

Minqian Liu

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Research Summary

My research primarily focuses on **evaluating** and **improving** language models and vision-language models in diverse real-world scenarios, from *natural language generation* [3, 9, 18], *continual learning* [4, 6], to *interleaved text-and-image generation* [1, 2, 5]. I am one of the early researchers who built a **general multi-aspect evaluator** that can follow any customized evaluation instructions with a lightweight language model [3]. I am also the first to propose to *jointly* evaluate the generated text and images, and introduce the **first interleaved generation benchmark along with a strong multi-dimensional metric** to enable comprehensive assessments of mixed-modal generation quality [2]. In addition, I explored improving the models' capability via instruction tuning [1], in-context learning [10, 13], recursive reasoning [7], and visual chain of thought [14]. Totally, I have 18 papers along these directions, including 11 (co-)first-author papers and 12 peer-reviewed publications in top-tier venues such as ICLR, ACL, EMNLP, NAACL, AAAI, etc. I was a core member of Team HokieBot which won **Third Place** in the Scientific Innovation Competition in Alexa Prize SocialBot Grand Challenge 5, where my work [3] was part of the key innovations.

Education

Virginia Tech

Ph.D. Student in Computer Science

Blacksburg, USA

Aug. 2021-May 2026 (expected)

- Advisor: Lifu Huang
- Thesis Committee: Naren Ramakrishnan, Chang-Tien Lu, Dawei Zhou, Chris North

South China University of Technology (SCUT)

B.Eng. in Computer Science and Technology

Guangzhou, China

Sept. 2017-Jun. 2021

- Advisor: Mingkui Tan

University of California, Berkeley

Visiting Student

Berkeley, USA

Jan. 2019-May 2019

Employment

Microsoft Research

Research Intern

Redmond, USA

May 2024-Aug. 2024

- Manager: Dinei Florencio
- Topic: In-context Learning for Visual Prompting with Vision-Language Models

Amazon AWS AI

Applied Scientist Intern

New York, USA

May 2023-Aug. 2023

- Manager: Patrick Ng
- Topic: Evaluation for Conversational Agents as Database Interfaces

Highlighted Papers

(*: Equal contribution)

Modality-Specialized Synergizers for Interleaved Vision-Language Generalists

- Zhiyang Xu*, **Minqian Liu***, Ying Shen, Joy Rimchala, Jiaxin Zhang, Qifan Wang, Yu Cheng, Lifu Huang.
- In *ICLR 2025*.

X-EVAL: Generalizable Multi-aspect Text Evaluation via Augmented Instruction Tuning with Auxiliary Evaluation Aspects

- **Minqian Liu**, Ying Shen, Zhiyang Xu, Yixin Cao, Eunah Cho, Vaibhav Kumar, Reza Ghanadan, Lifu Huang.
- In *NAACL (Main)*, 2024.
- **Won Third Place** in the Scientific Innovation Competition in Alexa Prize SocialBot Grand Challenge 5.

Holistic Evaluation for Interleaved Text-and-Image Generation

- Minqian Liu, Zhiyang Xu, Zihao Lin, Trevor Ashby, Joy Rimchala, Jiaxin Zhang, Lifu Huang.
- In *EMNLP (Main)*, 2024.

Teamwork Is Not Always Good: An Empirical Study of Classifier Drift in Class-incremental Information Extraction

- Minqian Liu, Lifu Huang.
- In *ACL (Findings)*, 2023.

Full Publications

(*: Equal contribution)

Peer-Reviewed

[1] Modality-Specialized Synergizers for Interleaved Vision-Language Generalists

- Zhiyang Xu*, Minqian Liu*, Ying Shen, Joy Rimchala, Jiaxin Zhang, Qifan Wang, Yu Cheng, Lifu Huang.
- In *ICLR 2025*.

[2] Holistic Evaluation for Interleaved Text-and-Image Generation

- Minqian Liu, Zhiyang Xu, Zihao Lin, Trevor Ashby, Joy Rimchala, Jiaxin Zhang, Lifu Huang.
- In *EMNLP (Main)*, 2024.

[3] X-EVAL: Generalizable Multi-aspect Text Evaluation via Augmented Instruction Tuning with Auxiliary Evaluation Aspects

- Minqian Liu, Ying Shen, Zhiyang Xu, Yixin Cao, Eunah Cho, Vaibhav Kumar, Reza Ghanadan, Lifu Huang.
- In *NAACL (Main)*, 2024.

[4] Teamwork Is Not Always Good: An Empirical Study of Classifier Drift in Class-incremental Information Extraction

- Minqian Liu, Lifu Huang.
- In *ACL (Findings)*, 2023.

[5] MULTIScript: Multimodal Script Learning for Supporting Open Domain Everyday Tasks

- Jingyuan Qi*, Minqian Liu*, Ying Shen, Zhiyang Xu, Lifu Huang.
- In *AAAI*, 2024.

