XIA SU

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PROFILE

I am a **final-year** Ph.D. student in Computer Science at the University of Washington, advised by Prof. Jon Froehlich. I research **Human–AI Symbiotic Spatial Perception**, studying Human–AI alignment in spatial understanding, AI-assisted situational awareness, and the externalization of human spatial knowledge through reality-based interaction.

EDUCATION

University of Washington, Seattle, WA *Sep 2021 - June 2026*
Master and PhD of Computer Science. Instructed by Prof. Jon Froehlich

Tsinghua University, Beijing, China *Sep 2014 - June 2021*
Bachelor and Master of Architecture

EMPLOYMENT

UW CSE, Seattle, WA *September 2021 - Present*
Graduate Research Assistant/ Teaching Assistant

Apple AIML, Seattle, WA *April 2025 - September 2025*
Machine Learning Intern

Adobe Research, San Francisco, CA *June 2024 - September 2024*
Research Scientist Intern

Adobe Research, San Jose, CA *June 2023 - September 2023*
Research Scientist Intern

Microsoft Research Asia, Beijing, China *June 2020 - March 2021*
Research Intern

KEY TECHNICAL SKILLS

Deep Learning & Foundational Models: Pytorch, Transformer Architectures, ViT, SFT, PEFT Methods, GRPO

Language & Reasoning Systems: Chain-of-Thought Prompting, Retrieval-Augmented Generation (RAG), Agentic AI Workflows, LangGraph, Model Context Protocol (MCP), Custom Objective & Evaluation Metrics

Computer Vision & Graphics: Dense Prediction & Segmentation, Structure-from-Motion (SfM), Visual SLAM, 3D Reconstruction, 3D Scene Synthesis, CAD/3D Modeling Tools, 3D Printing

Full-Stack & Interactive Applications: End-to-End Web Development, UI/UX Design, Cross-Platform Mobile/AR Apps, Embedded/Robotics Integration, Real-Time Graphics/Visualization

Benchmarking & Empirical Evaluation: Benchmark Design, Custom Evaluation Suites, Dataset Construction & Curation, Statistical Analysis

Human-Centered AI & Research Methods: User Study Design, Qualitative/Quantitative Evaluation Methodologies

SELECTED FULL PAPER PUBLICATIONS

CapNav: Benchmarking Vision Language Models on Capability-conditioned Indoor Navigation
Xia Su, Ruiqi Chen, Benlin Liu, Jingwei Ma, Zonglin Di, Ranjay Krishna, Jon E. Froehlich
Keywords: VLM, Embodied AI, Vision-language Navigation, Benchmark, Spatial Reasoning
CVPR 2026 accepted

DepthScape: Authoring 2.5D Designs via Depth Estimation, Semantic Understanding, and Geometry Extraction
Xia Su, Ruiqi Chen, Jingwei Ma, Chu Li, Jon E. Froehlich
Keywords: VLM, Agentic Systems, 3D Graphics, Program Synthesis, Spatial-Geometric Reasoning
DIS'26 under review

FlyMeThrough: Human-AI Collaborative 3D Indoor Mapping with Commodity Drones
Xia Su, Ruiqi Chen, Jingwei Ma, Chu Li, Jon E. Froehlich
Keywords: SfM, 3D Reconstruction, 3D Localization, Spatial-Geometric Reasoning, Reality-based Interaction
UIST'25

Accessibility Scout: Personalized Accessibility Scans of Built Environments
William Huang, **Xia Su**, Jon E. Froehlich, Yang Zhang
Keywords: VLM, Agentic Systems, Personalized Assistive Systems, Human-Centered AI, Built Environment Analysis
UIST'25

SonifyAR: Context-aware Sound Generation in Augmented Reality
Xia Su,Jon E Froehlich, Eunyee Koh, Chang Xiao
Keywords: LLM, Agentic Systems, Audio Diffusion Models, Augmented Reality, Context-awareness
UIST'24

