

Ilya Semerikov

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Education

University of California, Berkeley - College of Engineering

Expected Class of 2029

B.S. Electrical Engineering & Computer Sciences.

Berkeley, CA

- **Relevant Coursework:** Computer Architecture, PCB Design, Data Structures, Circuits and Devices, Multivariable Calculus, Linear Algebra, Probability, Discrete Mathematics, Mechanics.

Professional Experience

Parallax Defense

May 2026 – August 2026

Robotics Engineering Intern

Berkeley, CA

- Counter-UAS startup incubated by Berkeley SkyDeck's Pad-13; winner of Most Innovative Tech at its pitch competition.
- Led design and sensor selection for a multi-stage counter-UAS perception architecture; translated ConOPs into hardware.
- Developed a centralized, low-latency sensor fusion pipeline on edge-AI computing systems with vendor SDKs on Linux.
- Built a managed Ethernet sensor network to consolidate live sensor streams, enabling centralized processing and testing.

OFS International

June 2025 – August 2025

IT Intern

Houston, TX

- Integrated an AI-vision inventory solution that counted finished production pipes using existing security cameras, then compared model output with ERP records to identify discrepancies: achieved 95% accuracy detecting incorrect records.
- Improved IT infrastructure reliability by integrating Zabbix and creating dashboards for server uptime, key routers, and backup-battery monitoring using network OID communication.

Projects

Berkeley Formula Racing - Shifting Lights PCB | *ESP32, Altium, CAN, C*

- Designed a PCB for an LED racing shift indicator, integrating CAN and power regulation for a 12 V, 5 W design budget.
- Developed the power and ESP32 support circuitry, including buck converters and LDO regulators, a CAN transceiver, and paired MOSFET outputs to control LED brightness. Integrated USB-to-UART programming with JTAG debugging.
- Wrote firmware to parse ECU CAN frames and update staged LED shift indicators based on real-time RPM data.

Bluetooth Water Turret PCB | *ESP32, KiCad, BLE*

- Designed a custom PCB integrating an ESP32-S3, servo connections, water- and air-pump control, power step-downs, and protection circuitry for a two-axis robotic turret. Used PWM signals paired with MOSFETs to control the pumps.
- Integrated the electronics in a 3D-printed assembly, implementing wireless control of pitch, yaw, water, and air actuation.

Two-Stage Pipelined 32-bit RISC-V CPU | *Logisim, RISC-V*

- Implemented a 32-bit RISC-V CPU supporting instructions through a custom datapath and ROM-based control unit.
- Designed the register file, ALU, instruction decoder, memory access, pipeline registers between instruction memory and decoding logic, and control-hazard flushing; debugged timing and datapath issues through custom unit tests.

Smart Solar Panel | *C++, I2C, SOLIDWORKS*

- Led a team of 10 in building a two-axis solar panel that charged an iPhone in two hours using only natural sunlight.
- Wrote a solar-tracking algorithm that compared current across panel positions and used UTC to estimate solar cycle.
- Designed the 3D-printed enclosure and gear mechanism for two-axis rotation using two 180-degree servo motors.

FPV Drone | *UART, Radio Control, PWM*

- Built and configured an FPV drone, integrating a radio-control receiver with the flight controller over UART and PID tuning flight-control settings in Betaflight. Attached a servo motor connected over a GPIO pin using PWM.

Involvement

- **Berkeley FSAE**, *Technical Member* (Sep. 2026 - Present): Participate in electrical design, integration, and testing.
- **CS 61C Course Staff**, *Tutor* (Sep. 2026 - Present): Facilitate office hours and labs for computer architecture students.
- **Theta Tau**, *Technology Chair* (Jan. 2026 - Aug. 2026): Professional engineering fraternity, managed the chapter website.

Technical Skills

Languages: C, C++, Python, Java, Verilog, RISC-V assembly, SQL

Platforms: ESP32, NVIDIA Jetson, Ubuntu Linux, Raspberry Pi, Arduino

Design & Test: KiCad, Altium Designer, LTspice, Logisim, Oscilloscopes, Git, SOLIDWORKS, Onshape, Fusion360

Interfaces & Peripherals: CAN, UART, SPI, I2C, USB, Ethernet, BLE, GPIO, PWM