Laura Yao

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RESEARCH INTEREST

Reliable Multimodal and Agentic AI Systems
Topic: Agentic AI, Multimodal AI, AI4Science

- Building agentic systems for scientific discovery, reasoning, retrieval, tool use, and verification.
- Connecting multimodal evidence to recover hidden structure and support decision-making.
- Improving reliability through unlearning, interpretability, robustness, and data provenance.

EDUCATION

University of North Carolina at Chapel Hill, Chapel Hill, NC — Aug 2025 – Present

- Ph.D. in Computer Science
  - Advisor: Prof. Tianlong Chen

Carnegie Mellon University, Pittsburgh, PA — Aug 2020 – Dec 2023

- Bachelor of Science in Computer Science
  - Minor in Language Technology
  - GPA 3.88 out of 4.0

PUBLICATIONS

(*: Equal contribution)

Words Before Pixels: Selective Modality Routing for Vision-Language Model Unlearning
Laura Yao, Haochen Zhang, Jinhao Duan, Sijia Liu, Tianlong Chen
NeurIPS 2026

Bridging Language and Physics: Automated Design of Continuum Robots with Large Language Models
Laura Yao*, Jingyi Chen*, Mohan Zhang*, Yingtai Ni, Jianmin Ji, Jie Peng, Song Wang, Tianlong Chen
RSS 2026

FaithCoT-Bench: Benchmarking Instance-Level Faithfulness of Chain-of-Thought Reasoning
Xu Shen, Song Wang, Zhen Tan, **Laura Yao**, Xinyu Zhao, Kaidi Xu, Xin Wang, Tianlong Chen
ICLR 2026

Metacognitive Self-Correction for Multi-Agent System via Prototype-Guided Next-Execution Reconstruction
Xu Shen*, Qi Zhang*, Song Wang, Zhen Tan, Xinyu Zhao, **Laura Yao**, Vaishnav Tadiparthi, Hossein Nourkhiz Mahjoub, Ehsan Moradi Pari, Kwonjoon Lee, Tianlong Chen
ACL 2026 Findings

Audio-Journey: Open Domain Latent Diffusion Based Text-to-Audio Generation
Jackson Michaels*, Juncheng B. Li*, **Laura Yao**, Lijun Yu, Zach Wood-Doughty, Florian Metze
ICASSP 2024

CMU-VIDION: Modified BLIP With Audio for Video to Text Description
Laura Yao, Juncheng B. Li, Florian Metze
TRECVID 2022

IN SUBMISSION/ PREPARING

(*: Equal contribution)

CONFERENCES

Geometry- and Relation-Aware Diffusion for EEG Spatial Super-Resolution
Laura Yao*, Gengwei Zhang*, Moajjem Chowdury, Yunmei Liu, Tianlong Chen
Under review, ICLR 2027

Cross-Modal Latent Influence: Patch-Level Training Sample Attribution for Vision-Language Models
Laura Yao, Shixing Yu, Jie Peng, Promit Ghosal, Kyra Gan, Tianlong Chen
Under review, ICLR 2027

GALA: Generation-Aware Cross-Modal Alignment for Text-to-Time-Series Synthesis
Haochen Zhang, Gengwei Zhang, **Laura Yao**, Nicholas Konz, Tianlong Chen
Under review, AAAI 2027

PROJECTS (IN PROGRESS)

Interpretable Vision-Language Foundation Modeling for Auditable Multimodal Reasoning, Concept Control, and Data Provenance.

Gene-Guided Single-Cell Foundation Modeling for Scalable Discovery of Disease-Associated Cell States.

RESEARCH EXPERIENCE

UNITES Lab, University of North Carolina at Chapel Hill Aug 2025 – Present
- Research Assistant, working on applications of multimodal AI and multi-agent systems.
  - Advisor: Prof. Tianlong Chen

Lawrence Livermore National Laboratory May 2026 – Aug 2026
- Research Intern, working on agentic AI-based scientific discovery for biosurveillance tasks.
  - Mentor: Dr. Bhavya Kailkhura

Language Technologies Institute, Carnegie Mellon University
- Research Assistant Aug 2023 – Dec 2023
  - Analyzed chest x-rays to create relevant findings and summaries from text and image input by designing multimodal LLM with a retrieval augmentation approach in collaboration with doctors at UCSF.
  - Advisor: Prof. Chenyan Xiong
- Research Assistant May 2022 – Aug 2023
  - Investigated LLMs with a novel trained diffusion method to augment AudioSet and boost audio classification.
  - Utilized contrastive learning-based models coupled with an audio tagging model to perform video-to-text description.
  - Advisor: Prof. Florian Metze

Human Computer Interaction Institute, Carnegie Mellon University Mar 2021 – Aug 2021
- Research Assistant, focusing on CS education.
  - Advisor: Prof. Amy Ogan

WORK EXPERIENCE

Databricks
- Software Engineer, Network Control Plane Team. Feb 2024 – Sep 2025
  - Worked on large-scale multi-cloud networking infrastructure.
  - Responsible for the serverless network billing project to greatly reduce and recoup costs from networking infrastructure and helped deliver important network egress products.
  - Worked on high impact collaboration with Azure for Databricks-specific scaling solutions and improved overall scalability and reliability of networking architecture across AWS, Azure, and GCP.
- Software Engineering Intern, Core Networking Team. May 2023 – Aug 2023
  - Developed an AWS and Kubernetes tool in Scala to manage customer network egress through private link.

Meta
- Software Engineering Intern, Network Delivery Systems Team. May 2022 – Aug 2022
  - Worked on a network data tool to improve scale and reliability with Python.
  - Helped refactor and create new strategies for scheduling while interacting with databases, containers, and jobs.
- Facebook University Engineering Intern Jun 2021 – Aug 2021
  - Developed and designed algorithms, visual features, database, and other functionalities for an iOS social media app using Objective C and Xcode.

AWARDS & HONORS

- John M. Glotzer Teaching Assistant Award, Annual Award at UNC
- Operational Excellence Award, Databricks
- Teamwork Award, Databricks
- Dean's List, Carnegie Mellon University
- Citadel x Amplify Trading Challenge - Python Challenge 1st Place
- National Merit Winner - $2500 Scholarship
- Regeneron Science Talent Search Scholar
- Mathworks Math Modeling 1st Runner-up - $15000 Scholarship

TEACHING EXPERIENCE

Teaching Assistant, Artificial Intelligence, UNC Chapel Hill Spring 2026
Teaching Assistant, Computer Organization, UNC Chapel Hill Fall 2025
Head Teaching Assistant, Great Practical Ideas of CS, Carnegie Mellon University Fall 2021 - 2023
Teaching Assistant, Introduction to Computer Systems, Carnegie Mellon University Spring 2022

SKILLS

Technical Skills
- Python, Scala, C++, C, Java, CUDA, SML; LaTeX; Pytorch.

Development Tools
- Linux, Windows; Git, Bash; AWS, Azure, GCP, Databricks; Terraform; VSCode; Spark ETL, Kubernetes