Litao Yan

ltyan@seas.upenn.edu
yanlitao.github.io

Research Interests

Human-Computer Interaction, Large Language Models, Programming Tools, Interactive Data Visualization, Data-Driven Decision Making

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

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

I developed a tool that instantly offers anchored explanations for generated code. Through a meticulous in-lab usability evaluation, this tool demonstrated enhanced code comprehension support and was preferred by users over a GPT-based chatbot in the programming tool ecosystem. The paper is submitted to CHI 2024 with me as the first author.

2019 – 2022 **Harvard University**, *Research Assistant*, Cambridge, MA, United States

ParaLib I designed ParaLib to showcase concept-annotated code examples in parallel, elevating library comparison and offering insights into capabilities and code nuances. This was further validated 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 26 participants, I identified DL 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	■■■■□	JavaScript	4
Language	■■■■□	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.

Litao Yan
ltyan@seas.upenn.edu
yanlitao.github.io

Company Recruitment team
Company, Inc.
123 somestreet
some city

October 10, 2023

Dear Sir or Madam,

I am writing to express my interest in the intern position in applied AI at [Company Name], focusing on the innovative applications of Large Language Models (LLMs) in programming. As a current PhD student in Computer and Information Science at the University of Pennsylvania, my research intersects Human-Computer Interaction, Large Language Models, and Human-AI Interaction. I am enthusiastic about contributing my insights and expertise to your esteemed organization.

In my recent paper titled "Ivie: Lightweight Anchored Explanations of Just-Generated Code," I delved into how programming assistants are improving the programming experience. The essence of the paper revolves around Ivie, a tool powered by LLMs that augments Github Copilot, providing instantly visible in-situ explanations. With Ivie, generated code is instantly accompanied by explanations positioned adjacent to the code, optimized for low-cost invocation and dismissal. This design aids programmers in critically examining and understanding the generated code more efficiently.

While Ivie has shown promise in enhancing code comprehension, I am eager to further explore its potential. Features like expandable explanations, which allow users to delve deeper into code outputs, and the concept of an always-on Ivie, where explanations are seamlessly integrated and accessible with a simple hover, are areas I am passionate about advancing. These enhancements aim to enrich real-time understanding and provide a more immersive programming experience.

Beyond programming, I envision LLMs playing a pivotal role in bridging gaps in various domains, from academic papers with interactive diagrams to instructive copilots for creative domains. The horizon of LLMs is vast, and I am excited about the possibility of collaborating with [Company Name] to push these boundaries further.

I am particularly drawn to [Company Name] because of [specific reason or project that attracted you to the company]. I believe that together, we can redefine the landscape of AI-supported comprehension across diverse domains.

Thank you for considering my application. I am eager to discuss how my research and aspirations align with the innovative spirit of [Company Name]. Please feel free to contact me at [Your Phone Number] or [Your Email Address] for further conversation.

Yours faithfully,

Litao Yan

Attached: curriculum vitæ