NANA PORTER-HONICKY

Mechanical Engineer

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CURRENT POSITION

Doctoral Student Researcher

Neurobionics Lab (University of Michigan, Ann Arbor)
August 2023 – PRESENT

- Developing a kinetic and kinematic prediction model of level ground walking for joint impedance estimates

TECHNICAL EXPERIENCE

Undergraduate Research Associate

Lawrence Berkeley National Lab
June 2021 – June 2023

- Design of mold for the fabrication of scintillating PTFE material
- Design of dark box components for use in testing scintillating PTFE material
- Design of vertical circuit to modify the electromagnetic field in the detector

Electronics Lab Design and Implementation Intern

Tarana Wireless
June 2019 – August 2019

- Designed floor plans for three new telecommunication equipment labs
- Designed new rack and lab bench configuration for new labs
- Fulfilled IT requests for RF laboratory installation and maintenance

PRESENTATIONS

- *Forecasting Gait Kinetics and Kinematics for Biological Joint Impedance Estimation Using Machine Learning* (2025a). RehabWeek. Poster
- *Forecasting Gait Kinetics and Kinematics for Biological Joint Impedance Estimation Using Machine Learning* (2025b). Midwest Machine Learning Symposium. Poster
- *Using Kinetic and Kinematic Prediction Models to Characterize Ankle Impedance* (2024). Dynamic Walking. Poster
- *Fabrication of ZnO-PTFE material for use in LUX-ZEPLIN dark matter detection experiment to flag lead-210 alpha decays through scintillation* (2022). UCLA McNair Symposium. 5 min talk

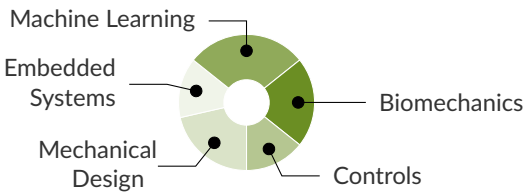
EDUCATION

University of Michigan, Ann Arbor (2023 - PRESENT)
Mechanical Engineering/Robotics PhD

University of Michigan, Ann Arbor (2023 - PRESENT)
Movement Science M.S.

University of California, Berkeley (2023)
Mechanical Engineering B.S.

OVER-ALL EXPERIENCE



SKILLS

MATLAB/Simulink	●●●●●
Fabrication	●●●●○
Python	●●●●○
C++	●●●○○
Solidworks/Onshape	●●●●○
LABVIEW	●●●○○
Vicon	●●●○○

CLASS PROJECTS

Dead reckoning on the Össur Power Knee

Quantifying Human Motion Through Wearable Sensors
Winter 2025

- This study explores the feasibility of using the limited sensor suite of the Ossur Power Knee to estimate gait speed and incline in a pilot study.

Effects of Powered Ankle Prostheses on Lower Limb Kinetics and Metabolics: A Literature Review

Clinical Gait Analysis
Fall 2024

- A semester long literature review on the impact of powered ankle prostheses on sloped walking in unilateral transtibial amputees.

Wrist-guard Pedal for Hand Cycle

Augmenting Human Dexterity
Spring 2023

- An adapted off-the-shelf wrist guard that can attach to a hand-cycle with a magnetic mechanism. Designed to alleviate wrist pain for hand-cycle user. Patent submitted for the magnetic attatchment mechanism.

Sous-Gardener II

Design of Microprocessor-Based Mechanical Systems
Spring 2023

- An upgrade to the Sous-Gardener to also track light levels and actuate a pump or a grow-light when the soil is too dry or the plant isn't getting enough light with a new GUI that allows you to manually toggle the grow-light and pump.

Beer Pour Machine

Mechatronics Design
Fall 2022

- Device that pours your beer for you to get the perfect head using a linkage designed to make the optimal pour from a bottle with another actuator to tilt your glass just right so you don't get too much foam.

Sous-Gardener

Internet of Things
Spring 2022

- A small flowerpot with an embedded moisture sensor and NFC tag. When you tap the flower pot with your phone it takes you to a webpage with live readouts from the moisture sensor and tells you if you need to water your plant.

REFERENCES

Dr. Elliott Rouse
Associate Professor of Robotics and Mechanical Engineering
University of Michigan, Ann Arbor
@ ejrouse@umich.edu

Dr. Peter Sorensen
Senior Scientist
Lawrence Berkeley National Lab
@ PFSorensen@lbl.gov

Dr. Hannah Stuart
Associate Professor of Mechanical Engineering
University of California, Berkeley
@ hstuart@berkeley.edu

AWARDS

Rackham Merit Fellowship (2023-PRESENT)
The RMF is a funding partnership between Rackham and the graduate program that includes tuition, stipend, health, and dental coverage, during each fall and winter semester, with select summer stipend and benefits.

McNair Scholar (2021-2022 Cohort)
Received funding for my work at LBNL, gave a presentation at the McNair 2022 Symposium at UCLA, and published in the 2022 Berkeley McNair Research Journal

ME Scholar (2021-2022 Cohort)
Hand-picked group of incoming MechE students at UC Berkeley chosen by the MechE counselor for a weekly seminar involving a stipend, research presentations by faculty, and career/academic planning

NSF S-STEM Scholar (2018-2019 Cohort)
SPECS Scholarship Program supports academically talented, financially disadvantaged students from groups that are traditionally underrepresented in engineering professions: minorities, women, and first-generation students

TEACHING

What is Mechanical Engineering? (Engineering Day with the Girl Scouts)

Organizer and Instructor
April 2025
- Taught Junior and Brownie Girl Scouts about Mechanical Engineering with forces and motion

Engineering the World Around Us (Detroit Area Pre-College Engineering Program)

Organizer and Instructor
February-March 2025
- Taught High School and Middle School students engineering fundamentals such as forces and motion, mechanical design, fluid mechanics, programming etc.

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First Robotics Outreach at IROS (International Conference on Intelligent Robots and Systems)

Instructor
October 2023
- Taught High School Students about programming principles for robotics

STUDENT LEADERSHIP

Mechanical Engineering Graduate Council (2024-PRESENT)

Outreach Chair

Women and Gender Minorities in Mechanical Engineering (2024-PRESENT)

Public Relations Chair

HOBBIES

Plant care | Reading | Baking/Cooking | Climbing | Quilting | Swimming