### NOELLE DAVIS

✓ noelledavis@berkeley.edu

Recent PhD graduate working on wearable, unobtrusive electronics with a focus on sensing human eccrine sweat. Interested in full-time opportunities developing sensing systems or teaching in higher education starting October 2025.

#### Education

## University of California, Berkeley

July 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 - July 2025

- Designing sensor platforms integrating electrochemistry, electronics, microfluidics, and packaging
- 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

VTT Technical Research Centre of Finland, Flexible sensors & devices, visiting researcher Aug 2023 – Dec 2023 Mar 2017 – Jun 2020 Caltech Nanofab Lab, undergraduate researcher with Dr. Axel Scherer NASA Jet Propulsion Laboratory, electrical systems engineering summer intern Jun 2019 - Aug 2019 Velodyne LiDAR, electrical engineering summer intern Jun 2018 - Aug 2018

## Awards and Fellowships

- 2024 Best Oral Presentation, Berkeley Sensors and Actuators Center Spring Conference. Voted by industry members.
- 2023 Grasshopper Adventure Series, 5-Race Series Champion, Amateur Women 20-29. Mixed-terrain cycling.
- 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 & academic excellence.
- 2019 Southern California Intercollegiate Athletics Conference Women's Soccer Award of Distinction

### **Publications**

sNails: Sweat-Sensing Nails for Unobtrusive, Wearable Microfluidic Sweat Monitoring on the Dorsal Distal Phalanges. Noelle Davis, Pooja Mehta, Amanda Kang, Liam Gillan, Jussi Hiltunen, and Ali Javey. [under revision]

Reusable, Fully Integrated Sweat Monitor Band with Peel-and-Stick-Replacement Printed Microfluidic Sensor. Noelle Davis, Amanda Kang, Elina Hakola, Liam Gillan, Yifei Zhan, Jussi Hiltunen, and Ali Javey. Advanced Materials Technologies. 2025.

Electrodermal Activity as a Proxy for Sweat Rate Monitoring during Physical and Mental Activities. Seung-Rok Kim\*, Yifei Zhan\*, Noelle Davis\*, Suhrith Bellamkonda, Liam Gillan, Elina Hakola, Jussi Hiltunen, and Ali Javey. Nature Electronics, 2025.

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.

DeTagTive: Linking MACs to Protect Against Malicious BLE Trackers. Tess Despres, Noelle Davis, Prabal Dutta, David Wagner. SNIP2+: Proceedings of the Second Workshop on Situating Network Infrastructure with People, Practices, and Beyond. 2023.

Resettable Microfluidics for Broad-Range and Prolonged Sweat Rate Sensing, Mallika Bariva\*, Noelle Davis\*, Liam Gillan, Elina Jansson, Annukka Kokkonen, Colm McCaffrey, Jussi Hiltunen, and Ali Javey. ACS Sensors. 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, 2021.

<sup>\*</sup> indicates equal contribution

### **Talks**

sNails: Sweat-Sensing Nails for Unobtrusive, Wearable Microfluidic Sweat Monitoring from the Dorsal Distal Phalanges.

Berkeley Institute of Design, Summer Design Seminar

July 2025

The Challenges and Promise of Sweat Sensing.

BMW Technology Office, "Unlocking Insights with Biosensors" Workshop

February 2025

Wearable Sweat Sensors with High-Throughput Fabrication.

Berkeley Sensors and Actuators Center Research Review

March 2024

**Teaching** 

Graduate Student Instructor at UC Berkeley

CS 61C, Introduction to Computer Architecture, *3x guest lectures on synchronous data systems* summer 2025 EECS 16B, Designing Information Devices and Systems II, Head TA, *3x guest lectures* fall 2024 & spring 2025

Berkeley EECS 149/249a, Introduction to Embedded Systems

fall 2022

Undergraduate Teaching Assistant at Caltech

EE 10a, Introduction to Embedded Systems Iwinter 2019 & 2020EE 10b, Introduction to Embedded Systems IIspring 2019 & 2020

EE 13, Electrical Prototyping EE/ME 7, Intro to Mechatronics

fall 2019 fall 2018

**Advising** 

**Undergraduate Researchers** 

Luis Fernando Ayala Cardona (now PhD student at Northwestern University)

Ashwin Aggarwal (now software engineer at Salesforce)

Yifei Zhan (now PhD student at UC Berkeley)

Nicole Oing (now PhD student at Northwestern University)

Kalynna Tang

Meera Devine (Bakar Ignite Scholar)

Amanda Kang (Bakar Ignite Scholar)

Pooja Mehta

spring 2021 – fall 2022

fall 2021 – spring 2023

spring 2023 – fall 2023

summer 2023 – spring 2024

fall 2023 – spring 2024

spring 2024 – fall 2024

spring 2024 – spring 2025

fall 2024 – spring 2025

**Technical Skills** 

Circuits Eagle, LTSpice, Firmware

ARM Cortex-M4, BLE Software Python, C/C++/C#, MATLAB

CAD AutoCAD, SolidWorks Design P

Photoshop, InDesign, Illustrator