RASSAR: Room Accessibility and Safety Scanning in Augmented Reality
Xia Su, Kaiming Cheng, Han Zhang, Jaewook Lee, Wyatt Olson and Jon E. Froehlich
Keywords: Augmented Reality, Object Detection, Built Environment Analysis
CHI'24

Kinergy: Creating 3D Printable Motion using Embedded Kinetic Energy
Liang He, **Xia Su**, Huaishu Peng, Jeffrey I. Lipton, and Jon E. Froehlich
Keywords: 3D Graphics, 3D Printing
UIST'22

Interior Layout Generation Based on Scene Graph and Graph Generation Model
Xia Su, Chenglin Wu, Wen Gao, and Weixin Huang
Keywords: Indoor Scene Synthesis, Graph Neural network, Graph Generative Model
Design Computing and Cognition'20, Springer International Publishing, Cham, 267–282.

SELECTED POSTERS & DEMOS

Authoring 2.5D Designs with Depth Estimation
Xia Su, Cuong Nguyen, Matheus A Gadelha, Yu Shen, Stefano Petrangeli, Jon E. Froehlich
Keywords: VLM, Agentic Systems, 3D Graphics, Program Synthesis, Spatial-Geometric Reasoning
CHI'25 LBW

A Demo of DIAM: Drone-based Indoor Accessibility Mapping
Xia Su, Ruiqi Chen, Weiye Zhang, Jingwei Ma, Jon E. Froehlich
Keywords: SfM, 3D Reconstruction, 3D Localization, Spatial-Geometric Reasoning, Reality-based Interaction
UIST'24 Demo

RAIS: Towards A Robotic Mapping and Assessment Tool for Indoor Accessibility Using Commodity Hardware
Xia Su, Daniel Campos Zamora, Jon E. Froehlich
Keywords: Robotics, Object Detection, Built Environment Analysis
ASSETS'24 Poster

PATENTS

Context-aware Audio Data Acquisition
Xia Su, Chang Xiao, Eunyee Koh.
Filed with Adobe Research

FlyMeThrough: Human-AI Collaborative 3D Indoor Mapping with Commodity Drones
Xia Su, Ruiqi Chen, Jon E. Froehlich
Approved by UW CoMotion (in process)

Authoring 2.5D Designs with Depth Estimation
Xia Su, Cuong Nguyen, Matheus A Gadelha, Yu Shen, Stefano Petrangeli
Filed with Adobe Research (in process)

VOLUNTEERING & SERVICE

- Reviewer for top HCI conferences including CHI'24, CHI'24 LBW, SUI'24, UIST'24, CHI'25, CHI'26.
- Reviewer for top robotics conference ICRA'25.

PRESS & INVITED TALKS

- **Using augmented reality to improve accessibility**, Oregon Public Broadcast, Link, *Nov 17, 2023*
- **RASSAR: Room Accessibility and Safety Scanning in Augmented Reality**, UW CSE Colloquium, *Nov 2, 2023*
- **AR for Accessibility and Creativity**, Talk at Brown HCI Lab, *Oct 26, 2023*
- **Q&A: Researchers aim to improve accessibility with augmented reality**, UW News, Link *October 17, 2023*
- **Evaluating Real-world Accessibility**, Talk at Igarashi Lab at UTokyo, *May 14, 2023*

TEACHING

- Teaching Assistant for UW CSE 442 (Data Visualization)
- Teaching Assistant for UW MHCID Prototyping Studio
- Teaching Assistant for UW CSE 412 (Introduction to Data Visualization for non-CSE majors)
- Teaching Assistant for UW CSE 160 (Data Programming)
- Guest lecturing for UW CSEP 590 B (The Future of Access Technology) 2023 Winter
- Guest lecturing for UW CSE 493 E (The Future of Access Technology) 2023 Fall & 2024 Fall

MENTORING

- Ruiqi (Richard) Chen, Master Student, University of Washington, *May 2024 - Present*
- Weiye Zhang, Undergraduate, University of Washington, *March 2024 - Present*
- Qiaochu (Steve) Liu, Master Student, Tsinghua University, *December 2022 - May 2023*
- Jackson Ma, Undergraduate, University of Washington, *October 2022 - February 2023*