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Website

SUMMARY OF QUALIFICATIONS

- Skilled engineer with broad experience in data analysis, cross-disciplinary research, and graduate leadership.
- Established and led multiple cross-disciplinary collaborations at Johns Hopkins University and Medical Institutions to address specific research challenges in sensorimotor control in biological systems.

EDUCATION

Ph.D. Johns Hopkins University (JHU), Mechanical Engineering (3.78 GPA) — December 2024

M.S.E. Johns Hopkins University, Robotics (3.74 GPA) — May 2021

B.S. University of Alabama, Electrical Engineering (4.0 GPA) — May 2019
Minor in Mathematics and Physics
Graduated from Honors College

H.S. Mentor High School, Mentor, Ohio (4.0 GPA, Class Rank: 8/666) — May 2015
President of Ecology Club and Anti-Suicide Club

PROFESSIONAL TRAINING

Johns Hopkins University, Operations and Strategy Manager — May. 2024 – Present

- Develop and implement innovative strategies for student outreach, increasing engagement and participation in programs across the doctoral and postdoctoral community.
- Provide expert analysis and advice on the specific needs and requirements of doctoral engineering programs.
- Collaboratively develop and implement strategic plans for event programs, oversee coordination efforts and ensure successful execution aligned with organizational goals

Johns Hopkins University Graduate Representative Organization (GRO) — Dec 2021 – Present
Executive Board Leader and Member

- Lead the largest graduate student organization (>2000 students) at Johns Hopkins Homewood Campus.
- Collaborate with administrators and executives across the university in the establishment of university wide initiatives.
- Manage and direct organizational expenditures with an annual budget of over $150,000.

Deshazo Automation/LLC., Electrical Engineering CO-OP — Aug. 2016 – Aug. 2017

- Managed and aided in the programming of an industrial scale robot installation at the Amerex Corporation, the world's largest manufacturer of hand portable and wheeled fire extinguishers.
- Provided guidance and technical direction to executive leadership of Deshazo and the Amerex Corporation to satisfactorily meet the technical and financial needs of both companies during robotic installation.
- Aided the design of a patented computer vision-based 3D part picking system used in industrial robotic installations.

RESEARCH EXPERIENCE

Bat Echolocation Project, Johns Hopkins University, Baltimore, MD — Jan. 2020 – Present
Mechanical Engineering PhD Researcher, Advisor: Dr. Noah J. Cowan

- Established collaboration with the Psychological and Brain Sciences department via research on modeling echolocation processing in bats, resulting in a JHU Kavli Fellowship ($40,000/year) and a conference talk at the Acoustical Society of America Conference 2023 (5000+ attendees).

Human Cerebellar Control Project, Johns Hopkins University, Baltimore, MD — Mar. 2021– Present
Mechanical Engineering PhD Researcher, Advisor: Dr. Noah J. Cowan

- Created collaborations with the Kennedy Krieger Institute via research on modeling motor control in people with ataxia, leading to a poster presentation at the Society for Neuroscience Conference 2022 (25000+ attendees).

Weakly Electric Fish Control Project, Johns Hopkins University, Baltimore, MD — Apr. 2020 – Jan. 2021
Mechanical Engineering PhD Researcher, Advisor: Dr. Noah J. Cowan

- Collaborated with a colleague in Dr. Cowan's lab researching weakly electric knifefish refuge tracking leading to a virtual talk at the Society for Integrative and Comparative Biology (SICB) Conference 2021 (1000+ attendees)

MURI Dome Project, Johns Hopkins University, Baltimore, MD — July 2019 – Jan. 2020
Mechanical Engineering PhD Researcher, Advisor: Dr. Noah J. Cowan

- Developed a collaboration with the JHU Neuroscience department researching rat spatial mapping, leading to Department of Defense MURI funding and a poster at the Dynamic Walking Conference 2023 (400+ attendees).

R.E.U. Ionospheric Studies, University of Florida, Gainesville, FL — May 2018 – Aug. 2018
Undergrad Researcher, Advisor: Dr. Robert Moore

- Led research on ionospheric lighting funded through the National Science Foundation R.E.U. program, leading to a conference poster presentation at the American Geophysical Union Conference 2018 (25000+ attendees).

R.E.U. Autonomous Kayaks, University of Alabama, Tuscaloosa, AL — Aug. 2017 – May 2020
Mechanical Team Lead, Advisor: Dr. Aijun Song

- Led the development of an automated kayak to be used for marine based sensing for applications such as weapons detection, biological sampling, etc., resulting in NSF's R.E.U. program funding for my research in 2019-2020.

Electric Vehicle Emulator, University of Alabama, Tuscaloosa, AL — Aug. 2018 – May 2019
Senior Design Project Team Lead, Advisor: Dr. Mithat Kisacikoglu

- Directed and organized a team of peers in the creation of an Electric Vehicle (EV) Emulator capable of simulating the load behavior of a battery during high-power charging for EV charger and grid integration testing.

Materials/Chemical Sensing, University of Alabama, Tuscaloosa, AL — Jan. 2018 – May 2019
Undergrad Researcher, Advisor: Dr. Adam Hauser

- Measured designed materials exposed to water, DNT, and nitrobenzene to test the reactiveness for use in military safety applications.

