Elliot Weiner

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EDUCATION

Boston University, College of Engineering GPA 3.8 - Boston, MA
Masters of Science, Robotics and Autonomous Systems Fall 2024 - Fall 2025
2024 Engineering Graduate Scholarship recipient.
Studies focused on machine learning/computer vision, with coursework like Robot Learning, Deep Learning, and GPU Programming.

University of Rochester, Hajim School of Engineering GPA 3.6 - Rochester, NY
Bachelor of Science, Electrical and Computer Engineering Fall 2020 - Spring 2024

PROFESSIONAL EXPERIENCE

Machine Learning Engineering Intern - Perception Cambridge, MA
Marble Technologies May 2025 - August 2025

- Prototyped product volume estimation via **2D RGB to 3D reconstruction**. Leveraged **Meta's VGGT** and **Depth-Anything-V2** for point cloud synthesis. Enabled DINO self-supervised learning and replaced depth cameras, **cutting hardware costs by up to $8000**.
- Designed camera smudge detection software via logistic regression (**95% accuracy**), which led to a production deployment. Scraped 568 data samples from AWS S3. Incorporated segmentation-based image verification using **Data Version Control**.
- Designed production-grade calibration tool for Basler cameras, leading to a **30x speedup in maintenance workflows.** Analyzed foundational model performance over transforms to **ensure 99% classification accuracy.**

Small Satellite Software Engineering Intern El Segundo, CA
The Aerospace Corporation Jun 2023 - Aug 2023

- Optimized ground software upload speeds to be **5x faster**. Used Python profiling and shared object files for error correction.
- Collaborated with XLab Small Satellite Group to establish mission-critical software for both ground systems and satellite operations, including an orbiting satellite deployed for USAF Hack-a-Sat Competition (www.hackasat.com).

Cloud Software / DevOps Engineering Intern Tallahassee, FL
Acumera Inc. May 2019 - Aug 2022

- Coordinated support teams to modernize system build processes and incorporated PXE boot of bare metal systems, reducing overall labor.

RESEARCH EXPERIENCE

Independent Study/Research - Edge ML, Segmentation Models Rochester, NY
Boston University, College of Engineering August 2025 - Present

- Built a Vision Transformer (ViT) using NumPy. Engineered patch embeddings, multi-head self-attention, positional encodings, etc.
- Trained a hybrid U-Net semantic segmentation model with **95% accuracy**. Optimized compute/memory footprint for edge devices.
- Implemented distributed AI infrastructure with Ray on a 4-GPU cluster. Reduced CNN/ViT training time **up to 91%** vs. CPU baselines.

Research Assistant Rochester, NY
University of Rochester, Robotics and AI Lab Sep 2023 - May 2024

- Conducted field experiments testing advanced planning algorithms on ROS-reliant physical platforms as part of DoD funded research.

RELEVANT PROJECTS

- **Perception-Enabled Dance Dance Revolution:** Developed a multi-view Pytorch model for real-time vision-based action recognition. Created dataset aggregation and cleaning tools, and **aggregated 25k temporal data points**.
- **Self-Driving Model Development:** Explored modern approaches to embodied AI in autonomous vehicles. Engineered CNN-based end-to-end, pipelined, and reinforcement learned (RL) policies with CARLA simulator and RGB camera sensors.
- **Unipedal Embodied Agent:** Built **multi-modal embodied AI agent for goal-directed action** with classical vision and RL methods. Designed an affordance-driven Hiera-B transformer pipeline to generate control signals in CoppeliaSim (see GitHub).
- **Learned Hand Sign Detection:** Prototyped low-power wearable for multi-modal data collection. **Aggregated hand pose dataset with >10k samples** using on-device IMU and flex sensors. Learned classification with a neural network (see GitHub).

SKILLS

Languages/Systems: Python, C/C++, CUDA, Java, MATLAB, Groovy, Linux, Docker, AWS, Ray

ML/AI: PyTorch, Scikit-learn, OpenCV, Open3D, DVC, logistic/linear regression, SVM, Bayesian Networks, YOLO

Deep Learning: CNNs, Vision Transformers, diffusion, reinforcement learning (Q-learning), self-supervised learning

Robotics: ROS/ROS2, SLAM (filtering, localization, mapping), MDPs, TCP, I2C, SPI, CoppeliaSim, CARLA, Gazebo, RViz