# Areg Hovumyan

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## Professional Summary

Machine Learning and robotics engineer with 4+ years of experience in C/C++, Python, and ROS2 development in real-time communication systems. Proven record of optimizing applications for speed and scale, debugging complex systems, and integrating cloud-based AI solutions. Strong background in PC architecture, embedded systems, and Linux environments, with hands-on experience across the full software lifecycle from design to testing and deployment.

## Education

**California State Polytechnic University, Pomona** **Sep 2023 – Jun 2027**

Bachelor of Science in Computer Engineering

## Related Coursework

Data Structures and Algorithms, Computer Architecture, Operating Systems for Embedded Applications, Digital Logic Design, Intro to Microcontrollers, Object-Oriented Programming, Robotics, Digital Signal Processing, Digital Circuit Design Using Verilog

## Experiences

**Object recognition and robotics integration lead engineer(SUAS)** **May 2025 – Present**

*Sponsored by Lockheed Martin*
- Develop efficient ROS2 nodes to get real-time camera streams from a live drone. Use python and c++.
- Sped up image object detection time by 60% and improved the quality by over 400%.
- Integrated Python code into the ROS2 environment. Communicated the camera, payload, and processor to the drone.
- Taught the whole project system to the new members and delivered a production-level ready product to a competition.
- Ranked 4th among all U.S. teams in the international SUAS UAV Competition.

**MedusaVR — Full-Stack Software Engineer** **May 2025 – Sept 2025**

- Save storage 99% costs by rewiring the entire API infrastructure from the previous $99 per 225GB to $1 per 100GB.
- Built AI companion platform in Python/Node.js, scaling to 100+ concurrent sessions with <100ms latency.
- Implemented safety guardrails, debugging pipelines, and monitoring tools to ensure reliable AI outputs.
- Collaborated with product managers and designers to iterate on features, improving user engagement metrics by 54%..
- Implemented safety measures for AI-generated outputs, including moderation APIs, reducing harmful outputs by 30%.

## Independent Projects

**Mock Interview WebApp** **Feb 2024 – Mar 2024**

Developed a web application for conducting mock interviews with AI-powered feedback and analysis.
- Designed and deployed a webapp using Next.js, Node.js, and Python scripts to deliver real-time AI feedback.
- Implemented secure authentication with Firebase (Firestore + Auth) and role-based session management.
- Built real-time interview interactions using Next.js and Node.js, deployed on Vercel.
- Optimized UI/UX with React, Tailwind CSS, and dynamic tech stack icons to improve user engagement.

**Real-Time Chat App** **Jan 2023 – Feb 2024**

- Created a Socket.IO messaging system supporting live user presence and sub-100 ms latency.
- Secured endpoints with JWT, bcrypt, and Express middleware; maintained 0 security incidents.
- Integrated Zustand for client-side state management, reducing unnecessary re-renders by **25%.**
- Optimized MongoDB queries with compound indexes, cutting average response time from 200 ms to 50 ms.

## Skills

- Programming: C, C++, Python, Java, JavaScript (React.js, Node.js, Express), TypeScript, Shell scripting
- Operating Systems: Linux, UNIX, Embedded RTOS
- Databases: PostgreSQL, MySQL, MongoDB
- Cloud/DevOps: Docker, AWS (S3, Lambda), Azure (familiar), CI/CD, Railway, Vercel
- Debugging & Security: Git, GitHub, Perforce (familiar), OAuth2, JWT, TLS/SSL, testing & debugging methodologies
- Architecture & Embedded: PC/CPU architecture, Arduino, ESP32, Microcontrollers, FPGA (Vivado), Verilog
- AI/ML (additional): OpenAI API, Gemini AI integration, PyTorch, TensorFlow, Hugging Face

## Membserships and affiliations

Member of MEP, IEEE.
Machine Learning and Artificial Intelligene
SUAS Unmanned Drone Competition Memeber