

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* [2, 5, 16], *continual learning* [6, 8], *multimodal script generation* [3, 15], to *interleaved text-and-image generation* [1, 12]. 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 [2]. 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 [1]. In addition, I explored improving the models' capability via instruction tuning [12], in-context learning [9, 13], recursive reasoning [7], and visual chain of thought [14]. Totally, I have 17 papers along these directions, including 11 (co-)first-author papers and 12 peer-reviewed publications in top-tier venues such as 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 [2] 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

AWS AI Lab

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)

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.

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.

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 submission to ICLR 2025.

MULTIScript: Multimodal Script Learning for Supporting Open Domain Everyday Tasks

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

[2] 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.

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

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

[4] 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.

[5] 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.

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

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

[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. [Oral Presentation](#).

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

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

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

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

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

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

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

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

Preprints & Technical Reports

[12] **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 submission to ICLR 2025.

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

- **Minqian Liu**, Peng Chu, Xingyu Fu, Jiang Wang, Lifu Huang, Dinei Florencio, Cha Zhang
- Work in progress. In submission to CVPR 2025.

[14] **SKETCHDOC: Visual Editing as a Chain of Thought for Visual Document Understanding**

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

[15] **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.

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

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

[17] **HOKIEBOT: 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.