NOELLE DAVIS

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New PhD graduate in wearable electronics. Interested in full-time opportunities developing sensing systems in Fall 2025.

Education

University of California, Berkeley | Berkeley, CA — **August 2025**
Laboratory for Materials and Device Innovation, advised by Dr. Ali Javey
Ph.D. Electrical Engineering and Computer Science
Dissertation: Wearable, User-Centric Sweat Sensing Platforms with Scalable Fabrication

California Institute of Technology | Pasadena, CA — **June 2020**
B.S. Electrical Engineering
GPA: 3.80/4.00

Experience

Laboratory for Materials and Device Innovation, UCB | Berkeley, CA — Aug 2020 – Aug 2025
Doctoral Researcher
- Designed complete wearable platforms for sensing eccrine sweat integrating microfluidics, electrochemical sensors, PCB's, and packaging which outperform precision of commercial devices.
- Fabricated devices via laser cutting, 3D printing, and roll-to-roll screen printing on PET and TPU films.

Department of Electrical Engineering and Computer Sciences, UCB | Berkeley, CA — Aug 2022 – Aug 2025
Graduate Student Instructor
CS 61C, Introduction to Computer Architecture, Discussion TA, 3x guest lectures (1 semester)
EECS 16B, Designing Information Devices and Systems II, Head TA, 3x guest lectures (2 semesters)
EECS 149/249a, Introduction to Embedded Systems, Laboratory TA (1 semester)
Awarded Certificate in Teaching and Learning in Higher Education by GSI Teaching & Resource Center

VTT Technical Research Centre, Flexible Sensors & Devices | Espoo, Finland — Aug 2023 – Dec 2023
Visiting Researcher
- Iterated on roll-to-roll screen printing of electrode patterns on TPU resulting in 2x improved yield.
- Characterized flexible electrodes under linear strain, demonstrating stability up to 15% strain.

Department of Electrical Engineering, Caltech | Pasadena, CA — Sep 2018 – June 2020
Undergraduate Teaching Assistant
EE 10a, Introduction to Embedded Systems I (2 quarters)
EE 10b, Introduction to Embedded Systems II (2 quarters)
EE 13, Electrical Prototyping (1 quarter)
EE/ME 7, Intro to Mechatronics (1 quarter)

NASA Jet Propulsion Laboratory | Pasadena, CA — Jun 2019 – Aug 2019
Electrical Systems Engineering Intern

Velodyne LiDAR | Alameda, CA — Jun 2018 – Aug 2018
Electrical Engineering Intern

Nanofabrication Group, Caltech | Pasadena, CA — Mar 2017 – Jun 2020
Undergraduate Researcher

Awards and Fellowships

2024 **Best Oral Presentation, Berkeley Sensors and Actuators Conference**. *Industry member vote.*
2023 **Grasshopper 5-Race Series Champion, Amateur Women 20-29**. *Gravel and mountain biking.*
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 in leadership.*
2020 **Caltech Athletics Director's Award**. *Annual female awardee.*
2019 **Caltech Deans' Office Donald S. Clark Service Award.** *Service & academic excellence.*
2019 **Southern California Intercollegiate Athletics Conference Women's Soccer Award of Distinction**

Invited Talks

Berkeley Institute of Design, Summer Design Seminar — July 2025
BMW Technology Office, "Unlocking Insights with Biosensors" Workshop — February 2025
Berkeley Sensors and Actuators Center Research Review — March 2024

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. *Lab on a Chip*. 2025.

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 Bariya*, 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.

* indicates equal contribution

Advising

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
Kalynna Tang	fall 2023 – spring 2024
Meera Devine (Bakar Ignite Scholar)	spring 2024 – fall 2024
Amanda Kang (Bakar Ignite Scholar)	spring 2024 – spring 2025
Pooja Mehta	fall 2024 – spring 2025

Skills

PCB	*Firmware*	*Software*	*CAD*	*Fabrication*	*Design*
Eagle, LTSpice, reflow soldering	*Segger Embedded Studio, ARM Cortex-M4, BLE*	*Python, C/C++/C#, MATLAB, OpenCV*	*AutoCAD, SolidWorks*	*Laser cutting, 3D printing, Machine sewing*	*Photoshop, InDesign, Illustrator*