Stephen Taylor

Engineering for the enviorment.

Skills

- Strong communication and presentation abilities, developed through intentional practice.
- Builds trust through active-listening and genuine empathy for other's concerns and obstacles.
- Creative problem solving and prototyping, especially when given limited resources.
- Exceptional adaptability and resilience in the face of unexpected obstacles.
- Embedded systems programming
- Experienced with C and Python
- Strong technical writing skills achieved through mentored experience on grants, proposals, and publications.

Education

The University of California, Santa Cruz

September 2018 – December 2022

Bachelor of Science, Robotics Engineering

Experience

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

February 2022 – Present

- Full-time research in effectively harvesting renewable energy from non-traditional sources.
- Collaborate with experts across disciplines to understand those non-traditional energy sources more effectively.
- Develop open-source tools to improve research community's ability to experiment with low-power energy sources and sensors.
- Mentor 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

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

- John Madden, Gabriel Marcano, **Stephen Taylor**, Pat Pannuto, and Colleen Josephson
- In Proceedings of the 20th ACM Conference on Embedded Networked Sensor Systems (SenSys 2022)
- Association for Computing Machinery, New York NY, USA, 906-912
- https://doi.org/10.1145/3560905.3568110

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
- Proceedings of the ACM on Interactive, Mobile, wearable and Ubiquitous Technologies, Volume 7, Issue 4
- https://doi.org/10.1145/3631410

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

- Laura Jaliff, **Stephen Taylor**, Colleen Josephson, George Wells
- In the process of publication, an invited review article for the Soil Science Society of America Journal

Soil Power Sensor

- Firmware development on a low-cost open-source sensing platform for challenging environmental sensing applications
- Capable of low-power measurement, external sensor communication and long-range data transmission
- https://github.com/jlab-sensing/soil_power_sensor
- https://github.com/jlab-sensing/soil-power-sensor-firmware

Awards and Honors

2nd Place in 2022 Santa Cruz Pitch Competition for Bike Recovery and Security System (BRASS)

- Awarded $2,500+ at a local start-up competition for the development of BRASS, a novel bicycle security approach using an alarmed U-lock integrated via Bluetooth to a GPS tracker.

2023 CITRIS Tech for Social Good Award

- Awarded $5000 for the development of low-cost sensors hardware for microbial fuel cell monitoring and data collection.

Interests and Hobbies

- Surfing, swimming, and anything in the ocean
- Climbing
- Hiking and backpacking

References

Professor Colleen Josephson

cjosephson@ucsc.edu