Elijah Tabachnik

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Skills

Languages: Python, C++, C#, Java, SQL
AI & Automation: PyTorch, OpenCV, YOLOv8, Computer Vision, LLM Integration, Workflow Automation (Codex, ChatGPT)
Robotics & Simulation: Isaac Sim, Isaac Lab, ROS2, Fusion 360
Tools & Frameworks: Docker, Git, Unity, Linux, FastAPI, Flask
Cloud: AWS, Azure

Experience

Machine Learning Engineer Aug. 2025 - Current
F1Tenth Autonomous Racing Team at UCI *Irvine, CA*

- Developed and trained autonomous driving models in simulation (Isaac Lab, Unity) for real-time navigation and control
- Built automated simulation-based ML training pipelines using synthetic data to iteratively train and evaluate driving policies
- Improved robustness of learned driving policies under diverse simulated conditions and domain variations

Software Engineer Feb. 2025 - Nov. 2025
Palletton-US (Remote) *Palm Coast, FL*

- Built an automated CLI pipeline for batch price analysis, integrating web scraping and LLM-based ingestion to eliminate manual data collection across marketplaces
- Developed and deployed a FastAPI microservice to automate data processing workflows via REST APIs and database integration; containerized with Docker for scalable execution
- Created a Swift iOS application that captured product images and used an AI-driven decision pipeline for real-time classification, processing 3,000+ products and saving $15K+ in wages to date.

Software Engineer Intern Jun. 2024 - Jan. 2025
Leucadia Therapeutics *Riverside, CA*

- Developed a Unity-based conversational AI avatar with real-time voice interaction, lip-sync rendering, and LLaMA/OpenAI API integration for immersive client testing, through the application of OO design principles.
- Designed and deployed a HIPAA-compliant, scalable cloud architecture on Azure and AWS (Docker), including Flask, REST APIs and SQL backends for secure health data management.
- Created a real-time researcher UI enabling interactive avatar demos and large-scale client testing.

Projects

Meta-Learning RL System for Non-Stationary Environments | PyTorch, PPO, Python Jan. 2026 - Mar. 2026

- Built a meta-learning reinforcement learning system for non-stationary environments, modeling real-world distribution shift via dynamic regime switching
- Implemented a multi-stage ML training pipeline combining parallel data collection, world model training, and simulated rollouts
- Designed experiments to evaluate adaptation across regime shifts, achieving 0.73–0.75 success under fast-switching conditions vs. 0.46 baseline
- Implemented scalable training across 16 parallel environments with experiment tracking and performance monitoring

Full Stack Quadruped Robot | *Fusion 360, IsaacLab, IsaacSim* Sept. 2025 - Current

- Currently developing a full-stack quadruped robot, spanning mechanical design, simulation, and autonomy.
- Designing and iterating leg and chassis assemblies in Fusion 360 with actuator-aware torque constraints and weight targets; validating URDFs and rigid-body dynamics in Isaac Sim/IsaacLab.
- Implementing locomotion and navigation pipelines in IsaacLab, integrating SLAM, and conducting simulation-to-policy transfer for RL-based control.

Agentic LLM Drone | *OpenCV, YOLOv8, OpenAI API, Whisper, Python* Jun. 2025 - Sept. 2025

- Developed an autonomous drone system where OpenAI interprets natural language commands to plan and execute real-time flight paths.
- Integrated YOLOv8 and OpenCV for real-time object and human detection, tracking, and autonomous drone-following behavior.
- Built and labeled a custom dataset to train a classification model for distinguishing vehicle types (SUV, pickup, sedan) and deployed it in live drone missions.

Procedural Terrain Generator | *Unity, C#* Jan. 2024 - Jun. 2025

- Built a Unity procedural generation system with layered Perlin noise for terrain, textures, and biome-specific foliage, implementing scalable foliage rendering for 15K+ trees with Unity LOD and optimized placement logic.
- Developed modular controls for terrain scale, forest density, chunk size, and biome zoning, put onto Unity asset store.

Education

University of California, Irvine Expected Graduation Jun. 2026
B.S. in Computer Science | GPA: 3.40

- **Relevant Coursework:** Algorithms & Data Structures, Operating Systems, Machine Learning, Artificial Intelligence, Probabilistic Programming, Software Engineering, Database Systems