

YIFAN XU

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Education

University of Illinois at Urbana-Champaign

Master Science in Information Management **GPA 4.0/4.0**

Aug. 2024 – Present

Champaign, Illinois

ShanghaiTech University

Bachelor of Engineering in Computer Science

Sep. 2020 – June 2024

Shanghai, China

Technical Skills

Languages: Python, Java, HTML/CSS, TypeScript, JavaScript, SQL, Markdown, Shell, R, MATLAB

Developer Tools: Docker, AWS, VS Code, Linux/Unix, MySql, Microsoft SQL, MongoDB, PostgreSQL

Technologies/Frameworks: Flask, Node.js, React, Numpy, Pytorch, Mongooose, SCSS, Axios, Spark, Git

Research Experience

Pick Your Textual Gradients

Jun. 2025 – Sep. 2025

Graduate Research Intern

University of Illinois at Urbana-Champaign

- Developed a novel framework to stabilize automated prompt optimization by introducing two core mechanisms: Error-Driven Refinement, which generates high-quality learning signals exclusively from incorrect model outputs, and Regularized Verification, which prevents over-specialization and performance degradation on general tasks.

Tracing LLM Reasoning Processes with Strategic Games

Feb. 2025 – May. 2025

Graduate Research Intern

University of Illinois at Urbana-Champaign

- Designed and developed the "Turn-based Attribute Game" for the AdvGameBench framework, a complex environment with elemental attributes and skill budgets to test the strategic planning and decision consistency of LLMs.
- Evaluated 12 state-of-the-art LLMs within the game, analyzing process-level metrics like Correction Success Rate (CSR) and Over-Budget Rate (OBR) to quantify their ability to plan, revise, and manage resources under constraints.

NanoNeRF: Nanoscale 360° reconstruction with NeRF under SEM

Oct. 2023 – Jan. 2024

Undergraduate Research Intern

ShanghaiTech University

- Invented new super resolution and 3D reconstruction techniques to enhance the precision and speed of controlling nanorobots, typically observed under a Scanning Electron Microscope (SEM), where imaging quality and speed are inversely related.
- Achieved rapid reconstruction of nanotubes captured under SEM by modifying the Neural Radiance Field's pinhole imaging model to parallel projection using **Pytorch**, aligning it with the physical imaging process of SEM, improving average PSNR from 22.3 to 28.13.

Review of Deep-learning-based Super-Resolution

Feb. 2023 – Sep. 2023

Undergraduate Research Intern

ShanghaiTech University

- Conducted extensive research on blind and non-blind super-resolution methods, from classification to application scenarios, and authored a comprehensive review paper.

Publications

- [1] **Yifan Xu**, Yixuan Li, Xinzhuo Li, Lijun Yu, Haohan Wang, "Pick Your Textual Gradients", *Submitted to ICLR*, under review, 2025.
- [2] Xiaopeng Yuan, Xingjian Zhang, Ke Xu, **Yifan Xu**, Lijun Yu, Jindong Wang, Yushun Dong, and Haohan Wang, "Tracing LLM Reasoning Processes with Strategic Games: A Framework for Planning, Revision, and Resource-Constrained Decision Making", *arXiv preprint arXiv:2506.12012*, 2025.
- [3] Xiang Fu, **Yifan Xu**, Hu Su*, Song Liu, "NanoNeRF: Robot-assisted Nanoscale 360° reconstruction with neural radiance field under scanning electron microscope", in *IROS(Oral)*, Abu Dhabi, Oct. 2024.
- [4] Ying Li, **Yifan Xu**, Hu Su, and Song Liu, "A Review of Deep-learning-based Super-Resolution: from methods to applications", in *Pattern Recognition*, paper id: 10.1016/j.patcog.2024.110935.

Teaching Experience

CS100: Introduction to Programming

Jan. 2023 - Jun. 2023

Teaching Assistant

Shanghai, China

- Hosted weekly office hours to tutor students on C/C++ programming concepts and assist with debugging assignments.
- Graded programming assignments, quizzes, and exams, providing constructive feedback.