

# Fahad Anwar

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## EDUCATION

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### Inderkum High School

GPA | W: 4.8, UW: 4.0

Sacramento, CA

Class of 2026

- **Coursework:** AP Calculus AB (5), AP Computer Science A (5), AP Physics C Electricity and Magnetism (4), IB Math AA HL (IP), IB Computer Science HL (IP), AP Calculus BC (IP)

### University of California, San Diego

Bachelor of Science in Electrical Engineering & Bachelor of Science in Cognitive Science

La Jolla, CA

Class of 2030

SAT: 1530 (750E, 780M)

## EXPERIENCE

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### MIT Intro. to Technology, Engineering, & Science (MITES) Semester | Scholar *July 2025 - December 2025*

- Selected as 1 of 240 students globally from a pool of 5,100+ applicants (4.7% acceptance rate) to complete rigorous, college-level STEM coursework: Neuroscience and Science Communication
- Co-developed a Bayesian predictive ML model in Python (PyMC) to flag early-onset schizophrenia risk, incorporating 8 literature-weighted clinical and behavioral markers (e.g., CHR flagging  $OR \approx 85$ , family history  $OR = 7.0$ ) and achieving an AUC of 0.96 across 16 training chains
- Wrote an award-winning research article on CRISPR-Cas9 and its future implications under the mentorship of Doudna Lab researcher Seyone Chithrananda and Science Communication instructor Asenette Ruiz.

### Incoming Amazon Hardware Engineer | Intern

*May 2027 - August 2027*

- Awarded the \$40,000 Amazon Future Engineer (AFE) Scholarship, along with a guaranteed Hardware Engineering Internship at Amazon, in recognition of exceptional academic achievement

### Independent Physics Research at CSU Sacramento | Scholar

*June 2025 - July 2025*

- Conducted a self-directed experimental study at CSU Sacramento in collaboration with physics professor Brianna Santangelo, investigating how inductance affects resonance frequency in series RLC circuits
- Designed and assembled circuit configurations from scratch, collected and analyzed quantitative and qualitative data trends, and authored a 4,000-word research paper documenting findings

## TECHNICAL PROJECTS

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### Home Automation System (Arduino, ESP32, C#, Python)

*July 2025 - Present*

- Engineered a multi-room home automation system using an Arduino UNO R4 and multiple ESP32 microcontrollers, integrating DHT22 temperature/humidity sensors, PIR motion detectors, servo motors, and moisture sensors
- Automated bedroom climate control (humidifier/fan activation), motion-triggered LED lighting, app-controlled window blinds, a scheduled home sprinkler system, and a custom PVC drip-irrigation system for a vegetable garden; controlled via localhost and Arduino IoT Cloud

### 4-Bit DAC (R-2R Ladder, Op-Amp, Arduino)

*April 2026 - Present*

- Designed and built a 4-bit digital-to-analog converter using an R-2R resistor ladder network driven by an Arduino microcontroller, converting 4-bit binary inputs to discrete analog voltage levels
- Integrated an op-amp output stage for signal buffering and gain control; validated all 16 output states with a multimeter, confirming linearity and expected step resolution across the full input range

### LANA — Linear Algebraic Nodal Analysis (Python, MATLAB, Circuit Prototyping)

*May 2026 - Present*

- Implemented the LANA algorithm to solve nodal voltage problems in DC resistive circuits by constructing nonsingular linear systems ( $Ax = b$ ) and solving them programmatically in Python/MATLAB
- Physically built and measured multi-resistor circuits with DC voltage and current sources on a breadboard, then verified computed node voltages against measured values to validate the mathematical model

## SKILLS & INTERESTS

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**Languages:** English, Urdu, Punjabi

**Skills:** Python, PyMC, C#, Java, MATLAB, Arduino, ESP32, CAD, Communication

**Interests:** Coding, Research, Electronics, Networking, Wrestling, and Classic Literature