

Autumn McLane-Svoboda, Ph.D.

Project Engineer

PROFESSIONAL SPECIALIZATION

Biomedical engineer with over 6 years of experience specializing in experimental design, data analysis, and applied problem solving:

- Neural engineering and electrophysiology, including analysis of complex neurophysiological systems
- Signal processing and machine learning applied to large, high-dimensional time-series datasets
- Biosensing and diagnostic technology development, translating biological signal data into real-world detection and classification systems
- Experimental neurophysiology workflows, integrating multimodal data collection methods
- Data science and statistical analysis, building reproducible computational pipelines for large-scale datasets
- Cross-functional team leadership and mentorship, guiding research teams and junior staff through complex, multi-phase project execution

EDUCATION

Ph.D. in Biomedical Engineering

Michigan State University, East Lansing MI

Aug 2021 – Jul 2026

Focus: Neural Engineering, Cognitive Neuroscience, Signal Processing,
Machine Learning, & Biomedical Diagnostics

B.S. in Mechanical Engineering with Concentration in Biomedical Engineering

Michigan State University, East Lansing, MI

Aug 2017 – May 2021

PROFESSIONAL EXPERIENCE

Project Engineer, Design Research Engineering, Novi MI

Aug 2026 – Current

Doctoral Research Assistant, BOSS Lab, Michigan State University

Aug 2023 – July 2026

Dissertation: Investigating Insect Olfactory Processing for Neural Dynamics
Underlying Stimulus Classification and Associative Learning

Doctoral Research Assistant, Pelled Lab, Michigan State University

Aug 2021 – Jul 2023

Project: Characterizing sensorimotor neural processing and movement
in Octopus Bimaculoides arms

Research Assistant, Hoffmann Lab, Michigan State University

Sept 2019 – Aug 2021

Project: Effects of shiftwork (light at night) on behavior and circadian
rhythms in reproductive tissues of mice

Prosthetics Intern, Vilminot Prosthetics Clinic, Howell MI

Apr 2019 – Sept 2019

Clinical and technical experience in the creation of custom prosthetics

LEADERSHIP EXPERIENCE

Graduate Student Association Cohort Representative, Biomedical Engineering

Aug 2024 – May 2026

Oversaw cohort advising efforts, proactively addressing academic barriers

Entrepreneurship Bootcamp, National Institute of Health

Jun 2024 – Sept 2024

Led multidisciplinary team to clinically assess endometriosis care pathways,
diagnostic barriers, and external stakeholder needs

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LEADERSHIP EXPERIENCE *(CONTINUED)*

STEM Ambassador Program, Michigan State University Sept 2022 – Feb 2023
Designed an engaging, student-centered curriculum on the nervous system to make complex anatomy accessible to young learners

PROFESSIONAL DEVELOPMENT & CERTIFICATES

Foundations of Python Programming and Applied Machine Learning, Michigan State University, 2025-2026
BESTxTech: Innovation and Technology Commercialization Series, Michigan State University, 2024
Broadening Educational and Scientific Training (BEST) Program, Michigan State University, 2023-2024
R Basics Certification, EdX, 2020
Experiential Education Certification, Michigan State University, 2020
Women in Engineering Leadership Series Certification, Michigan State University, 2020

AWARDS

3 Minute Thesis First Place Presentation, College of Engineering, Michigan State University, 2026
National Science Foundation Graduate Research Fellowship, 2023
Academic Achievement Withrow Fellowship, Michigan State University, 2022
Ann Clark Engineering Scholarship, Michigan State University, 2020
Family Fund Scholarship, Michigan State University, 2018
Imelda “Mel” and Ralph Lemar Scholarship, Fowlerville High School, 2017

RESEARCH PUBLICATIONS

Journal Articles:

Detection of multiple per- and polyfluoroalkyl substances (PFAS) using a biological brain-based gas sensor. SB McLane-Svoboda, S Joshi, AK McLane-Svoboda, C Stout, M Bazhenov, D Saha. *Journal of Hazardous Materials Advances*, Vol 22, 101202, May 2026.

Precision detection of select human lung cancer biomarkers and cell lines using honeybee olfactory neural circuitry as a novel gas sensor. M Parnas, AK McLane-Svoboda, E Cox, SB McLane-Svoboda, SW Sanchez, A Farnum, A Tundo, N Lefevre, S Miller, E Neeb, CH Contagb, D Saha. *Biosensors and Bioelectronics*, Vol 261, Oct 2024.

Fabrication and validation of sub-cellular carbon fiber electrodes. JJ Richie, JG Letner, A McLane-Svoboda, Y Huan, DH Ghaffari, ED Valle, PR Patel, HJ Chiel, G Pelled, JD Weiland, C Chestek. *Institute of Electrical and Electronics Engineers (IEEE) Transactions on Neural Systems & Rehabilitation Engineering*, Vol. 32, pp 739-749, 2024.

Use of living systems for clinical diagnostics by monitoring volatile chemicals. AK McLane-Svoboda, SW Sanchez, M Parnas, EH Apu, D Saha. *TrAC Trends in Analytical Chemistry*, Vol 180, Nov 2024, 117987.

Precision detection of select human lung cancer biomarkers and cell lines using honeybee olfactory neural circuitry as a novel gas sensor. M Parnas, AK McLane-Svoboda, E Cox, SB McLane-Svoboda, SW Sanchez, A Farnum, A Tundo, N Lefevre, S Miller, E Neeb, CH Contag, D Saha. *Biosensors and Bioelectronics*, Vol 261, 116466, Oct 2024.

