CEDAR ROSE D. LEACH

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EDUCATION

University of Southern California Class of 2027
B.S. in Electrical and Computer Engineering | GPA: 3.97 Los Angeles, CA

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

EXPERIENCE & INVOLVEMENT

USC Sigma Eta Pi, *Co-founder of Memoir* September 2024-Current

- Led a product through customer & problem discovery, product development/ideation, market/growth strategies, and a final showcase in a startup incubator
- Co-founded Memoir, an audio-based photo library aiding visually impaired in interacting with their memories and recollection
- Winner of the Audience Choice & Judges Honorary Mention Award at 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 femtosecond laser ablation to pattern coil structure & parylene deposition for neural probe shaft and coil insulation
- Embedding integrated circuit neural recording chips to enable high spatial resolution in chronic neural recording

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

- Designing and testing an EEG-controlled drone through a self-engineered brain-controlled interface
- Created SmartTender, an autonomous assembly line robot that dispenses and prepares beverages depending on user input with movement mechanisms modeled after 3D printer linear rails

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

- Designed robot features through Autodesk Inventor; programmed robot's turret in Java
- Established an inaugural all-girls FIRST LEGO League robotics competition team for elementary school students and earned the Core Values Award recognizing FIRST philosophies of Gracious Professionalism and Coopertition
- Mentored in strategizing, designing, building, and programming an original, autonomous robot; advanced to the 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

Islam, M.S., Cha, S., Hassan, M.F., Cai, W., Saniat, T.S., **Leach, C.R.** and Khan, Y. (2025), Printed Wearable Sweat Rate Sensor for Continuous *In Situ* Perspiration Measurement. Advanced Intelligent Systems. 2400927. 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