Alexa Fernando

alexafernando.com

EDUCATION

B.S. in Electrical Engineering Systems & Data Science - University of Hawaii at Mānoa
GPA: 3.82/4.00
Graduated: May 2021

M.S. in Electrical Engineering Systems & Data Science - University of Hawaii at Mānoa
GPA: 4.00/4.00
Expected Graduation: May 2023

KEY SKILLS

Languages: MATLAB, HTML, CSS, C++, Java, Verilog, SystemVerilog, Python

Software: Arduino, Raspberry Pi, AutoCAD, Revit, Simulink, GitHub, MPLab X IDE, PowerWorld Simulator, Fusion 360, Vivado, PSPICE, AGI32

Hardware: Microcontroller, Multimeter, Oscilloscope, Signal Generator, Power Supply, FPGA, MACCOR Battery Cycler, VMP/MPG Battery Cycler

Relevant Coursework: Dynamic Programming & Stochastic Control, Battery Mechanistic Modeling, Detection & Estimation Theory, Electrochemical Power Sources, Computer Communication Networks, Applied Random Processes, Machine Learning, Digital Signal Processing, Linear Feedback-Control Systems, Electromagnetics, Intro to Communication Systems, Signals & Systems Analysis, Digital Systems & Computer Designs, Physical Electronics, Microelectronic Circuits, Intro to Optimization, Electrical Engineering Probability & Statistics, Renewable Energy

RESEARCH EXPERIENCE

Graduate Research Assistant - *Hawaii Natural Energy Institute, University of Hawaii at Mānoa, School of Ocean and Earth Science and Technology*
Honolulu, HI / August 2021 - Present
Advisor: Matthieu Dubarry

- Studied and developed methods to improve the accuracy of determining battery open circuit voltage from laboratory data for diagnoses and prognoses. Several analysis methods are included, such as equivalent circuit and mechanistic modeling.
- Researched the effects of depth of discharge, rate, and temperature on battery voltage relaxation.
- Developed new methods of visualizing patterns in full-cell and half-cell battery relaxation data.

Li-ion Segmented Cell Project - *Hawaii Natural Energy Institute, University of Hawaii at Mānoa, School of Ocean and Earth Science and Technology*
Honolulu, HI / August 2020 - May 2021
Advisor: Matthieu Dubarry

- Assisted in the development of a new type of Li-ion segmented cell that contains microelectronic sensor components to read the pressure, temperature, and current of the cells simultaneously. These cells have the potential to gain a new and better understanding of the conditions inside Li-ion batteries in operando, leading to improvements in battery technology and a longer life cycle.
- Performed research to determine the constraints of the segmented cell design and improve upon previous methods of addressing battery life cycle concerns.
- Designed circuitry to daisy-chain multiple analog and digital sensors on one recording bus.
- Programmed the microcontroller using C++ to interact with sensors and output data in JSON format for further analysis.

Lab Manager - *Renewable Energy Design Laboratory, University of Hawaii at Mānoa, College of Engineering*

Honolulu, HI / August 2019 - December 2019

- Managed two undergraduate students as we worked on a smart hydroponics project.
- Ensured adherence to budget, schedule, and scope.
- Tracked project milestones and deliverables.
- Assigned duties and responsibilities to project personnel.

INDUSTRY EXPERIENCE

Senior Electrical Engineering Intern - Property & Buildings - *WSP*

Honolulu, HI / June 2020 - June 2021

- Assisted the electrical team in engineering designs as well as production and construction services.
- Involved in the design of power, telecommunication, and fire alarm systems for commercial buildings per the National Electrical Code and State Electrical Code using AutoCAD and Revit.
- Performed lighting design and software calculations for a park lighting replacement project.
- Consulted with clients on an inverter decision for a PV system in compliance with permitting standards.

Website Manager - *Independent Energy Hawaii*

Honolulu, HI / December 2020 - June 2022

- Built and designed a website for Independent Energy Hawaii, a local solar energy company.
- Managed and maintained site functionality and navigation for both desktop and mobile platforms.

OUTREACH

Engineering Research and Technical Outreach Assistant - *STEM Pre-Academy, Office of the VP for Research and Innovation, University of Hawaii System*

Honolulu, HI / May 2019 - December 2020

- Supported the development of hands-on STEM projects consistent with the research and innovation areas of the University of Hawaii.
- Assisted in research-based STEM outreach, which included the collection and integration of appropriate research and technology-related materials for middle school teachers.
- Supported teacher and student workshops and served as a role model for middle school students.
- Trained two teachers from Washington Middle School to help them understand the programming fundamentals and skills needed to successfully design their own IoT hydroponics system, which was implemented in their classroom.

Solar Tracker Project - *STEM Pre-Academy, Office of the VP for Research and Innovation, University of Hawaii System*

Honolulu, HI / January 2019 - August 2019

- Led a solar tracking project under STEM Pre-Academy that integrated engineering skills and knowledge of sustainability into middle school curriculum by creating activities for students that apply scientific principles to create, observe, and measure the output of energy from solar tracking.

IoT Hydroponics Project - *Renewable Energy Design Laboratory, University of Hawaii at Mānoa, College of Engineering*

Honolulu, HI / January 2019 - August 2020

- Worked on developing an IoT-based hydroponics network that monitors and controls the parameters of an ebb and flow hydroponics system using a digital dashboard accessible via any portable device.
- Designed a system of microcontrollers, single-board computers, and laboratory-grade sensors.
- Clearly and effectively documented technical instructions for the purpose of project reproduction.
- This project was implemented by the STEM pre-academy as a basis for various activities involving programming, circuitry, and data collection and analysis with the aim of motivating students to pursue STEM careers. It has been a continuing resource for students and teachers for training and reference.

Wāhine Processing Power - *Wāhine Processing Power*

Honolulu, HI / July 2021 - August 2021

- Participated in the 6-week mentorship program to empower women in STEM.
- Assisted in the development of the Wāhine Processing Power website.

Project POKE Judge *- Hawaii Space Flight Laboratory*
Honolulu, HI / April 2022

- Judged and provided feedback to middle and high school students on their CubeSat mission design.

AWARDS

Dean's List, College of Engineering *2017-2021*
University of Hawaii at Mānoa Chancellor's Scholar *2017-2021*
Mānoa Freshman Merit Scholarship *2017*
Mililani High School Valedictorian *2017*