

MARIAM OUDEH

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SUMMARY

Computer Engineering senior at Sacramento State with hands-on experience in embedded systems design, firmware development, and hardware testing. Skilled in C/C++ and Python with practical experience taking projects from schematic through PCB fabrication and validation. Strong communicator with a track record of working across technical and non-technical teams, documenting processes, and delivering results independently. Planning to pursue a Master's in Electrical and Electronics Engineering with a focus on biomedical and wearable systems.

EDUCATION

B.S. Computer Engineering

Expected Dec 2026

California State University, Sacramento | GPA: 3.5

Relevant Coursework: Probability & Statistics, Embedded Systems, Digital Signal Processing, Electronic Circuits, Data Structures & Algorithms, Technical Writing

A.S. Computer Science

2024

American River College

SKILLS

Programming: Python, C/C++, Java, Verilog, Git

Hardware & Tools: STM32, ESP32, PCB design (EasyEDA/JLCPCB), LTspice, oscilloscope, logic analyzer, UART/SPI/I2C/BLE, PWM, MOSFET driver circuits

Data & Analysis: Data collection and analysis, Excel, statistical analysis, technical documentation, process improvement

PROJECTS

Automated Hydroponic Greenhouse System | Senior Capstone | CSU Sacramento

Jan 2026 - Present

- Designed a 4-channel PWM LED driver subsystem controlling 440nm, 660nm, and 850nm wavelength channels using STM32 and MOSFET driver circuits, with iterative hardware testing to characterize and validate performance
- Designed PCB in EasyEDA, simulated circuit behavior in LTspice, and validated fabricated boards against design specifications after receiving from JLCPCB
- Developed 14 plant-specific operational profiles with defined parameters and response logic; collaborated with 3-person team using Git for version control and shared documentation

Wearable Glucose Monitoring Bracelet | Independent Hardware Project

Feb 2026 - Present

- Building a self-contained wrist-worn device on an ESP32-S3 that reads live glucose data from a Dexcom G7 CGM via BLE, with a color OLED display and haptic feedback motor; documented full power budget and hardware interfaces across all stages
- Reverse-engineered the G7's BLE protocol through passive scanning, identified the FEBC service UUID, and currently implementing J-PAKE authentication via mbedTLS using the transmitter serial number to unlock CGM data access on-device
- Debugged a USB CDC communication failure using oscilloscope probing and serial monitoring, isolating root cause across firmware, hardware wiring, and host driver configuration

Community Management Discord Bot | Independent Software Project

2024

- Built a Python automation tool that monitored and logged 500+ user interactions, generating structured reports and reducing manual moderation workload

EXPERIENCE

Outreach Specialist | TRIO Educational Talent Search, American River College, Sacramento, CA

Jan 2023 - Present

- Built the program's digital records system from scratch, establishing standardized data entry procedures, audit trails, and documentation templates adopted across the organization
- Collect, verify, and maintain accurate program data, producing reports and visual summaries to track trends and support compliance with federal reporting requirements
- Mentor middle school students one-on-one and in group settings, guiding them through college access programming and helping them build confidence in pursuing higher education
- Plan and coordinate field trips to college campuses and educational sites, managing logistics and compliance documentation from start to finish