NOELLE DAVIS

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PhD student working on wearable, unobtrusive electronics with a focus on sensing human eccrine sweat. Interested in full-time opportunities developing integrated, deployable sensing systems starting June 2025.

Education

University of California, Berkeley	Expected May 2025
Ph.D. Electrical Engineering and Computer Science, advised by Dr. Ali Javey	
California Institute of Technology	June 2020
B.S. Electrical Engineering, GPA: 3.8 / 4	

Experience

Berkeley Sensors and Actuators Center, PhD student with Dr. Ali Javey — Aug 2020 – Present
- Designing electrode and microfluidic patterns sensing of human eccrine sweat for roll-to-roll fabrication via screen printing on PET and TPU films, molding of PDMS, and laser cutting of adhesive films
- Integrating subsystems of electrical measurement/readout (nRF52 with BLE) with sensing, microfluidics, and packaging
- Fabricating and characterizing planar electrochemical sensors (sodium, chloride, ethanol, glucose) for sweat

VTT Technical Research Centre of Finland, *Flexible sensors and devices (BA6304),* visiting researcher — Aug 2023 – Dec 2023
Caltech Nanofab Lab, undergraduate researcher with Dr. Axel Scherer — Mar 2017 – Jun 2020
NASA Jet Propulsion Laboratory, electrical systems engineering summer intern — Jun 2019 – Aug 2019
Velodyne LiDAR, electrical engineering summer intern — Jun 2018 – Aug 2018
University of Texas at Arlington Dasgupta Lab, undergraduate researcher — Jun 2017 – Aug 2017

Awards and Fellowships

2024	**Best Oral Presentation, Berkeley Sensors and Actuators Center Spring Conference.** *Voted by industry members.*
2021	**National Defense Science and Engineering Graduate (NDSEG) Fellowship**
2021	**National Science Foundation (NSF) Graduate Research Fellowship (declined)**
2020	**Caltech Deans' Office Robert L. Noland Leadership Award.** *Motivating others to live out their leadership potential.*
2020	**Caltech Athletics Director's Award.** *Annual female awardee.*
2019	**Caltech Deans' Office Donald S. Clark Service Award.** *Service to the campus community and academic excellence.*
2019	**Southern California Intercollegiate Athletics Conference Women's Soccer Award of Distinction**

Publications

* indicates equal contribution

The Challenges and Promise of Sweat Sensing. Noelle Davis, Jason Heikenfeld, Carlos Milla, and Ali Javey. Nature Biotechnology. 2024.

Tape-Free, Digital Wearable Band for Exercise Sweat Rate Monitoring. Manik Dautta, Luis Fernando Ayala-Cardona, **Noelle Davis**, Ashwin Aggarwal, Jonghwa Park, Shu Wang, Liam Gillan, Elina Jansson, Mikko Hietala, Hyunhyub Ko, Jussi Hiltunen, and Ali Javey. Advanced Materials Technologies (2023): 2201187.

Resettable Microfluidics for Broad-Range and Prolonged Sweat Rate Sensing. Mallika Bariya*, **Noelle Davis***, Liam Gillan, Elina Jansson, Annukka Kokkonen, Colm McCaffrey, Jussi Hiltunen, and Ali Javey. ACS Sensors 7 (4): 1156–64. 2022.

A Wearable Patch for Continuous Analysis of Thermoregulatory Sweat at Rest. Hnin Yin Yin Nyein, Mallika Bariya, Brandon Tran, Christine Heera Ahn, Brenden Janatpour Brown, Wenbo Ji, **Noelle Davis**, and Ali Javey. Nature Communications 12 (1): 1823. 2021.

Teaching

Graduate Student Instructor
Berkeley EECS 16B, Designing Information Devices and Systems II, Head Lab TA	fall 2024
Berkeley EECS 149/249, Introduction to Embedded Systems	fall 2022

Undergraduate Teaching Assistant
Caltech EE 10ab, Introduction to Embedded Systems	winter 2019 – spring 2020
Caltech EE 13, Electrical Prototyping	fall 2019
Caltech EE/ME 7, Intro to Mechatronics	fall 2018

Advising

Undergraduate Researchers
Luis Fernando Ayala Cardona (now PhD student at Northwestern University)	spring 2021 – fall 2022
Ashwin Aggarwal (now software engineer at Salesforce)	fall 2021 – spring 2023
Yifei Zhan (now PhD student at UC Berkeley)	spring 2023 – fall 2023
Nicole Qing (now PhD student at Northwestern University)	summer 2023 – spring 2024

Technical Skills

Circuits	Eagle, LTSpice, DipTrace	*Firmware*	ARM Cortex-M4, BLE	*Software*	Python (pandas), C/C++/C#, MATLAB	*CAD*	AutoCAD, SolidWorks	*Design*	Photoshop, InDesign, Illustrator