NOELLE DAVIS

noelle@eecs.berkeley.edu · noelledavis.github.io/ · github.com/noelledavis

Education

University of California, Berkeley, *Ph.D. Electrical Engineering and Computer Science* — Expected May 2025
National Defense Science and Engineering Graduate Fellow
Major Area: Physical Electronics

California Institute of Technology, *B.S. Electrical Engineering* — June 2020
GPA: 3.8 / 4
Relevant Coursework: Embedded Systems Design Lab, Feedback and Control Circuits, Analog Circuit Design, Electromagnetic Engineering

Research and Work Experience

Javey Laboratory for Materials and Device Innovation, UC Berkeley, *PhD Researcher* — August 2020 – Present
- Designed electrode and microfluidic patterns for composition and flow rate sensing of human eccrine sweat for roll-to-roll fabrication with screen printing and laser cutting
- Characterized various aspects of sweat sensor device packaging including collection mechanism and adhesives

Scherer Nanofab Lab, California Institute of Technology, *Undergraduate Research Assistant* — March 2017 – June 2020
- Analyzed backlog of data for glucose sensors, resulting in a 60x reduction of sensor start-up time.
- Designed portion of servo motor controller on Infineon XMC1100 to replace problematic valves in sensor testbed.
- Characterized biosensor patch for continuous, non-invasive glucose monitoring for senior thesis.

Caltech Electrical Engineering Department, *Teaching Assistant* — October 2018 – June 2020
- TA for Intro to Mechatronics, EE/ME 7; Introduction to Embedded Systems, EE 10ab; Electrical Prototyping, EE 13.
- Held tutorials on lab equipment and software tools, assisted students in weekly office hours, and graded projects.

Jet Propulsion Laboratory, NASA, *Electrical Systems Engineering Intern* — June 2019 – August 2019
- Led a working group to develop multiple frequency-shift keyed (MFSK) tones for Europa Clipper, a simplified deep-space communication scheme used during periods of very low signal strength from the spacecraft.
- Validated MFSK tones detection probabilities for these scenarios and constructed a baseline design for Europa Clipper by evaluating the flight system and communication priorities against several proposed tones architectures.

Velodyne LiDAR, *Electrical Engineering Intern* — June 2018 – August 2018
- Measured and characterized jitter of the clock on the lidar transmission chip for various PLL settings.
- Automated jitter measurements for various test settings using Python to control oscilloscope via GPIB interface.

Dasgupta Lab, University of Texas at Arlington, *Caltech Summer Undergraduate Research Fellow* — June 2017 – August 2017
- Prototyped a compact charged aerosol detection device to detect analytes after capillary chromatography.
- Wrote an application to display a real-time graph of detector readings using Visual C#.

Activities and Leadership Experience

Co-President, *Engineers without Borders Caltech* — February 2017 – June 2020
- Evaluated slow-sand filtration project serving 30 households in Nepal with water quality tests and surveys.
- Created and implemented a comprehensive fundraising plan to fund projects, including fundraisers at local restaurants, partnerships with Rotary clubs, and grant awards.

Co-Captain, *Caltech Women's Soccer Team* — August 2017 – November 2019
- Founding member of the team; organized practices before inaugural season and during non-traditional season.
- Maintained communication between team and coaches and serve on the Student Athletics Advisory Committee.

Awards

SCIAC Women's Soccer Award of Distinction (2019). Southern California Intercollegiate Athletics Conference.
Caltech Athletics Director's Award (2020). Annual female awardee from the Caltech Director of Athletics.
Robert L. Noland Leadership Award (2020). Caltech Deans' Office. *Motivating others to live up to their leadership potential.*
Donald S. Clark Award (2019). Caltech Deans' Office. *Service to the campus community and academic excellence.*

Technical Skills

Circuits	Eagle, LTSpice, DipTrace	***Code***	Python, C/C++/C#, MATLAB, AVR Assembly	***Other***	Excel, SolidWorks	***Design***	Photoshop, InDesign, Illustrator, Lightroom

Projects

Embedded Binario Game, ATmega64 microcontroller with AVR Assembly

- Sudoku-esque game with LED display and buttons and rotary encoders for control
- Debounces switches and encoders; multiplexes red and green LEDs with duty cycle to produce blinking, dimming, and three display colors; plays sounds; reads game setup files from serial EEROM storage.