

Stephen Taylor

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My research focuses on developing low-power, sustainable sensing systems to monitor and understand environmental processes. I design tools that enable cross-disciplinary research by making environmental data more accessible, scalable, and actionable. By combining embedded systems and novel sensing methods, I aim to support ecological sustainability and drive innovation at the intersection of computing and environmental science.

Education

The University of California, San Diego

September 2024 – present

PhD, Computer Engineering

The University of California, Santa Cruz

September 2018 – December 2022

BS, Robotics Engineering

Experience

Junior Specialist, jLab in Smart Sensing, Santa Cruz, CA

February 2022 – September 2024

- Full-time research in effectively harvesting renewable energy from non-traditional sources.
- Collaborated with experts across disciplines to understand those non-traditional energy sources more effectively.
- Developed open-source tools to improve research community's ability to experiment with low-power energy sources and sensors.
- Mentored younger students and assist with overall management of the lab.
- Identified gaps in the current literature on energy-harvesting and designed experiments to fill them.
- Reviewed resumes and interviewed candidates for open positions in the lab.

Student Researcher, jLab in Smart Sensing, Santa Cruz, CA

May 2022 – December 2022

- Successfully deployed a remote power measurement system using a BeagleBone-based architecture.
- Presented the lab's work and demonstrated its importance to the annual UCSC Open-Source Symposium.
- Built four power-producing microbial fuel cells, and successfully transferred two of them to a real-world farm environment.

Publications and Projects

A Sensing System is More than its Electronics: Towards addressing environmental challenges on outdoor data collection platforms

- **Stephen Taylor**, Fayza Elshafie, David Fisher, Michael Gonzalez, Benny La, Yaman Sanga, Elliot Snyder, and Pat Pannuto
ENSsys 2025

Poster: HERMES – Heavy Element Real-time Monitoring for Environmental Safety

- **Stephen Taylor** and Pat Pannuto
SenSys 2025

Is it time to start moving soil microbial fuel cell research out of the lab and into the field?

- **Stephen Taylor**, Laura Jaliff, George Wells, and Colleen Josephson
STOTEN 2024

Soil-Powered Computing: The Engineer's Guide to Practical Soil Microbial Fuel Cell Design

- Bill Yen, Laura Jaliff, Louis Guitierrez, Philothei Sahinidis, Sadie Bernstein, John Madden, **Stephen Taylor**, Colleen Josephson, Pat Pannuto, Weitao Shuai, George Wells, Nivedita Arora and Josiah Hester
ACM IMWUT 2024

Hardware to Enable Large Scale Deployment and Observation of Soil Microbial Fuel Cells

- John Madden, Gabriel Marcano, **Stephen Taylor**, Pat Pannuto, and Colleen Josephson
ENSsys 2022

Opportunities and Challenges in Soil Management with Microbial Fuel Cells: A Review

- Laura Jaliff, **Stephen Taylor**, Yaman Sanga, George Wells, Neal Blair, Pat Pannuto, and Colleen Josephson
IN PROGRESS

ENTS: Environmentally NeTworked Sensor

- **Stephen Taylor**, John Madden, Yaman Sanga, Laura Jaliff, Aaron Wu, Alec Levy, Jack Lin, Ahmed Falah, Tyler Potyondy, Josiah Hester, George Wells, Pat Pannuto, and Colleen Josephson
IN PROGRESS