

Rico Zhu

rico.zhu@duke.edu

(+1) 919 - 501 - 5399

<https://www.linkedin.com/in/rico-zhu-737174166/>

<https://github.com/ricohasgithub>

Languages: Python (Pytorch, Tensorflow, Keras), Java, Javascript, C++, C, HTML/CSS

Education

Duke University

August 2021 - May 2025

Double major BS in Computer Science and Mathematics with an AI and Data Science concentration. 3.815 cumulative GPA.

Relevant coursework: Data structures and Algorithms, Computer Systems, Discrete Math, Artificial Intelligence, Research Independent Study on AI Music Composition, Multivariable Calculus, Linear Algebra, Proofs and Conjecture, Probability, Differential Equations, Abstract Algebra, Linguistics; taking: Algorithms Design, Deep Learning, Machine Learning, Real Analysis.

Professional Experience

Duke University Department of Computer Science, Teaching Assistant

September 2022 - Current

Teaching assistant for CS 201 – Data Structures and Algorithms, one of Duke University's largest undergraduate courses; helped develop a bot that automatically notifies Slack channel of student discussion board updates; responsible for hosting office hours and a weekly in-person discussion section with 30+ students.

Duke University Robotics, Computer Vision Team Lead

September 2022 - Current

Chief architect of custom vision pipeline, from camera to model, which led to an 11th overall placement at the 2023 Robosub competition for the team; engineered a Unity-based synthetic image generation system to help generate training and testing images; trained and deployed a Yolov7 CNN on custom camera hardware using Linux knowledge.

Research Experience

Duke University Interpretable Machine learning Lab

December 2022 - Current

Algorithmic Composition Group: developed an experimental particle filter based method motivated by music theory to model sentiment mixtures in music. Implemented a sentiment-driven model for music composition with a novel hidden markov model based approach. Currently developing a LLM for music composition conditioned on lyrical content. Latest publication to appear in [KDD 2023](#).

CERN

May 2022 - May 2023

Optimized the Pflow collision event reconstruction algorithm on ATLAS LHC run 3 data by modeling collider sensors as a graph and implementing a Graph Neural Network classifier. Created scripts to run models on CERN's distributed computing network.

Duke University Multiphysics Geomechanics Lab

September 2021 - May 2022

Incorporated machine learning in an augmented reality pipeline to visualize porous geomaterials. Used Fourier Neural Operator (Li et al., 2020) models to accelerate PDE calculations in the material deformation simulation process.

Univ. of Toronto Intelligent Sensory Microsystems Lab

February 2021 - August 2021

Designed and implemented RNNs and Neural ODEs to run on a simulator for experimental AI hardware (memristor crossbars) to investigate potential performance enhancement. Models developed using Pytorch.

Hackathon Awards & Projects

MIT Blueprint Hackathon - 1st Place

With a team of 3, created a chrome extension that helps students study by generating bite-sized quizzes based off of what they read online. Fullstack web app with NLP backend built with spaCy and word2vec models.

Ubisoft, Hack the North - Best Game Design

Created game that portrayed the immigrant experience, all while learning C++ from scratch within the 48 hour span of the hackathon. Selected first from a hackathon with over 1000 participants.