# Minqian Liu

📱 +1 (540)-998-0624 • ✉ minqianliu@vt.edu • 🌐 mqianliu.github.io

## 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, 17], *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 [15]. 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 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**                                                                            **Blacksburg, USA**
*Ph.D. Student in Computer Science*                                        *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)**                          **Guangzhou, China**
*B.Eng. in Computer Science and Technology*                                 *Sept. 2017-Jun. 2021*
- Advisor: Mingkui Tan

**University of California, Berkeley**                                             **Berkeley, USA**
*Visiting Student*                                                                  *Jan. 2019-May 2019*

## Employment

**Microsoft Research**                                                              **Redmond, USA**
*Research Intern*                                                                *May 2024-Aug. 2024*
- Manager: Dinei Florencio
- Topic: In-context Learning for Visual Prompting with Vision-Language Models

**AWS AI Lab**                                                                      **New York, USA**
*Applied Scientist Intern*                                                        *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.

**[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
- Work in progress.

**[14] 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*.

**[15] 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 *CVPR 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] 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.
- Saliai 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.