Miles M. Smith

Personal Information

E-mail milessmi@mit.edu **Website** https://www.milesmsmith.com/

Education

2023 - Present **Massachusetts Institute of Technology** Cambridge, MA
Ph.D., Mechanical Engineering

2020 - 2022 **Stanford University** Stanford, CA
MS, Civil and Environmental Engineering (Atmosphere/Energy)

2016 - 2020 **University of Maryland, Baltimore County (UMBC)** Baltimore, MD
BS, Mechanical Engineering

Skills

Programming MATLAB, Python, C, C++, JavaScript, HTML/CSS, Arduino, R, LaTeX

Technical SolidWorks, Autodesk Inventor, Autodesk Revit

Engineering Manufacturing Operations, Mathematical Modeling, Control Systems, Battery Management Systems, Energy Systems, Electronic Instrumentation

Work Experience

2022 - Present **Software and Hardware Systems Engineer**
Otherlab / Channing Street Copper
Supervisor: Sam Calisch

Developed embedded system firmware and integrated control logic for pre-seed stage start-up company

2021 - 2022 **Energy Systems Group Summer Research Program**
Lincoln Laboratory, Massachusetts Institute of Technology
Supervisors: Erik Limpaecher, Theodore Bloomstein, Ph.D.

Summer 2022: Studying fundamental chemistry of aluminum for hydrogen fuel cell applications as well as experimental and system design for the fuel cell applications.
Summer 2021: Developed a control system using Arduino to characterize the battery state-of-health as a function of the internal resistance.

Academic Research Experience

2023 - Present **Electrochemical Energy Laboratory**
Massachusetts Institute of Technology, Department of Mechanical Engineering
Principal Investigator: Yang Shao-Horn

Applying techniques from materials science, automation, and computational science to design new polymer materials for solid-state batteries. Currently, working on developing a novel polymer electrolyte by implementing active learning techniques for high-throughput materials design.

2017-2019 **Energy Harvesting and Design Optimization (ED) Lab**
University of Maryland, Baltimore County
Principal Investigator: Soobum Lee, Ph.D.

Researched, designed, and tested a gravity-induced piezoelectric energy harvesting system that could be used to power structural health monitoring sensors in wind turbines and has since been developed into a start-up company through bwtech@UMBC. (Link: https://activecharge.us/)

Publications

1. Jacobson, M.Z.; von Krauland, A.-K.; Coughlin, S.J.; Palmer, F; **Smith, M.**. *Zero Air Pollution and Zero Carbon From All Energy at Low Cost and Without Blackouts in Variable Weather Throughout the U.S. With 100% Wind-Water-Solar and Storage. Renewable Energy 2022*
2. Jacobson, M.Z.; von Krauland, A.-K.; Burton, Z.F.; Coughlin, S.J.; Jaeggli, C.; Nelli, D.; Nelson, A.J.H.; Shu, Y.; **Smith, M.**; Tan, C.; Wood, C.D.; Wood, K.D. *Transitioning All Energy in 74 Metropolitan Areas, Including 30 Megacities, to 100% Clean and Renewable Wind, Water, and Sunlight (WWS). Energies 2020, 13, 4934.*

Conference Proceedings

1. Jung, HJ.; Chervin, S.; **Smith, M.**; Lee, S. *Design of an impact-driven piezoelectric energy harvester with gravity-induced rotator for wind turbine blade monitoring system (Conference Presentation).* Proc. SPIE 10595, Active and Passive Smart Structures and Integrated Systems XII, 105951Y (3 April 2018);

Patents

1. Induction Heating Adapter System and Method (Provisional)
2. Energy Storage Equipped Water Heater Architecture (Provisional)
3. Systems and Methods for Battery Enhanced Appliances (Provisional)

Highlighted Projects

Polymer Electrolyte Design
Affiliations: MIT / Electrochemical Energy Lab
Development of computational techniques for high-throughput materials characterization using Impedance, Raman, and FTIR spectroscopy with the aim to predict, synthesize, and characterize novel polymer electrolytes.

Battery-Powered Induction Stove
Affiliations: Channing Street Copper Company
Developed software stack for over-the-air firmware updates, cloud-based data storage, active data monitoring for first in class battery-powered induction stove. Developed protocols and testing setup for better characterization and testing. Implemented the control logic for thermal controls in the oven.

The Solutions Project *Affiliations: Stanford / Mark Jacobson*
Lead software developer for an infographic map built using Google Maps JavaScript API and other tools to convey information about transitions to 100% sustainable energy in 50 states and 143 countries.
(Link: https://sites.google.com/stanford.edu/wws-roadmaps/home)

Honors and Awards

2024 **Wunsch Foundation Silent Hoist and Crane Award**
An award from the MIT Mechanical Engineering department recognizing a graduate student for excellence in research and academic achievement.

2021 **GEM Full Fellowship**
Received a full GEM Fellowship for graduate support towards an advanced degree in STEM. The aim of the fellowship is to support underrepresented groups pursuing graduate studies in engineering and applied sciences. As part of the fellowship, I will also intern at MIT Lincoln Laboratory in Lexington, MA.

2021 **USTFCCCA NCAA Division I Men's Track & Field All-Academic Award**
Recognized for athletic and academic achievement by the NCAA for qualifying to the first round of the NCAA Division 1 Outdoor Track and Field Championships and maintaining a strong GPA.

2020 **MDCAAA Postgraduate Scholarship Award Winner**
Winner of a post-graduate scholarship given to a single student-athlete from an NCAA D1 university in Maryland and Washington, D.C. for graduate studies.

2020 **Arthur Ashe Jr. Sports Scholar Award**
A national award to honor student-athletes of color that have excelled academically. Recognized as a national first team award winner in Track and Field.

2020 **Earnestine Bailey Baker Scholarship**
An award given to one graduating Meyerhoff scholar per year based on distinction as a scholar and representing the values of the program.

2018 - 2019 **Undergraduate Research Award (URA)**
A grant for undergraduate students at UMBC to conduct research and present findings.
Project: *Piezoelectric Energy Harvesting Research For Self-Sustainable Wind Turbine Monitoring Systems*

2016 - 2020 **Meyerhoff Premier Scholarship Award**
An academic scholarship awarded to undergraduates entering UMBC to support research in STEM for underrepresented groups.

Affiliations

2022 - Present **Peninsula Distance Club**
Semi-professional distance runner for a premier elite training group based in Stanford, CA. Represented the club at various professional track meets and national competitions. Club record holder over 800m.

2020 - 2021 **Stanford Track and Field Team**
An active member of Stanford's track and field team from 2020-2021 to compete as a graduate student.

2016 - 2020 **Meyerhoff Scholars Program**
A scholars program at UMBC that is primarily focused on supporting underrepresented groups in professional development and STEM-related research.

2016 - 2020 **UMBC Cross Country and Track & Field Team**
An active member of UMBC's cross country and track & field teams from 2016-2020. Team captain.

2019-2020 **Tau Beta Pi Engineering Honor Society**
Inducted into the premier engineering honor society as an undergraduate. Induction is only offered to engineering majors that are distinguished amongst their peers.

2018 - 2020 **Chi Alpha Sigma Student-Athlete Honor Society**
An organization and honor society that aims to recognize student-athletes that excel athletically and academically.

2018 **Louis Stokes Alliance for Minority Participation**
A research-oriented program affiliated with UMBC that focuses on helping undergraduates from underrepresented groups succeed and prepare them for graduate school.