Ethan Lin

eyl45@cornell.edu ethan-y-lin ethan-y-lin.github.io Scholar

Education

Cornell University Ithaca, NY

B.S. Computer Science *Aug 2022 – May 2026*

- **GPA:** 3.99/4.0 (4.16/4.3 on Cornell Scale)
- **CS Courses:** Advanced Topics in ML (A+), Computer Vision (A+), Computer Graphics (A+), Computer Systems and Organization (A+), Discrete Structures (A+), Functional Programming (A), Machine Learning (A+), Object-Oriented Programming & Data Structures (A), Robotics (A+), Practicum in AI (A)
- **ECE Courses:** Circuits (A), Data Science (A+), Embedded Systems (A), Microelectronics (A+), Probability for Random Signals (A+), Computer Architecture (A), Signals and Systems (A)

Publications

- **AgentSSL: Can MLE Agents Leverage Unlabeled Data?**
  A. Sarkar*, **E. Lin***, Z. Liu, K. Branson, J. Sun. *Submitted to NeurIPS 2026.*
- **A case study of evaluating AI agents on a neuroscience data-to-discovery pipeline**
  K. Horstmann, **E. Lin**, A. Robie, J. Sun, K. Branson. *Submitted to COLM 2026.*
- **WildFin: An In-the-Wild Video Dataset from Underwater Ecology Pipelines**
  A. Grassick, J. Hsu, **E. Lin**, Z. Liu, M. Whitton, L. Gutierrez, M. Hair, H. Yu, K. Branson, V. Jayaraman, M. Gil, A. Hein, J. Sun. *Submitted to ECCV 2026.*
- **Beyond Accuracy: Metrics that Uncover What Makes a 'Good' Visual Descriptor**
  E. Lin*, L. Zhao, A. Sehgal, and J. Sun. *VisCon at CVPR 2025.*
- **Simple Agents Outperform Experts in Biomedical Imaging Workflow Optimization**
  X. Wang, K. Horstmann, **E. Lin,** J. Chen, A. Farhang, S. Stiles, A. Sehgal, J. Light, D. Valen, Y. Yue, and J. Sun. *CVPR 2026.*

Research Experience

Sun Lab | Advisor: Dr. Jennifer Sun

- **AI Agents for Data Efficient Learning** *Summer 2025 – Present*
  Led a collaboration with Dr. Kristin Branson to improve data efficiency in scientific workflows using agentic optimization by leveraging unlabeled data. Adapted an agentic program-synthesis framework to unstructured scientific tasks, enabling scalable evaluation across datasets and search policies. Reproduced previous state-of-the-art baseline semi-supervised learning methods, through large-scale distributed experiments on HPC. Demonstrated that tree-search agents can achieve competitive performance with SSL methods and have the potential to reduce annotation requirements in real-world pipelines. *Co-first-author, Under Review at NeurIPS 2026.*
- **Simple Agents Outperform Experts in Biomedical Imaging Workflow Optimization** *Fall 2025 – Present*
  Evaluated tree-search agentic systems for program synthesis in biomedical imaging pipelines. Showed that minimal agent designs achieve comparable or superior performance to complex agents and expert baselines in automating pre- and post-processing functions. *Co-Author. Accepted to CVPR 2026.*
- **WildFin**: **A Video Dataset of Fish Behavior In-the-Wild** *Spring 2025 – Present*
  Collaborated with ecologists at the Hein Lab to benchmark their new fish behavior dataset. Built a scalable PyTorch benchmarking framework for evaluating vision foundation models for video classification. Mitigated severe class imbalance using focal loss and balanced sampling, enabling non-trivial performance on rare behaviors. Identified failures of SOTA vision models under long-tailed, real-world conditions. *Co-author, Under Review at ECCV 2026.*
- **Beyond Accuracy: Metrics that Uncover What Makes a 'Good' Visual Descriptor** *Spring 2025*
  Developed novel unsupervised metrics for evaluating the quality of text-based visual descriptors for image classification with vision-language models. *Accepted to the Visual Concepts Workshop at CVPR 2025* and won a **best poster award**.

Cornell Graphics Lab | Advisor: Dr. Donald Greenberg

- **3D Room Design Planner** *Summer 2024*
  Explored novel use cases for 3D geometry capture and built a full-stack room layout tool in ThreeJS, designed for senior accessibility.
- **Freehand Virtual Grasping** *Spring 2024*
  Developed a novel free-hand physics-based grasping method for VR. Implemented a working prototype in Unreal Engine using hand tracking technology in the Meta Quest Pro.

Teaching Experience

Cornell University | Teaching Assistant

- **CS 4782**: Introduction to Deep Learning *Spring 2026*
- **CS 4620**: Introduction to Computer Graphics *Fall 2025*
- **CS 3780**: Introduction to Machine Learning *Fall 2024 & Spring 2025*
- **CS 1620**: Visual Imaging in the Electronic Age *Fall 2024*
- **CS 2110**: Object-Oriented Programming and Data Structures *Spring 2024*

Projects

DreamLayout | CS 6784 Final Project

- Created a tool for improving creative and editable graphic design layouts using diffusion models.
- Implemented efficient synthetic dataset generation algorithms and trained diffusion models using Pytorch.

Softbody Physics Simulator | Graphics Creative Project Top Submission (1st / 70)

- Developed a 2D soft-body physics simulator using particle-spring systems to model soft-body interactions.

Taichi Path Tracer | Graphics Rendering Project Top Submission (Top 5 / 70)

- Built an efficient path tracer from scratch with Taichi.
- Implemented refractions, reflections, BVH speedup structure, and texture and normal mapping.

Infinite Zelda | Graphics Final Project Top Submission (Top 3 / 70)

- Created a 3D open-world web browser game modeled after Zelda with procedurally-generated terrain.
- Implemented procedural infinite-terrain with Simplex Noise, texture mapping, and efficient grass and tree rendering with instanced particles, shaders, and a height map.

Extracurricular Experiences

Engineers for a Sustainable World | Software Development Sub-Team Lead *Fall 2023 – Spring 2025*

- Led the development of a web application that optimizes the distribution of surplus food at Cornell.

Cornell Cup Robotics | ECE Sub-Team Member *Fall 2024*

- Collaborated with DigiKey to design electrical systems for accessories to the XRP educational robotics platform.

Honors and Awards

- CRA Outstanding Undergraduate Researcher Award Honorable Mention (2025 - 2026)
- Dean’s List, Cornell University (All semesters)
- Best Poster Award, Visual Concepts Workshop at CVPR 2025

Technical Skills

Languages: Python, Java, C/C++, MATLAB, OCaml, TypeScript, SQL, HTML/CSS
Frameworks/Tools: PyTorch, Taichi, React, Flask, ThreeJS, Git, NumPy, Pandas