

# Kevin Y. Wu

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**Education**      **University of Chicago**      Sept. 2023 - June 2024  
M.S., Computer Science  
*4-Year Joint Degree*  
GPA: 3.87/4.00

**University of Chicago**      Sept. 2020 - June 2024  
B.S., Computational and Applied Mathematics  
*Summa Cum Laude*  
GPA: 3.95/4.00

**Experience**      **Robotic Intelligence through Perception Lab**      Mar. 2024 - Present  
*Undergraduate Researcher*  
Advisor: Prof. Matthew Walter

- Worked on [Progressor](#), a self-supervised reward model capable of learning goal-conditioned task rewards from videos. Benchmarked the reward function using the DrQV-2 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 play tic-tac-toe. Covered Python, forward/inverse kinematics, computer vision, and robot learning.
- Implemented two teleoperation systems for our UR5e arm using Leap Motion hand-tracking and Meta Quest 3. Exhibited at the MSI in Chicago and enabled lab members to efficiently collect trajectories for imitation learning.
- Designed and built a fully-programmable 4-DOF robotic arm module for [Duckietown](#), to be released with their new Duckiebot self-driving car.

**Zero Knowledge Discovery Lab**      Nov. 2021 - July 2024  
*Undergraduate Researcher*  
Advisor: Prof. Ishanu Chattopadhyay

- 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*  
Mentor: Dr. Brenda Zhuang

- 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 ResNet.

## MathWorks

June 2022 - Sept. 2022

*Software Engineer Intern, Install & Licensing Team*

Mentor: Sheba Oommen

- Built automated tests in Java JUnit and MATLAB for new license borrowing functions and UI, 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*

Mentor: Livia Xu

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

## Papers

### Progressor: Perceptual Guided Reward Estimator with Self-Supervised Optimal Refinement

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

*In submission, International Conference on Learning Representations (ICLR), 2025*

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

### 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

*In submission, Science Advances, 2024*

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

### Riemman-Roch through the Dollar Game

**Kevin Yuanbo Wu**

*University of Chicago Mathematics REU, 2021*

[paper](#)

## Awards

<b>Enrico Fermi Scholar</b> - Top 5% of Physical Sciences Dept. (27 students)	2024
<b>Dean's List</b> - Awarded each year of undergrad	2024
<b>Phi Beta Kappa</b> - Elected junior year	2023
<b>Robert Maynard Hutchins Scholar</b> - Top 10% of class	2022
<b>Hack@Brown Wolfram Award</b> - Top 25 projects	2021
<b>LEGO Design Award</b> - Model displayed at LEGOLAND	2020

## Skills

**Technical Languages:** Python, MATLAB, C++, SQL,  $\text{\LaTeX}$

**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