

ARSALAN AHMED

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Education

University of California, Davis

Jun 2025

Bachelor of Science, Electrical Engineering Relevant Coursework: Machine Learning, Circuit Fabrication, GPA: 3.5

Davis, CA

Relevant Experience

Microelectronics Fabrication Intern

Jun 2025 – Sep 2025

University of California, Davis

Davis, CA

- Operated in a cleanroom environment to design and fabricate semiconductor devices using techniques such as etching, stamping, screen printing, and chemical vapor deposition.
- Characterized resistors, capacitors, inductors, and photosensors using electrical measurements and scanning electron microscopy; analyzed device structure and performance against theoretical models.
- Researched photovoltaic device fabrication and testing, with a focus on solar cell materials and doping profiles.

Robotics Production Intern

Jun 2024 – Jun 2025

Barobo Inc.

Sacramento, CA

- Designed and optimized PCB layouts in **Altium Designer**, improving circuit efficiency and compatibility.
- Assembled and soldered 1000+ programmable circuit boards and robots, ensuring **100% functionality** after testing.
- Streamlined testing, debugging and packaging processes for electronic motherboards and Arduino kits to reduce defects.
- Managed robot shipments, increasing logistics efficiency through improved inventory tracking.

Software Engineer Fellow

Jun 2024 – Aug 2024

Headstarter AI

San Francisco (Remote), CA

- Built 5 projects using React JS, Next.js, and Vercel and incorporated CICD practices for iterative development.
- Participated in weekly sessions with engineers from Google, Y Combinator, Amazon, and venture-backed startups.

Projects

Autonomous Vehicle Design | *OpenMV, PWM, Custom PCB*

Jun 2025

- Developed an autonomous RC vehicle using camera-based lane detection with OpenMV, real-time PWM motor/servo control, and a custom vision algorithm based on dual-region blob tracking.
- Designed and tested a custom motor control PCB using H-Bridge and MOSFET drivers for brushed DC motor control.
- Implemented filtered position/angle tracking and adaptive speed control, achieving consistent lap completion with a best time of 48 seconds.

Deep Learning Vehicle Classifier | *PyTorch, ResNet18*

Dec 2024

- Developed a deep learning vehicle classification system, implementing a custom PyTorch Dataset class, data augmentation techniques, and transfer learning with ResNet18.
- Optimized model performance through hyperparameter tuning (learning rate, batch size), and advanced visualization techniques including confusion matrices, per-class accuracy metrics, and confidence-based prediction analysis.
- Improved classification accuracy by **20%** through model fine-tuning and augmentation strategies.

Multi-Object Tracking System with YOLO | *YOLOv3*

Dec 2024

- Integrated YOLOv3 for object detection and centroid extraction, enabling real-time identification and tracking of multiple objects within video frames.
- Developed a custom centroid-based tracking system with unique ID assignment, dynamic object registration, and trajectory visualization for robust multi-object tracking.
- Achieved a **30% reduction in tracking errors** by refining object association algorithms.

Handheld Console Design using Raspberry Pi | *Raspberry Pi*

Apr 2024

- Designed and engineered a versatile handheld portable PC capable of running Windows and retro console games.
- Utilized cutting-edge components including Raspberry Pi, compact battery, and common handheld parts.

Technical Skills

Languages: C++, Python, HTML, MATLAB, LaTeX, Verilog, RISC-V

Developer Tools: Visual Studio, Jupyter Notebook, Eclipse IDE, Silvaco

Technologies&Frameworks: React JS, Next.js, Vercel, PyTorch, ResNet18, YOLOv3