KEVAL RAJESH SHAH

602-813-7978 | kshah57@asu.edu | github.com/kevalshah14 | linkedin.com/in/keval-shah14 | kevalshah.dev

WORK EXPERIENCE

The Good Drone Company | **Machine Learning & Embedded Systems Intern** June 2025 – August 2025

- Built **servo degradation ML model** using current/voltage time-series data; designed **Arduino Nano test rig** with PWM generation, current sensing, and **circular buffer pipeline** for failure event capture and supervised training.
- Developed **Python MAVLink parser** for flight log analysis, implementing **FFT spectral analysis** on IMU vibration data and GPS telemetry processing for geospatial flight path reconstruction.
- Implemented bare-metal **C firmware** for distributed **PIC32 microcontroller network**, featuring custom **I^2C protocols**, interrupt handling, ADC sampling, and real-time task scheduling across multiple control boards.
- Engineered **UART telemetry bridge** with packet multiplexing and integrated **React.js dashboard** for real-time visualization of system states across embedded nodes.
- Integrated **RockBLOCK Iridium satellite communication** with flight stack using **MAVLink/MAVProxy** protocols, enabling remote ground control station connectivity through **Mission Planner**.

BeHuman(e) | **Founding AI Engineer** Mar 2023 - June 2025

- Architected and deployed production **AI systems** including a **multi-modal RAG pipeline** for context-aware therapeutic dialogue, **agentic workflow orchestration** for multi-step reasoning, and **dynamic model routing infrastructure** to optimize performance across multiple LLMs (GPT-4, Claude, open-source models).
- **Fine-tuned and aligned large language models** for therapeutic parenting applications using supervised fine-tuning and reinforcement learning from human feedback (RLHF), improving empathy metrics by 35% and safety alignment scores, while implementing **NER-based PII detection** pipelines to ensure HIPAA-compliant data processing.
- Built end-to-end **ML infrastructure** with **FastAPI** microservices, **PostgreSQL** vector databases, and real-time **recommendation engines** using collaborative filtering and neural embeddings, serving 10,000 active users with sub-200ms response times and personalized therapeutic insights.

PROJECTS

EgoTransfer

- Built a pipeline for **egocentric video imitation learning**, tracking human hand motion and converting trajectories into robot joint angles for **dexterous retargeting**.
- Implemented a retargeting module that maps hand pose estimations to robot kinematics, enabling transfer of fine motor skills from human demonstrations.
- Integrated the retargeted trajectories with **GR00T-Dreams** to fine-tune a **ACT** model, producing control policies conditioned on classes of egocentric video demonstrations.

RoboLLVM

- Implemented a **VLA** for **robotics control**, combining natural language input with video stream processing to generate executable robot actions.
- Designed modular components: **segmentation** (SA-1B), **object classification**, **reasoning**, and **action planning**, integrated with **YOLOv8** for low-latency object detection in dynamic environments.

Autonomous Chess-Playing Robotic System

- Developed a **computer vision pipeline** with **OpenCV** and a **Gemini-2.0 VLM classifier** for board localization, chess piece detection, and state estimation in real time.
- Implemented **motion planning algorithms** (trajectory optimization and collision avoidance) for a collaborative robotic arm, enabling accurate pick-and-place execution of chess moves.

Reinforcement Learning from AI Feedback

- Developed a scalable **reinforcement learning (RL) framework** that leverages **large language models (LLMs)** to autonomously generate and refine **control policies** across diverse **robotics** challenges.
- Engineered robust **memory architectures** and **policy tables** to discretize **continuous state spaces**, enabling dynamic **decision-making** in various **simulation environments**.

EDUCATION

Arizona State University August 2024 – December 2025
Master of Science in Robotics and Autonomous Systems *Tempe, AZ*

Arizona State University August 2021 – May 2024
Bachelor of Science in Computer Science *Tempe, AZ*

ACHIEVEMENTS

- Received **Moeur Award** - Arizona State University's highest academic distinction
- Graduated **Summa Cum Laude** from Arizona State University Computer Science program
- Won **8 hackathons**.
- Earned **Dean's List** recognition for **all** undergraduate semesters (Fall 2021 – Spring 2024)

TECHNICAL SKILLS

Core Programming : Python, C/C++, MATLAB, JavaScript/TypeScript
AI/ML Frameworks : TensorFlow, PyTorch, OpenCV, scikit-learn, LangChain, NumPy, Pandas
Robotics & Systems : ROS, NVIDIA Isaac SDK, Docker, AWS
Data Management : PostgreSQL, MongoDB, ChromaDB, Prisma
Web & Automation : React, Next.js, FastAPI, Flask, Selenium, BeautifulSoup, Playwright, GitHub