

EDUCATION

University of Illinois Urbana-Champaign <i>Ph.D. in Electrical and Computer Engineering</i>	2026 – present Champaign, IL
University of Michigan, Ann Arbor GPA:3.86/4.0 <i>M.S. in Electrical and Computer Engineering</i>	2021 – 2023 Ann Arbor, MI
University of Notre Dame <i>Summer Research with Professor William Goodwine</i>	2019 South Bend, IN
Southern University of Science and Technology GPA:3.52/4.0 <i>B.E. in Robotics</i>	2017 – 2021 Shenzhen, Guangdong

EXPERIENCE

Cognitive Robotics Engineer Cognitive Automation @ Comau	2023 – 2026
Graduate Student Research Assistant Roahm Lab @ UM	2022 – 2023
Undergraduate Student Research Assistant BionicDL Lab @ SUSTech	2019 – 2021

RESEARCH & OPEN-SOURCE

Learning Dynamical Systems with Constraint [1]  Advisor: Anthony Bloch, Dpt of Mathematics @ UM	2024 – 2025
Deep learning the dynamics of systems under <i>Nonholonomic constraints</i> (or non-integrable constraints) with symmetry using <i>Hamel's Equations</i>. Discovered nonholonomic constraint implicitly from data and learned the dynamics.	
Safe Planning of Robot Arm [2]  Advisor: Ram Vasudevan, Roahm Lab @ UM	2022 – 2023
Simulated robot trajectory planning and control in <i>Mujoco</i> and <i>Pybullet</i> using <i>reachability analysis</i>, which approximate the <i>reachable sets</i> of the system discretely to select optimal, safe trajectory.	
Differentiable SysId  Advisor: Ram Vasudevan, Roahm Lab @ UM	2022
Wrote a generic <i>Lagrangian Dynamics</i> algorithm for n-link rigid body using the <i>symbolic data type</i>. Applied <i>Casadi</i> to the symbolic function and rapidly solve the optimization problem to identify system parameters bound.	
Adaptive Exoskeleton  STARX @ UM	2021 – 2022
Implemented an <i>Adaptive Frequency Oscillator</i>, an extended version of <i>Hopf Oscillator</i>, on an exoskeleton to assist walking and adapt to walking frequency for user's comfort. Won 2nd prize in the competition.	
Overconstrained Monopod  Advisor: Song Chaoyang, BionicDL Lab @ SUSTech	2020 – 2021
Designed a <i>provably stable</i> oscillator-like controller for a monopod with <i>overconstrained</i> leg (Bennett isogram).	
Volumetric Soft Actuator [3] Advisor: Song Chaoyang, BionicDL Lab @ SUSTech	2019 – 2020
Defined a generic <i>Volumetric metric</i> for soft actuators that measure the performance per unit. Analyzed the mechanics of the actuator using <i>Castigliano's Theory</i> to have accurate output force prediction.	

SKILLS & AWARDS

Software: Python, C/C++, MATLAB/Simulink, PyTorch, ROS/ROS2, Casadi, Issac Sim, Pybullet, Mujoco, Blender, Webots, Git, SQL, Docker, Lean.

Math: Dynamics, Analysis, Differential Geometry, Algebra.

Awards: Applied Collegiate Exoskeleton Competition 2nd Prize (2022), WAIC Simulation Competition 3rd Prize (2020), RoboMaster 3rd Prize (2019, 2018), SUSTech Outstanding Student Scholarship (2020) and Freshman Scholarship (2017).

ARTICLES & PUBLICATIONS

- [1] B. Wang and A. Bloch, "Learning nonholonomic dynamics with constraint discovery," in *Proceedings of The 8th Annual Learning for Dynamics and Control Conference*, ser. Proceedings of Machine Learning Research, G. Sukhatme, L. Lindemann, S. Tu, A. Wierman, and N. Atanasov, Eds., vol. 331. PMLR, 17–19 Jun 2026, pp. 2123–2137. [Online]. Available: <https://proceedings.mlr.press/v331/wang26d.html>
- [2] J. Michaux, P. Holmes, B. Zhang, C. Chen, B. Wang, S. Sahgal, T. Zhang, S. Dey, S. Kousik, and R. Vasudevan, "Can't touch this: Real-time, safe motion planning and control for manipulators under uncertainty," *IEEE Transactions on Robotics*, pp. 1–20, 2025. [Online]. Available: <https://ieeexplore.ieee.org/document/11059838>
- [3] B. Wang, W. Guo, S. Feng, Y. Hongdong, F. Wan, and C. Song, "Volumetrically enhanced soft actuator with proprioceptive sensing," *IEEE Robotics and Automation Letters*, vol. 6, no. 3, pp. 5284–5291, 2021. [Online]. Available: <https://ieeexplore.ieee.org/document/9403871>