

Education	University of Chicago B.S., Computational and Applied Mathematics <i>Summa Cum Laude</i> GPA: 3.95/4.00	Sept. 2020 - June 2024
	University of Chicago M.S., Computer Science <i>4-Year Joint BS/MS Degree</i> GPA: 3.87/4.00	Sept. 2023 - June 2024

Experience	MathWorks <i>Software Engineer, Engineering Development Group</i>	Sept. 2024 - Present
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- Implementing continuous collision detection between convex shapes in C++ using the Gilbert–Johnson–Keerthi (GJK) algorithm and finding penetration depth using the Expanding Polytope Algorithm (EPA).
- Updating MATLAB's existing inverse kinematics (IK) solvers to include a constraint based on penetration depth for collision-free IK.

	Robotic Intelligence through Perception Lab <i>Advisor: Prof. Matthew Walter</i>	Mar. 2024 - Present
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- Working on a project learning latent actions between consecutive image frames of unlabeled human videos. Fine-tuning the latent action prediction model on small-scale robot data to ground the latent actions to real robot actions.
- Worked on [PROGRESSOR](#), a self-supervised reward model capable of learning goal-conditioned task rewards from unlabeled human videos. Benchmarked the reward function using the DrQ-v2 reinforcement learning (RL) algorithm in the Metaworld environment, and tested it on real-robot tasks via reward-weighted behavioral cloning (BC) using Action Chunking Transformers (ACT).
- Led a six-week robotic manipulation course, teaching high school students to build a low-cost 5-DOF arm and program it to pick-and-place tic-tac-toe pieces. Covered Python, robot kinematics, computer vision, and robot learning.
- Implemented two teleoperation systems for a UR5 robot with Leap Motion hand-tracking and Meta Quest 3. Exhibited at the Museum of Science in Chicago and enabled lab members to efficiently collect demonstrations for imitation learning.
- Designed and built a fully-programmable 4-DOF robotic arm module for [Duckietown](#), a company offering small autonomous vehicles for education and research.

	Zero Knowledge Discovery Lab <i>Advisor: Prof. Ishanu Chattopadhyay</i>	Nov. 2021 - July 2024
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- Developed [EMERGENET](#), a framework built on conditional inference trees to capture long-range structural dependencies in viral genomes with only sequence data.
- Introduced *E-distance* metric quantifying mutation probabilities between viral strains to assess the emergence risk of animal Influenza A strains.
- Validated EMERGENET on $\sim 220k$ sequences from 2003 - 2023, outperforming WHO vaccine recommendations for H1N1/H3N2 in 81% of seasons.
- EMERGENET predicted risk scores correlate ($R = 0.721, p = 10^{-4}$) with the CDC's expert-evaluated IRAT (Influenza Risk Assessment Tool) scores.

MathWorks

June 2023 - Aug. 2023

Software Engineer Intern, Deep Learning Compression Team

- Developed a neural network to classify ECG signals from a wearable device.
- Applied model quantization to reduce memory footprint for embedded systems.
- Implemented and trained Neural ODE (NODE) and Deep Equilibrium (DEQ) models to benchmark performance against Residual Network (ResNet).

MathWorks

June 2022 - Sept. 2022

Software Engineer Intern, Install & Licensing Team

- Built automated tests in Java JUnit and MATLAB for new license borrowing functions and user interface, achieving 100% code coverage.
- Built Python performance tests to profile MATLAB startup speed, identifying critical bugs and optimization opportunities.

University of Chicago Department of Mathematics

June 2021 - Aug. 2021

REU Student

- Wrote an expository [paper](#) on the chip-firing game and its use in proving the graph-theoretic analogue of the Riemann-Roch theorem.
- Solved problems and attended talks on combinatorics, geometry, and analysis.

Papers

PROGRESSOR: A Perceptually Guided Reward Estimator with Self-Supervised Online Refinement

Tewodros W. Ayalew, Xiao Zhang*, Kevin Yuanbo Wu*, Tianchong Jiang, Michael Maire, and Matthew R. Walter

Under review, Conference on Computer Vision and Pattern Recognition (CVPR), 2025

EMERGENET: A Digital Twin of Sequence Evolution for Scalable Emergence Risk Assessment of Animal Influenza A Strains

Kevin Yuanbo Wu, Jin Li, Aaron Esser-Kahn, and Ishanu Chattopadhyay

Under review, Science Advances, 2024

[code](#) | [website](#)

Riemman-Roch through the Dollar Game

Kevin Yuanbo Wu

University of Chicago Mathematics REU, 2021

[paper](#)

Awards

Enrico Fermi Scholar - Top 5% of Physical Sciences Division	2024
Dean’s List - Awarded each year of undergrad	2024
Phi Beta Kappa - Elected junior year	2023
Robert Maynard Hutchins Scholar - Top 10% of class	2022
Hack@Brown Wolfram Award - Top 25 projects	2021
LEGO Design Award - Model displayed at LEGOLAND	2020

Skills

Technical Languages: Python, C++, MATLAB, SQL, L^AT_EX

Frameworks: PyTorch, Sklearn, NumPy, Pandas, OpenCV, MuJoCo

Tools: Unix/Linux, Git, Docker, Bash

Spoken Languages: English (native), Mandarin (native)

Hobbies: LEGO ([YouTube channel](#)), guitar, soccer, basketball, reading