XIAOLONG LUO (AARON)

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Education

Harvard University — *Cambridge, Massachusetts*
Ph.D. Candidate in Engineering Science — *Sep. 2022 – Present*

Harvard University — *Cambridge, Massachusetts*
S.M. in Computer Science — *Sep. 2022 – May 2025*

University of Science and Technology of China — *Anhui, China*
Bachelor of Technology in Statistics — *Sep. 2018 – Jun. 2022*

Research Interests

My ultimate research goal is to develop the *foundations* of next-generation artificial intelligence to enhance AI's effectiveness and practical applications in healthcare. My research interests focus on the following key directions:

- **Flexible Diagnostic Models with Multi-task and Multi-modal Learning.** I work on developing advanced AI models that can simultaneously handle multiple diagnostic tasks while effectively integrating various types of medical data (imaging, clinical notes, lab results) to provide more comprehensive and accurate medical assessments.
- **Evaluating and Enhancing LLM Reasoning in Real-World Medical Settings.** I work on developing evaluation frameworks and benchmarks to assess and improve how large language models reason over complex, temporally extended medical data. My goal is to enhance their fidelity, calibration, and robustness, ultimately enabling trustworthy and generalizable clinical AI systems.

Publications

[4] **The CRITICAL Records Integrated Standardization Pipeline (CRISP): End-to-End Processing of Large-scale Multi-institutional OMOP CDM Data**
Xiaolong Luo, Michael Lingzhi Li
ML4H 2025 (spotlight talk), Dec. 2025

[3] **Towards Interpretable, Sequential Multiple Instance Learning: An Application to Clinical Imaging**
Xiaolong Luo, Hsin-Hsiao Scott Wang, Michael Lingzhi Li
AMIA Annual Symposium, Nov. 2025

[2] **AI Transformers for Radiation Dose Reduction in Serial Whole-Body PET Scans**
YR Wang, L Qu, ND Sheybani, **X Luo**, J Wang, KE Hawk, AJ Theruvath, ...
Radiology: Artificial Intelligence (IF: 22.5), Apr. 2023

[1] **Learning Pruning-Friendly Networks via Frank-Wolfe: One-Shot, Any-Sparsity, and No Retraining**
Miao Lu*, **Xiaolong Luo***, Tianlong Chen, Wuyang Chen, Dong Liu, Zhangyang Wang
ICLR (Spotlight), Virtual, Mar. 2022

Research Experiences

AI for Healthcare Applications — *Harvard, May 2023 – Present*
Advisors: Prof. Michael Lingzhi Li (HBS, Harvard), Prof. Scott Wang (HMS)

Online Spike Sorting — *Harvard, Oct. 2022 – Feb. 2023*
Advisor: Prof. Jia Liu (SEAS, Harvard)

Learning Pruning-Friendly Networks via Frank-Wolfe — *UT Austin, May 2021 – Oct. 2021*
Advisor: Prof. Zhangyang Wang (ECE, UT Austin)

PET/MRI Image Super-Resolution Program — *Stanford & USTC, Feb. 2021 – Apr. 2022*
Advisor: Dr. Joyce Wang (Stanford AIMI)

Invited Talks

Towards Interpretable, Sequential Multiple Instance Learning: An Application to Clinical Imaging
INFORMS Annual Meeting, Seattle; AMIA Annual Symposium 2025, Atlanta *2024*

Academic Services

Conference Reviewer
CVPR 2026, ICLR (2025; 2026), NeurIPS 2025 Workshops (Imageomics; GenAI4Health), ML4H 2025

Journal Reviewer
Pattern Recognition

Teaching Assistant

ENG-SCI 139/239: Innovation in Science and Engineering (Teaching Fellow) *Fall 2025*
Instructor: Prof. David Ricketts; Class size: 113

COMPSCI 1090B: Data Science 2: Advanced Topics in Data Science (Teaching Fellow) *Spring 2025*
Instructors: Prof. Pavlos Protopapas (SEAS) & Natesh Pillai (Statistics); Class size: 277

NEURO 240: Biological and Artificial Intelligence (Teaching Fellow) *Spring 2025*
Instructor: Prof. Gabriel Kreiman; Class size: 142

AM101: Statistical Inference for Scientists and Engineers (Head TF) *Spring 2024*
Instructor: Prof. Rob Howe; Class size: 55

CS 182: Artificial Intelligence *Fall 2023*
Instructors: Prof. Stephanie Gil; Prof. Milind Tambe (Harvard SEAS); Class size: 138

Stat 139: Introduction to Linear Models *Fall 2023*
Instructor: Prof. James Xenakis (Harvard GSAS); Class size: 83

Probability Theory and Mathematical Statistics *Fall 2021*
Instructor: Prof. Canwen Hong (Applied Math, USTC); Class size: 97

Differential Equation I *Fall 2020*
Instructor: Prof. Wuqing Ning (Applied Math, USTC); Class size: 156

Extracurricular Activities & Interests

Co-director of the Harvard GSAS Entrepreneur Club, AI Community *Sep. 2023 – Sep. 2024*
Led initiatives to foster entrepreneurship and AI-focused projects within the Harvard GSAS community.

Founding Member of FutureX *Jul. 2022 – Jan. 2023*
Established a web3 community, winning the second prize in "H-InnoPitch" and securing pre-seed funding; selected for MiraclePlus 22 Fall Accelerator.

CYDP Program (Columbia Young Development Program) *Columbia University, Jan. 2019 – Feb. 2019*
Led a team to win a business plan competition after completing courses in business analytics and machine learning.

Awards and Honors

The 41st Guo Moruo Scholarship (top 1%, highest honor at USTC) *2021*
Outstanding Student Scholarship, Golden award (top 5%) *2020*
National Scholarship (top 1%, from Ministry of Education of China) *2019*
Chinese Mathematics Competitions, Anhui, The Second Prize *2019*

Skills

Programming Languages: Python, C/C++, R, HTML, JavaScript
Frameworks & Tools: PyTorch, TensorFlow, PyG, scikit-learn, OpenCV, React, Git, Docker, Linux, Figma
Languages: English, Mandarin