

EDRIAN PAUL LIAO

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EDUCATION

Massachusetts Institute of Technology

Incoming Ph.D. in Social & Engineering Systems

Expected: May 2030

Cambridge, MA

Duke University, GPA: 3.91

B.S.E. Electrical and Computer Engineering, B.S. Computer Science

May 2025

Durham, NC

Cum Laude | Science and Society Certificate in Digital Intelligence

Senior Thesis: "*Toward Scalable Heat Interventions: A Gaussian Process and Spectral Perspective*"

PUBLICATIONS & ABSTRACTS

[1] **Liao, E.P.**, Calhoun, Z., Carlson, D. (2024). *Lowering urban heat: How spatial causal inference can predict the efficacy of heat-reducing interventions*. Abstract accepted at the American Geophysical Union 2024.

[2] **Liao, E.P.**, Calhoun, Z., Carlson, D. (2024). *Urban heat mitigation: Predicting the efficacy of heat-reducing interventions using spatial causal inference*. Abstract accepted at the NC Breathe Conference 2024 and awarded **Best Student Presenter**.

[3] Islam, M.S., Kuwayama Y., Lu, C., **Liao, E.P.**, et al. (2024). *Assessing vulnerability to drought in Angola using multisource satellite Earth observations and socioeconomic data*. Manuscript submitted to the Global Environmental Change.

[4] Calhoun, Z., Jiang, G., **Liao, E.P.**, et al. (2024). *Towards precision urban climate: how causal inference can help us better quantify the effect of greenspace on neighborhood air temperature*. Abstract accepted at the Association of Environmental Engineering and Science Professors (AEESP) Research & Education Conference 2025.

POSTERS & TALKS

[5] *Community-centered AI: Towards a collective approach in designing AI systems for climate and sustainability*. A 10-minute talk during the senior capstone project presentations of the Digital Intelligence certificate students at the Duke Initiative for Science and Society.

[6] *Socioeconomic vulnerability-drought severity (SV-DS) Index for Angola's Drought Decision Support System*. A 10-minute talk presented at the MIT Media Lab Summer Research Program Symposium 2024.

[7] *Planet-Tales: Climate change experiences in the rural Philippines*. Chosen to conduct a brief lecture during the Duke Merit Scholars Symposium 2023.

HONORS & AWARDS

Graduation with Departmental Distinction, Duke Electrical and Computer Engineering

2025

- Awarded, per recommendation of a faculty panel, to 9 outstanding ECE undergraduate students who have successfully defended their senior thesis, presented in a poster session, and written a project report.

Tau Beta Pi, Engineering Honor Society

2024

- Inducted to the oldest engineering honor society in the US for high academic standing and exemplary character.

Karsh International Scholarship, Duke University

2021-2025

- A full-ride merit-based scholarship + \$21k research funding awarded to 10 intellectually and civically engaged international students.

- HackDuke: Code for Good**, Winner **2023**
- 1 of the 4 track winners out of 200+ students and 37 hacks in a hackathon focused on building tech for social good
- Outstanding Teaching Assistant Citation**, Duke Electrical and Computer Engineering Dept. **2023**
- Received the award "for exceptional dedication, clear communication, and attention to student learning."

RESEARCH INTERESTS

Community-centered AI for climate adaptation planning and disaster risk management in under-resourced rural and urban areas, AI and environmental policy frameworks in the developing world

RESEARCH EXPERIENCE

Spatial variance-informed causal inference model for mitigating urban heat ECE Independent Study @ Duke · Prof. David Carlson · [Report] [Code] [Poster]	Jan 2024 – Present <i>Durham, NC</i>
Vulnerability index for Angola's drought response system MIT Summer Research Program (MSRP) · Prof. Danielle Wood · Dr. Sharif Islam	June 2024 – Aug 2024 <i>Cambridge, MA</i>
Long-term earthquake prediction using time-series forecasting models Research Group @ Duke · Dr. Enmao Diao · [Code]	May 2023 – Dec 2023 <i>Durham, NC</i>
Tracking climate change causes and impacts with satellites and AI Duke Climate+ · Prof. Kyle Bradbury · Prof. Jordan Malof · [Website] [Code] [Poster]	May – Jul 2022 <i>Durham, NC</i>

SKILLS

Languages: Python, C, Java, LaTeX, HTML/CSS, JavaScript, MATLAB, C++
Libraries: PyTorch, [\[Geospatial Python Libraries\]](#), Google Earth Engine, Google Firebase
Devops: Git, Linux, Bash, GitHub Projects, Agile Product Development

SELECTED PROJECTS

WildfireAI: A Wildfire Spread Prediction System Senior Design Capstone, System Design ML and Signal Processing · [Poster]	Spr 2025 <i>Durham, NC</i>
PlanetTales: Climate change experiences in the rural Philippines and urban Europe Passion Project, Climate Justice Narratives · [Website] [Code] [Poster]	Jul 2023 - present <i>Philippines, Europe</i>
HarvestNet 2.0: Compressed CNNs and Augmented Dataset for Harvest Pile Detection Graduate Class Project, Deep Neural Networks · [Paper] [Code] [Poster]	Spr 2024 <i>Durham, NC</i>
A Call for Better Cheap Labor Conditions within the AI Revolution Case Study, AI Ethics · [Paper]	Spr 2024 <i>Durham, NC</i>

TEACHING EXPERIENCE

Teaching Assistant , Signals and Systems	Fall 2024
Teaching Assistant , Intro to Artificial Intelligence	Spr 2024
Teaching Assistant , Fundamentals of Electrical and Computer Engineering	Spr 2023, Fall 2023, Spr 2024
Teaching Assistant , Calculus I and II	Spr 2022, Fall 2022

VOLUNTEER EXPERIENCE

Mentor , CAUSE Philippines: College apps mentorship program for low-income Filipinos	2021 - Present
Co-Founder , Duke Pamilya: Filipino Students Association	2022 - 2025
Tech & Product Management Lead , Technify	2022 - 2024
Co-Founder , Pi-oneers: STEM Education Non-profit	2020 - 2022
Co-Organizer , Project <i>Manantaw</i> : Initiative for typhoon victims in the Philippines	2020