CEDAR ROSE D. LEACH

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EDUCATION

University of Southern California Class of 2027
B.S. in Electrical and Computer Engineering | GPA: 3.96 Los Angeles, CA

Palos Verdes Peninsula High School June 2023
Valedictorian | GPA: 4.8 Rolling Hills Estates, CA

EXPERIENCE & INVOLVEMENT

Northrop Grumman, *Intern* June 2025-Current
- Implementing and optimizing semiconductor manufacturing processes in the fabrication laboratory

Memoir Photos, *Co-Founder* September 2024-Current
- Created Memoir Photos, the only audio-based photo library, aiding the visually impaired in experiencing their memoires
- 1st place at Trojan Tank Pitch Competition, recipient of Loyd Grief Catalyst Micro Grant, and Audience Choice + Judges Honorary Mention Award at USC SEP's Product Launch Day

Center for Undergraduate Research in Viterbi Engineering (CURVE), *Research Fellow*
Biomedical Microsystems Lab, *Funded by CURVE Fellowship and USC Provost Fellowship* June 2024-Current
- Designing, fabricating, and characterizing a hybrid silicon-polymer neural recording probe, combining the flexibility of polymer-based neural interfaces with the high electrode density of silicon-based neural interfaces
- Using polyimide deposition and femtosecond laser ablation to encapsulate the inductive coil of the neural probe shaft
- Developing PCB to evaluate inductive coupling efficiency of primary coil compatible with RF low amplitude signals

The Khan Lab, *Funded by CURVE Fellowship* January 2024-May 2024
- Developed firmware; tested, and designed printed circuit board for the analog front end of an extended-gate transistor-based electrochemical sensing system
- Acquired and processed electroencephalography (EEG) signals with Arduino IDE interfaced with analog front ends for potassium-ion sensing of printed wearable sensors
- Modeled components of wearable sensors through computer-aided design

USC Makers, *Member* September 2023-Current
- Developed an EEG-controlled drone through a custom brain-controlled interface
- Created SmartTender, an autonomous assembly line robot that dispenses and prepares beverages depending on user input

California Dreams DOD Microelectronics Commons Scholars, *Intern* June 2024-July 2024
- Trained and certified in semiconductor nanofabrication processes and safe chemical handling in a cleanroom
- Practiced machine operation and fabrication techniques: photolithography, etching, deposition, wafer cleaning & handling

FIRST Robotics Team 2637, *Team Member & Lead Technical Mentor* October 2019-June 2023
- Established and mentored an inaugural all-girls FIRST LEGO League robotics competition team for elementary school students
- Earned the *Core Values Award* recognizing gracious professionalism, advanced to Southern California State Championship

Boeing Company, *Intern* June 2022-August 2022
- Configured the field-programmable gate array (FPGA), Versal VCK 190
- Studied GPS satellites, flight mission, mission control center, space environment
- Awarded winner of the LINC Innovation Challenge for concept of Boeing's campus navigation to optimize collaboration; recognized by the President and the Executive Director of Human Resources for Boeing Commercial Satellite Systems

PUBLICATIONS

Barrera, N.D., Nguyen, T.D., Ramirez, E., ***Leach, C.R.****, Abbasi, N., Molisch, A., Sideris, C., & Meng, E.* **"Implantable Flexible GHz Waveguide for High Data Throughput Neural Recording Interfaces."** Neural Interfaces 2025– Accepted Scientific Abstract

Islam, M.S., Cha, S., Hassan, M.F., Cai, W., Saniat, T.S., ***Leach, C.R.*** *& Khan, Y.* **"Printed Wearable Sweat Rate Sensor for Continuous *In Situ* Perspiration Measurement**". Advanced Intelligent Systems, 2025. https://doi.org/10.1002/aisy.202400927

SKILLS

Technical: Verilog, Java, C++, React Native, CAD, Arduino, Soldering, Laser cutting, Cleanroom skills, PCB design, Front-end dev.
Software: MATLAB, Fusion 360, EAGLE, Vitis, Vivado, QuestaSim, Procreate, ImageJ, Figma
Certifications: IEEE Introduction to Metrology, IEEE Introduction to Etching, IEEE Fundamentals of Cleanroom Safety, IEEE Fundamentals of Cleanroom Protocols, CPR, First Aid, Open-Water Rescue
Creative: Graphic design, Woodworking, Resin pouring, Sewing, Ceramics, Product Design & Development