

Xuye Liu

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Education Experience

- University of Waterloo, Computer Science, Ph.D.** Sep. 2021 - Present
Supervised by Prof. Jian Zhao and Prof. Tengfei Ma. Focusing on **GenAI**, **Natural Language Processing**, **Human-AI Collaboration**, and **Multimodal Learning**.
- Rensselaer Polytechnic Institute, Computer Science, M.Sc.** Aug. 2019 - Jan. 2021
GPA: 3.83/4.0
- Jilin University, Computer Engineering, B.Eng** Sep. 2015 - Jun. 2019

Industry and Research Experience

1. **University of Waterloo**, Graduate Research Assistant Sep. 2021 – Present
Research on interactive systems for code developers, mentored by Jian Zhao and Tengfei Ma.
3. **Anytime AI**, Machine Learning Engineer Intern April 2025 – Aug. 2025
Developed a custom discovery algorithm that uses the LangChain framework with LLMs to fill legal templates and adds retrieval-augmented generation for quick long-document search.
4. **IBM Research**, Research Intern May 2020 – Aug. 2020
Research on GNN-based Code Documentation Generation, mentored by Dakuo Wang and Lingfei Wu.
5. **United Airlines**, Software Engineer Jan. 2020 – May 2020
Designed recommendation algorithms and built visualization tools.

Projects and Selected Publications, * is Equal Contribution

Project: **Multimodal Learning and GenAI** (ACL, EMNLP, NAACL, CHI, IJCAI, TOCHI)

1. **Survey of Video Diffusion Models: Foundations, Implementations, and Applications**
Yimu Wang*, **Xuye Liu***, Wei Pang*, Li Ma*, Shuai Yuan*, Paul Debevec, Ning Yu
Under Review at TMLR
2. **NBDESCRIB: A Dataset for Text Description Generation from Tables and Code in Jupyter Notebooks with Guidelines**
Xuye Liu, Tengfei Ma, Yimu Wang, Fengjie Wang, Jian Zhao
ACL 2025
3. **ELIOT: Zero-Shot Video-Text Retrieval through Relevance-Boosted Captioning and Structural Information Extraction**
Xuye Liu, Yimu Wang, Peng Shi, Jian Zhao
NAACL 2025
4. **HACONVGN: Hierarchical Attention Based Convolutional Graph Neural Network for Code Documentation Generation**
Xuye Liu, Dakuo Wang, April Yi Wang, Yufang Hou, Lingfei Wu
Conference on Empirical Methods in Natural Language Processing (EMNLP) 2021
5. **Graph-Augmented Code Summarization in Computational Notebooks**
April Y. Wang, Dakuo Wang, **Xuye Liu**, Lingfei Wu
International Joint Conferences on Artificial Intelligence (IJCAI) 2021

Project: **Human-AI Collaboration** (TOCHI, UIST, CHI, IUI)

6. **MACEDON: Supporting Programmers with Real-Time Multi-Dimensional Code Evaluation and Optimization**
Xuye Liu, Yuzhe You, Xinrong Qiu, Tengfei Ma, Jian Zhao
 UIST 2025
7. **Influencer: Empowering Everyday Users in Creating Promotional Posts via AI-infused Exploration and Customization**
Xuye Liu, Annie Sun, Pengcheng An, Tengfei Ma, Jian Zhao
 CHI 2025
8. **Slide4N: Creating Presentation Slides from Computational Notebooks with Human-AI Collaboration**
 Fengjie Wang*, Xuye Liu*, Oujing Liu, Ali Neshati, Tengfei Ma, Min Zhu, Jian Zhao
 ACM CHI Conference on Human Factors in Computing Systems (CHI) 2023
9. **Documentation Matters: Human-Centered AI System to Assist Data Science Code Documentation**
 April Yi Wang, Dakuo Wang, et al., Xuye Liu, et al.
 ACM Transactions on Computer-Human Interaction (TOCHI) 2021
10. **How Data Scientists Improve Generated Code Documentation in Jupyter Notebooks**
 Michael Muller, April Yi Wang, Steven I. Ross, et al., Xuye Liu, et al., Dakuo Wang
 Workshop on Human-AI Co-Creation with Generative Models at ACM IUI 2021
11. **What Makes a Well-Documented Notebook? A Case Study of Data Scientists' Documentation Practices in Kaggle**
 April Yi Wang, Dakuo Wang, Jaimie Drozdal, Xuye Liu, Soya Park, Steve Oney, Christopher Brooks
 Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems

Patents

1. **Learning-Based Automated Machine Learning Code Annotation with Graph Neural Network**
 Dakuo Wang, Lingfei Wu, Xuye Liu, Yi Wang, Chuang Gan, Jing Xu, Xue Ying Zhang, Jun Wang, Jing James Xu
 US Patent 11,928,156, 2024
2. **Learning-Based Automation Machine Learning Code Annotation in Computational Notebooks**
 Dakuo Wang, Lingfei Wu, Yi Wang, Xuye Liu, Chuang Gan, Si Er Han, Bei Chen, Ji Hui Yang
 US Patent 11,360,763, 2024
3. **Dots and Box V1.0**
Xuye Liu, Anbo Liu, Xueqi Wu
 Patent No. 2016SR366619, 2016
4. **Intelligent Reconstruction System of Three-Dimensional House Plan V1.0**
 Yi Xiao, Xuye Liu, Pan Li, Shuai Wang, Lingyun Zeng
 Patent No. 2018SR450413, 2018

Selected Honors and Awards

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| 1. Mitacs Accelerate Fellowship, Blackberry, Esentire | 2023-2024 |
| 2. International Doctoral Student Award, University of Waterloo | 2021-2024 |
| 3. Award for Excellence in Academic Performance, Jilin University | 2015-2019 |

Services

Conference and Workshop Reviews

- Natural Language Processing: EMNLP, ACL, NAACL
- Human-Computer Interaction: CHI, CHI Late-Breaking Works (LBWs)

- Visualization: VIS

Technical Skills

Programming	Python, HTML/CSS/JavaScript, C/C++, Java
Frameworks	PyTorch, React.js, Flask, Tensorflow
Software	Git, Visual Studio, AWS, Android Studio, Eclipse, Docker
Languages	English (fluent), Chinese (native)