji*

- Conducted research aimed at improving the interpretability and reliability of LLM agents in natural language processing tasks. Participated in the design and testing of model frameworks and contributed to two published papers..

Research Project at Zhejiang University   *October 2021 - June 2022*
Multi-Model Representation Learning and Efficient Transformers   *Advisor: Prof. Mingli Song*

- Engaged in developing advanced machine learning models that efficiently process and integrate multiple data types. Improved transformer architectures for better performance and lower computational costs

NUS Summer Workshop   *June 2021 - September 2021*
Computer Vision: A Visual Detection System   *Instructor: Prof. Colin Tan*

- Developed a visual detection system aimed at identifying and categorizing objects in dynamic scenes. Enhanced the accuracy of real-time detection in collaboration with a research team, contributing to a prototype now in pilot testing.

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