[6] Incremental Prompting: Episodic Memory Prompt for Lifelong Event Detection

- Minqian Liu, Shiyu Chang, Lifu Huang.
- In *COLING*, 2022.

[7] The Art of SOCRATIC QUESTIONING: Recursive Thinking with Large Language Models

- Jingyuan Qi*, Zhiyang Xu*, Ying Shen, Minqian Liu, Di Jin, Qifan Wang, Lifu Huang.
- In *EMNLP (Main)*, 2023.

[8] AMELI: Enhancing Multimodal Entity Linking with Fine-Grained Attributes

- Barry Menglong Yao, Yu Chen, Qifan Wang, Sijia Wang, Minqian Liu, Zhiyang Xu, Licheng Yu, Lifu Huang
- In *EACL*, 2024.

[9] Towards Effective Long Conversation Generation with Dynamic Topic Tracking and Recommendation

- Trevor Ashby, Adithya Kulkarni, Jingyuan Qi, Minqian Liu, Eunah Cho, Vaibhav Kumar, Lifu Huang
- In *INLG*, 2024.

[10] Dynamic Extension Nets for Few-shot Semantic Segmentation

- Lizhao Liu*, Junyi Cao*, Minqian Liu*, Yong Guo*, Qi Chen*, Mingkui Tan.
- In *ACM Multimedia*, 2020.

[11] Co-attention Network with Label Embedding for Text Classification

- Minqian Liu*, Lizhao Liu*, Junyi Cao, Qing Du.
- In *Neurocomputing*, 2021.

[12] Progressive Dialogue State Tracking for Multi-domain Dialogue Systems

- Jiahao Wang, Minqian Liu, Xiaojun Quan.
- In *ICASSP*, 2021.

Preprints & Technical Reports

[13] In-context Learning for Visual Prompting with Large Vision-Language Models

- Minqian Liu, Peng Chu, Jiang Wang, Lifu Huang
- Work in progress.

[14] REFOCUS: Visual Editing as a Chain of Thought for Structured Image Understanding

- Xingyu Fu, Minqian Liu, Zhengyuan Yang, John Richard Corring, Yijuan Lu, Jianwei Yang, Dan Roth, Dinei Florencio, Cha Zhang
- In submission to *ICML 2025*.

[15] METASCIENTIST: A Human-AI Synergistic Framework for Automated Mechanical Metamaterial Design

- Jingyuan Qi*, Zian Jia*, Minqian Liu, Wangzhi Zhan, Junkai Zhang, Xiaofei Wen, Jingru Gan, Jianpeng Chen, Qin Liu, Mingyu Derek Ma, Bangzheng Li, Haohui Wang, Muhao Chen, Dawei Zhou, Ling Li, Wei Wang, Lifu Huang
- In submission to *NAACL Demo Track 2025*.

[16] KnowledgeBot: Improving Assistive Robot for Task Completion and Live Interaction via Neuro-Symbolic Reasoning

- Minqian Liu, Ying Shen, Barry Menglong Yao, Sijia Wang, Jingyuan Qi, Zhiyang Xu, Lifu Huang.
- In *Alexa Prize Simbot Challenge Proceedings, 2023*.

[17] Iteratively Improving Biomedical Entity Linking and Event Extraction via Hard Expectation-Maximization

- Xiaochu Li*, Minqian Liu*, Zhiyang Xu*, Lifu Huang.
- In *arXiv, 2023*.

[18] HOKEYBOT: Towards Personalized Open-domain Chatbot with Long-term Dialogue Management and Customizable Automatic Evaluation

- Ying Shen, Jingyuan Qi, Sijia Wang, Barry Menglong Yao, Minqian Liu, Zhiyang Xu, Trevor Ashby, Lifu Huang.
- In *Alexa Prize SocialBot Grand Challenge 5 Proceedings, 2023*.
- **Third Place in the Scientific Innovation Competition in Alexa Prize SocialBot Grand Challenge 5.**

Honors & Awards

- **Third Place** of the Scientific Innovation Competition in Alexa Prize SocialBot Grand Challenge 5 (awarded \$25,000). 2023.
- Ranked **4/10** in Public Benchmark Phase of Alexa Prize SimBot Challenge. 2022.
- Saliat Technology Innovation Scholarship (Top 10% in Computer Science Department), SCUT. 2020.
- Outstanding Undergraduate Overseas Study Scholarship, SCUT. 2019.

Service

- Program Committee Member/Reviewer: ACL 2023, EMNLP 2023, ACL Rolling Review 2023-2024, AAAI 2023-2025, ICLR 2025.

Teaching

- Teaching Assistant of CS 3114: Data Structures and Algorithms, Fall 2021 & Spring 2022, Virginia Tech.