Alex Popov

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EDUCATION

University of Redlands **Expected Graduation: April 2027**

3/2 Electrical Engineering: B.A. Physics and Computer Science

- Students for the Exploration and Development of Space (SEDS) Redlands Chapter President
- UoR Robotics and Drones President
- UoR Achievement Award

SKILLS

Electrical & Power Systems: AC/DC circuit analysis, power distribution, wiring diagrams, circuit design, transformers, relay logic
PCB Design: schematic capture, board layout, Altium Designer
Communication Systems: RF telemetry, LoRa, 2.4Ghz, 5.8Ghz
Data Collection: IMU, LiDar, GPS coordinate averaging, US sensors, ROS, real-time telemetry and logging
Robotics Systems: microcontrollers, R/C, FPV, sensors, RF, motors
IoT Platforms: Raspberry Pi, ESP32, Arduino
Electrical Equipment: oscilloscopes, multimeters, power supplies
Quadcopter FPV Drones: designing, programming, troubleshooting
CAD & Drafting: Solidworks, AutoCAD Onshape, Revit
Software Engineering/AI/ML: Python, C++, JS, SQL, Java, HTML, CSS, PHP, Git, Linux Terminal, debugging/testing, modular code design, VS Code, web app integration for ML/LLMs, Numpy, Computer Vision, Github
Simulation Tools: MATLAB, ANSYS, CFD
Interpersonal Skills: collaboration, communication, teamwork
Other: 3D printing, engineering drawings, technical documentation, AC/DC Load Theory, engineering principles, Adobe, budget planning, material science, MS Excel, Microsoft Office, applied physics

LEADERSHIP EXPERIENCE

UoR Robotics & Drones*, President* **September 2025 - Present**

- Leading research and design of a quadcopter FPV drone that transmits *digital video* and GPS coordinates using *3x GPS averaging*
- Built object-avoidance vehicles utilizing *LiDAR*, *computer vision*, and Raspberry Pi, with navigation commands communicated to an ESP32 ROS2 motor controller

SEDS Redlands*, President, Vice President* **February 2024 - Present**

- Leading electrical design, *CAD/mechanical design*, and systems simulations for rover and drone development projects
- Organizing a rocket workshop focussed on building and launching *rocket kits*

WORK EXPERIENCE

Kumon*, Mathematics Instructor* **May 2025 - August 2025**

- Tutored and evaluated students in calculus, trigonometry, algebra, and reading
- Maintained and updated student *database* with classwork and assessment results

Fedex*, Administrative Assistant Internship* **June 2024 - August 2024**

- Assisted contractor with compliance, training, communicating with drivers, applicant screenings, maintenance reports
- Addressed customer inquiries, documented incidents, and completed business reports, leading to a *10% increase in Santa Clarita CSAT*

So-Cal Heating & Air*, HVAC Technician* **June 2021 - August 2021; June 2022 - August 2022**

- Assisted licensed technicians on residential installs and service calls (mini split systems, heat pumps, furnaces, condensers, air handlers)
- *Diagnosed common faults* (capacitors, contactors, relays, transformers, blower motors) and *replaced parts*

PROJECTS

Doppler Effect Device (Physics Capstone) | *HB100 Sensor, Op-amp, ESP32, Rotational Mechanics, Signal Amplification* **January 2026 - Present**

- Developing a tabletop device that utilizes the HB100's microwaves to calculate the doppler shift of an actuator-like motion
- Crank-slider mechanism creates motion which the sensor reads, producing an intermediate frequency and logs data via ESP32

3x GPS Averaging FPV Drone (R&D) | *CubePilot, FPV, 5.8Ghz Analog Video, PID Tuning, GPS Coordinate Averaging* **November 2025 - Present**

- Designing a quadcopter FPV drone to stream video and GPS coordinates
- Cubepilot for flight control, Herelink for video transmission, Mission Planner for PID tuning, and 3x GPS for coordinate averaging

Multiterrain Rover (SEDS) | *Solidworks CAD, Drill Press, C++, Python, Arduino, ESP32, Motor Drivers, Circuit Design* **February 2025 - Present**

- *Designed and fabricated rover frame* and jackshafts using 5052 Aluminum, steel rods, ATV chain, and sprockets
- *Designed and built the electrical system* to power 24V 25Nm rated motors and 5V electronics
- Programmed Arduino, ESP32, and receiver to *process navigation controls* and properly control the motors

Solar Cryptocurrency Mining Farm | *Nvidia RTX, Computer Hardware, Python, C++, Inverter and Panel Installation* **April 2023 - Present**

- *Installed solar panels* and inverters and *designed the power infrastructure* to support a GPU-based mining operation
- Built and configured custom crypto mining computers using Nvidia RTX GPUs and supporting hardware
- Developed an *autonomous control system* that enables mining only during active solar generation, minimizing off-grid power draw

HOBBIES & GOALS

Hobbies: Soccer, running and fitness training, woodworking, hiking, wrestling, gardening, reading, building drones, crypto mining, and laser cutting.
Career Goals: My goal as a university student is to intern at a company where I can grow at and work with new technologies as an engineer. Post graduation, I want to develop as an electromechanical engineer in the aerospace sector and lead projects the way I do with UoR Robotics & Drones and SEDS Redlands.