

Litao Yan

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Research Interests

Human-Computer Interaction, Large Language Models, Programming Assistants, Code Comprehension, Interactive Data Visualization

Education

- Present **University of Pennsylvania**, Philadelphia, PA, United States
Ph.D. in Computer and Information Science, Advisor: *Andrew Head*
- May 2021 **Harvard University**, Cambridge, MA, United States
M.Eng. in Computational Science and Engineering, Advisor: *Elena L. Glassman*
- June 2019 **Xiamen University**, Xiamen, Fujian, China
B.Eng. in Material Science and Engineering, Advisors: *Yixi Zhuang & Ye Luo*

Selected Publications

- CHI 2024 **Ivie: Lightweight Anchored Explanations of Just-Generated Code**
Litao Yan, Alyssa Hwang, Zhiyuan Wu, Andrew Head. 2024.
ACM Conference on Human Factors in Computing Systems.
[PDF](#) [Video](#)
- UIST 2022 **Concept-Annotated Examples for Library Comparison**
Litao Yan, Miryung Kim, Björn Hartmann, Tianyi Zhang, Elena Glassman. 2022.
ACM Symposium on User Interface Software and Technology.
[PDF](#) [Video](#)
- CHI 2021 **Visualizing Examples of Deep Neural Networks at Scale**
Litao Yan, Elena L. Glassman, Tianyi Zhang. 2021.
ACM Conference on Human Factors in Computing Systems.
[PDF](#) [Video](#)

Research Experience

- Present **University of Pennsylvania**, *Ph.D. Student*, Philadelphia, PA, United States
- current proj.** My current research project focuses on hard-to-answer programmer questions and is looking into developing new kinds of software engineering agents.
- Ivie** I developed Ivie, a novel extension for programming assistants designed to provide instantly visible in-situ explanations for generated code. Through a within-subjects user study, Ivie demonstrated enhanced code comprehension support and was preferred by users over a GPT-based chatbot in understanding generated code. The paper has been accepted by CHI 2024 with me as the first author.
- 2019 – 2022 **Harvard University**, *Research Assistant*, Cambridge, MA, United States
- ParaLib** I designed ParaLib to show concept-annotated code examples in parallel, facilitating library comparison and offering insights into library selections. ParaLib was evaluated through a user study I conducted with 20 participants spanning Visualization and NLP domains. This work was published in UIST 2022 with me as the first author.
- ExampleNet** I created ExampleNet, a visualization of 100 deep learning models, using a semi-automated data extraction process. Through studies involving 16 participants, I identified deep learning learners' needs and validated ExampleNet's utility. I wrote a first-author paper and accepted by CHI 2021.
- 2020 – 2021 **Massachusetts Institute of Technology**, *Research Assistant*, Cambridge, MA, United States
- VisMeet** Advised by Prof. Michael Cafarella and Tim Kraska, I developed VisMeet, a visualization-encoded video conference interface enhancing user awareness of topics and contributions. A study with 39 participants confirmed the system's ecological validity and efficacy.
- 2018 – 2019 **Xiamen University**, *Undergrad Research Assistant*, Xiamen, Fujian, China
- I simulated the Abelian Sandpile Model, visualizing patterns of 10 million grains on an infinite graph grid. Innovatively, I integrated this model into a new stream cipher by replacing the LFSR and further applied it to study social networks and simulate dynamic systems.

Selected Honors and Awards

- 2022 John Grist Brainerd Doctoral Fellow, University of Pennsylvania
- 2021 Honorable Mention at CHI'21 (top 5% of submitted papers)
- 2019 Outstanding Graduates, Xiamen University (top 3%)
- 2016 - 2018 Outstanding Scholarship for Undergraduates (top 5%), Xiamen University
- 2016 & 2017 Triple-A Student, Xiamen University (top 3%)
- 2016 & 2017 "An An" Scholarship First Prize (top 3%), College of Materials, Xiamen University
- 2016 Excellent Volunteer, Xiamen University (top 10)

Research skills

	Level	Skill	Years
Programming Language	■■■■■	JavaScript	4
	■■■■■	HTML & CSS	4
	■■■■■	Python	6
	■■■	TypeScript	2
	■■	C	7
Frameworks	■■■■■	Matplotlib	6
	■■■■■	D3.js	4
	■■■	scikit-learn, Pandas, Numpy	5
	■■	TensorFlow	5
	■■	PyTorch	3
	■	Node.js	2
HCI	■■■■■	Quantitative Analysis	4
	■■■■■	Qualitative Analysis	4
	■■■	Eye-tracking Analysis	1

Teaching

Fall 2022 **Teaching Assistant**, CIS 3990: Introduction to Human-Computer Interaction

Academic Service

2023 **Reviewer**, ACM Conference on Human Factors in Computing Systems

2017 **Volunteer**, BRICS Xiamen Summit

Professional Experience

2018 – 2019 **PZCNET (Xiamen) Ecommerce Co., Ltd.**, *Intern*, Xiamen, Fujian, China

Project: Developed a UI for an agricultural big data platform, incorporating features such as production forecasting, pest detection, targeted marketing, and food traceability.

Summer 2017 **CIB (China Industrial Bank) Fintech Co., Ltd.**, *Intern*, Shanghai, China

Project: Leveraged Stacked Sparse Auto Encoders (SSAE) for stable, high-dimensional feature extraction in smart stock selection. Enhanced data integrity by integrating COIF Wavelet denoising with SSAE, mitigating high-frequency noise interference.

2016 – 2018 **GenGee Sport Co., Ltd.**, *Intern*, Xiamen, Fujian, China

Project: Engineered a real-time soccer data analysis interface for Gengee's INSAIT K1, offering panoramic performance insights. Integrated live visualizations of 16 key metrics, synthesizing data from player sensors and smart soccer technology. Addressed and rectified JVM garbage collection issues, enhancing garbage collection efficiency tenfold.