Fabrication and validation of sub-cellular carbon fiber electrodes, J Richie. JG Letner, A McLane-Svoboda, Y Huan, DH Ghaffari, ED Valle, PR Patel, HJ Chiel, G Pelled, JD Weiland, CA Chestek. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, Vol 32, pp 739-749, 2024.



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RESEARCH PUBLICATIONS (*CONTINUED*)

Closed-loop neurostimulation via expression of magnetogenetics-sensitive protein in inhibitory neurons leads to reduction of seizure activity in a rat model of epilepsy. AC Metto, P Telgkamp, AK McLane-Svoboda, AA Gilad, G Pelled. *Brain Research*, Vol 1820, 148591, Dec 2023.

A Mouse Model of Shiftwork Reveals Sex-Specific Impairments in Circadian Behavior and Reproductive Tissue Timekeeping. AM Yaw, A McLane-Svoboda, D Nguyen, TVQ Duong, HM Hoffmann. *Journal of the Endocrine Society* (Suppl 1), A530, May 2021.

Shiftwork and light at night negatively impact molecular and endocrine timekeeping in the female reproductive axis in humans and rodents. AM Yaw, AK McLane-Svoboda, HM Hoffmann. *International Journal of Molecular Sciences*, 22 (1), 324, Dec 2020.

Conference Proceedings:

MON-167 A Mouse Model of Chronic Shiftwork-like Lighting Exposure Identifies Adverse Pregnancy Outcomes in Female Mice Independent of Estrous Cycle Regularity. AM Yaw, B Van Loh, AK McLane-Svoboda, K Jang, K Jursch, D Nguyen, HM Hoffmann. *Journal of the Endocrine Society*, Vol 9, Issue Supplement 1, Oct 2025.

S Joshi, MG Navas-Zuloaga, A McLane-Svoboda, S Sanchez, D Saha, M Bazhenov. Inferring network structure from neural activity in a biologically-constrained model of the insect olfactory system. *Cognitive Computational Neuroscience 2024*. Boston, Massachusetts, Aug 2024.

PRESENTATIONS

Conference Presentations:

A.K. McLane-Svoboda (Presenter), S.B. McLane-Svoboda, S. Joshi, M. Bazhenov, D. Saha, Neural basis of associative learning and generalization in locust olfaction. *Society for Neuroscience 2025*. San Diego CA, November 2025.

A.K. McLane-Svoboda (Presenter), S. Joshi, S.B. McLane-Svoboda, M. Bazhenov, D. Saha, Quantifying associative learning-induced changes in population neural responses in an insect brain. *Society for Neuroscience 2024*. Chicago IL, October 2024.

A.K. McLane-Svoboda (Presenter), S. Joshi, S.B. McLane-Svoboda, M.G. Navas-Zuloaga, M. Bazhenov, D. Saha, Uncovering associative learning-induced changes in locust olfaction through in-vivo neural recordings and machine learning. *International Congress of Neuroethology*. Berlin, Germany, July 2024.

A.K. McLane-Svoboda (Presenter), B. Bush, J. Richie, C.A. Chestek, G. Pelled, Sensorimotor neural responses to external stimulation in *Octopus Bimaculoides* arms. *2023 Engineering Graduate Research Symposium*. Michigan State University, East Lansing MI, May 2023.

A.K. McLane-Svoboda (Presenter), J. Richie, C.A. Chestek, G. Pelled, Characterizing sensorimotor neural activity in *Octopus Bimaculoides* arms. *Society for Neuroscience 2022*. San Diego CA, November 2022.

A.K. McLane-Svoboda (Oral Presentation), Identifying neural networks in *Octopus Bimaculoides* arms in response to sensory and motor stimulation. *2022 Octopus Inspired Biodesign Symposium*. Michigan State University, East Lansing MI, August 2022.

A.K. McLane-Svoboda (Presenter), A. Yaw, H.M. Hoffmann, The effect of shiftwork on behavior and circadian rhythms in reproductive tissues. *23rd Annual University Undergraduate Research and Arts Forum*. Michigan State University, East Lansing MI, March 2021.

A.K. McLane-Svoboda (Presenter), A. Yaw, H.M. Hoffmann, The effect of shiftwork on the circadian rhythms in reproductive tissues. *10th Annual Mid-Michigan Symposium for Undergraduate Research Experiences*. Michigan State University, East Lansing MI, August 2020.



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PRESENTATIONS (*CONTINUED*)

Exhibitor Presentations:

AK McLane-Svoboda, A Fazleabas, SB McLane-Svoboda (Presenters), SW Sanchez, D Saha. An insect-based diagnostic sensor for the precision detection of endometriosis. 2025 Michigan State University Innovation Celebration. East Lansing MI, April 2025.

OUTREACH ACTIVITIES

Graduate Women in Science Girls Math and Science Day, Presenter, 2025

Summer Workshop for Underrepresented Minority (URM) Students, Instructor, 2024-2025

Women in Engineering Think Like an Engineer Summer Camp, Instructor, 2022-2025

Howell Carnegie District Library STEAM Day, Instructor, 2023

Michigan State University Science Festival, Presenter, 2022

Women in Engineering, Student Mentor, and Girl's STEM Day, Instructor, 2017-2020

