

NIALAH WILSON-SMALL, PhD

[website](#) | nwilson.small@gmail.com | [Google Scholar](#)

RESEARCH

My research centers coordination algorithms for multi-robot systems as well as human-drone interactions. Specifically, I study how drones can use tactile feedback to influence human motion considering both individual and group interactions. My work is at the cross section of design, human-robot interaction, and autonomy.

EDUCATION

Ph.D., Aerospace Engineering

Cornell University, Ithaca, NY, 2022

Dissertation: “Embodied Physical Interactions for Robot-to-Robot and Robot-to-Human Coordination”

Advisor: Prof. Kirstin Petersen

M.S., Aerospace Engineering

Cornell University, Ithaca, NY, 2020

B.S., Mechanical Engineering

Howard University, Washington, D.C., 2017

WORK EXPERIENCE

Robotics, Automation, and Dance (RAD) Lab

Philadelphia, PA 12/2024 – Present

Research Scientist

Conduct research, and write grants to fund said research, at the intersection of art and robotics.

Smashworks Dance

New York, NY 9/2023 – Present

Artist-in-Residence

Collaborate with the dancers to develop new tactile drones to further physical human-drone interaction research. Choreographing an evening length performance with the new technology.

New York University Tandon School of Engineering, Brooklyn, NY

Industry Assistant Professor, Mechanical and Aerospace Engineering 8/2022 - 8/2024

Courses: Intro to Mechanical Engineering ME-UY 1012, Mechatronics ROB-GY 5103, Swarm Robotics ROB-GY 6333, MS Project, MS Thesis

Cornell University, Ithaca, NY

Teaching Assistant, Mixed Reality, CS 5678 1/2022 - 5/2022

Provided detailed feedback on research project progress reports. Graded paper reviews and assessed final projects reports.

Teaching Assistant, Mechatronics, MAE 3780 8/2019 - 12/2019

Tutored students in office hours and provided technical support during lab sessions with 36 students. Graded laboratory reports and gave detailed feedback on assignments.

Sandia National Laboratories

Albuquerque, NM 5/2021-8/2021 (Remote)

Autonomy NM Grad R&D Intern: Autonomy for Hypersonics

Contributed to controls and system integration projects.

Albuquerque, NM 5/2015-4/2016 (DOE L Security Clearance)

Summer Technical Intern/R&D Year Round Telecommuter: Thermal/Fluids Experimentation Sciences

Operated various lab equipment to characterize bellows (springs) and test their effect on dynamic systems with damping and multiphase flow under high vibration conditions.

Wrote multiple scripts in MATLAB to analyze the data sets.

The Boeing Company (Engineering Accelerated Hiring Initiative)

Everett, WA 6/2017-8/2017

Weight Engineer Intern: Optimization Center & Product Development in Flight Sciences

Utilized HyperWorks to produce weight efficient design alternatives for 777 and freighter parts. Collaborated across departments to provide accurate weight estimates to inform trade studies for a freighter configuration.

Seattle, WA 5/2016-7/2016

Metrology Intern: Metrology and Test Equipment Services in Boeing Test and Evaluation

Designed, implemented, and tested a proof-of-concept system including the programming, bracket design, and electronics to replace the laser interferometer measurement system with an optical encoder to be used in the Photometry Lab.

Precision Technology, USA

Roanoke, VA 5/2014-7/2014

Mechanical Engineering Intern

Designed components and configurations for multi-axis linear electromechanical actuator systems in SolidWorks.

AWARDS/RECOGNITION

2024 Forbes 30 Under 30: Science Category

2024 Jordan Legacy 23 Honoree

PRESENTATIONS AND INVITED TALKS

1. “We Are Your Robots” Musical, Theatre for a New Audience Talk Back, New York, NY 2024
2. Wilson-Small, N., A Drone Teacher: Designing Physical Human-Drone Interactions for Movement Instruction. Presen., ACM/IEEE Conference on Human Robot Interaction (HRI), 2023
3. Wilson, N., Designing Tactile Human-Drone Interactions for Movement Instruction, ext. abs., STEMNoire 2021
4. Wilson, N. Design and Coordination of Flexible Modular Robots. Presen., Robotics Science and Systems Conference (RSS): Women in Robotics Workshop, 2018

PROFESSIONAL ACTIVITIES & SERVICE (SELECTED)

1. Reviewer: IEEE IROS Conference, HRI Pioneers, HRI LBR
2. STEMInist Empowered Mentorship Program, 2024: Session speaker on Advisor Relationships.
3. STEMNoire Research and Wellness Conference, 2023: Judged research oral and poster presentations.
4. ENVISION Women in STEM Proposal Writing Competition, 2021 & 2022: Judged high school students’ entries and provided constructive feedback.
5. Howard University Robotics Organization Mentor, 2021: Created a ROS2 and Gazebo curriculum. Taught the students via recorded modules and created an end of semester assignment.
6. New Visions Engineering, Cornell University, 2018: Co-designed and led a four-hour robotics workshop for ~15 high school students interested in engineering.
7. Middle School Outreach, Howard University Middle School of Math and Science, 2017: 2-day trip to Washington DC to teach 7th grade teachers a physics science project for their students.
8. Congressional Black Caucus Foundation Emerging Leaders First China Cohort, 2014: Selected in the first cohort of African American students to travel to China to learn about their history, legislation, and emerging technologies towards the goal of fostering new US-China relationships and mentoring future delegators.