Andrew (Andy) Chen

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EDUCATION

University of Michigan **Ann Arbor, MI**

Bachelors of Science in Engineering (Intended Robotics) *Expected May 2029*

Coursework: Computational Linear Algebra; Intro to Engineering: Self-Driving Cars, Drones, and Beyond

TECHNICAL SKILLS

***Languages and Frameworks**:* Python, C++, Julia, ROS

***Python Libraries**:* NumPy, pandas, discord.py, TensorFlow, Keras, PyTorch, scikit-learn

***ML Concepts**:* Convolutional Neural Networks, computer vision, model evaluation, regression, data augmentation

Deployment: Raspberry Pi, Arduino, ESP32, TensorFlow-Lite Quantization, DigitalOcean

Kaggle Certifications: Intro to ML, Pandas, Intermediate ML, Intro to Deep Learning

PROJECT AND RESEARCH EXPERIENCE

Michigan Autonomous Robotic Vehicle Team **Ann Arbor, MI**

Navigation Subteam *Sep 2026 - Present*

- Develop a Model Predictive Path Integral (MPPI) controller to improve robot vehicle path tracking
- Develop dynamics and cost functions for MPPI, using vectorized PyTorch calculations to project sampled robot positions onto path segments, improving autonomous path tracking
- Implement a chord length based odometry calculation, replacing a midpoint approximation, resulting in ~80% reduction in RMS error across simulation runs

Pneumonia Detection and Edge Deployment Research using ML and Computer Vision

https://pmc.ncbi.nlm.nih.gov/articles/PMC12744362/ *May 2025 – Nov 2025*

First and Corresponding Author | Cureus | PubMed Central

- Built and evaluated 12 convolutional neural network models in Tensorflow/Keras to detect pneumonia across 5,856 chest X-Rays, refining model settings and expanding underrepresented image samples to address class imbalance
- Optimized and deployed a pneumonia-detection model on a Raspberry Pi 5, achieving 95% accuracy and 97% pneumonia recall while reducing the model to 1.45 MB and enabling predictions with 1.71 milliseconds inference latency
- Co-designed the study, acquired and interpreted data to draw conclusions about pneumonia-detection model performance
- Led critical review with U-M and MIT mentors and incorporated feedback from field experts during peer review

Discord Bot Development *Jan 2021 – May 2021*

- Built and maintained a Python Discord bot deployed to 100 servers with approximately 45,000 users
- Integrated discord.py and multiple third-party APIs across 16+ modules for moderation, games and automation, allowing users to run commands directly in discord chat

TECHNICAL EXPERIENCE

TeachShare through HUVTSP

AI Intern | Harvard Undergraduate Venture TECH Summer Program *Jul 2025 – Aug 2025*

- Designed and evaluated text-to-text and text-to-image generation LLMs, researching and testing models to support TeachShare's AI-generated worksheets for teachers and students
- Collaborated in a four-person team on model testing and presented findings directly to TeachShare staff at the end

WORK AND VOLUNTEER EXPERIENCE

YMCA of Silicon Valley **Cupertino, CA**

Lifeguard *Jun 2023 – Aug 2026*

- Monitored up to 50 patrons and coordinated with fellow lifeguards to enforce safety procedures and cleanliness
- Maintained certifications and conducted monthly skills reviews to stay operationally ready

Monta Vista High School Study Buddies **Cupertino, CA**

Student Tutor *Sep 2024 – Jan 2026*

- Assessed students' calculus profieincy through targeted questions and reviews of prior coursework, then developed individualized tutoring plans to address specific knowledge gaps
- Created visual diagrams and guided quiz reviews to strengthen conceptual understanding, contributing to test-score improvements of more than one letter grade