PRESENTATIONS/ PUBLICATIONS

M. Wilkinson, N. Cowan, C. Moss "Application of System Identification to Model Bat Echolocation Parameter Control During Prey Tracking", *International Congress of Neuroethology (ICN) Conference*, July 28-29, 2024

M. Wilkinson, X. Wang, N. Cowan, C. Moss "Adaptive Behavior in Sonar Prey Tracking Tasks: Empirical Data and Modeling", *Acoustical Society of America (ASA) Conference*, March 1, 2023

M. Wilkinson, D. Cao, X. Wang, C. Moss, A. Bastian, N. Cowan "System Identification of Mammalian Sensorimotor Control", *Imperial College London Robotics Forum Postgrad Network Seminar,* March 15 2023

D. Cao, **M. Wilkinson**, N. Cowan, A. Bastian "The Cerebellar Contribution to Human Feed-forward and Feedback Visuomotor Control", *Society for Neuroscience (SfN) Conference*, Nov. 15, 2022

Y. Yang, **M. Wilkinson**, N. Cowan, L. Whitcomb, "Modeling Nonlinearities of Refuge Tracking in *Eigenmmania virescens*", *Society for Integrative and Comparative Biology (SICB) Conference,* Virtual Conference, Jan. 3-7th, 2021

S. Lashkari, **M. Wilkinson**, B. Krishnan, J. Knierim, N. Cowan, "Decision-Making and Path Planning for Jumping Rats", *Dynamic Walking Conference,* Virtual Conference, May 14th, 2020

M. Wilkinson, R. Moore, "Time of Arrival Analysis – Narrow versus Broad Beam Heating of Ionosphere", *American Geophysical Union (AGU) Conference*, Washington DC., December 10th – 14th, 2018

M. Wilkinson, R. Moore, "Time of Arrival Analysis – Narrow versus Broad Beam Heating of Ionosphere", *Radio Frequency Ionospheric Interactions (RFII) Conference*, Washington D.C., July 29th – August 2nd, 2018

LEADERSHIP AND ADVOCACY

- **Cross-Institutional Student Advisory Council,** Student Member, JHU — Sept. 2023 – Present
  Advise JHU leadership on academic and co-curricular matters of broad interest to the university.
- **Student Advisory Council on Public Safety,** Student Member, JHU — Sept. 2023 – Present
  Provide guidance to JHU leadership on Public Safety implementation and future operations.
- **#100 Alumni Voices Podcast**, Podcast Host, JHU — Aug. 2022 – April 2023

Interviewed twenty-five doctoral alumni, highlighting their personal journeys to inspire current graduate students.

- **Doctor of Philosophy Board,** Student Member, JHU Aug. 2022 – May 2023
  Advised the Provost about University-wide issues pertaining to the Ph.D. and approve and review Ph.D. programs.
- **Police Accountability Board,** Student Member, JHU Aug. 2022 – April 2023
  Helped directly shape the development and operation of the future Johns Hopkins Police Department.
- **Student Advisory Committee on Public Safety,** Member, JHU June 2023 – Present
  Provide student perspective and guidance to JHU Public Safety for safety implementation and future operations.
- **Middle East Educational Programming Advisory Committee,** Student Member, JHU Oct. 2023 – Present
  Collaborate with students, faculty, and stakeholders across the university to educate and engage the Hopkins community around the conflict in the Middle East.
- **#100 Faculty Voices Podcast**, Podcast Host, JHU Aug. 2023 – May 2024
  Interviewed eight faculty, highlighting their academic journeys to inform and guide current graduate students.
- **Homewood Graduate Board,** Student Member, JHU Aug. 2022 – Present
  Advocated for students on the administration of approved policies and procedures for the award of the Ph.D. degree.
- **Mechanical Engineering Graduate Association (MEGA),** Union Chair, JHU Aug. 2023 – May 2024
  Created programming and engagement opportunities for the newly formed workers union within the Mechanical Engineering department.
- **Teachers and Researchers Union (TRU),** Mechanical Engineering Organizer, JHU Jan. 2022 – Present
  Engage department stakeholders to guide the creation of union policies and contracts with the university leadership.
- **LCSR Graduate Association (LCSRGA),** Treasurer, JHU Sept. 2022 – May 2024
  Managed expenditures collaboratively with department administration for the robotics graduate student organization.
- **Teachers and Researchers Union (TRU),** Communications Team Co-Chair, JHU Jan. 2021 – Jan. 2022
  Directed all communications on behalf of the newly forming workers union to our graduate student workers.
- **MentorUPP Program**, Outreach Committee Chair and Mentor, University of Alabama Aug. 2017 – May 2020
  Led the implementation of the first engineering PhD research interest seminar in the College of Engineering and led mentorship and outreach for freshman and sophomore undergraduates within the College of Engineering.

OTHER INVITED PANELS AND OUTREACH

- **Interviews of JHU Director of Doctoral and Post Doctoral Life Design**, Interviewer Feb. 2024
  Interviewed multiple candidates on behalf of the Office of Life Design to ensure candidates properly addressed student professional development needs.
- **JHU Discover Series**, Engineering Graduate Student Panelist, JHU Nov. 2023
  Served on a panel with attendance of over 200 prospective students addressing life as a WSE grad student.
- **Interviews of JHU WSE Director of Student Engagement**, Student Interviewer Sept. 2023
  Interviewed multiple candidates on behalf of the Whiting School of Engineering to ensure candidates properly addressed student academic and non-academic development needs.
- **Retreat on WSE Growth via Data Science Initiative,** Student Panelist Aug. 2023
  Provided guidance to the Deans of Engineering on the development of data science indicatives within the division to ensure a student-centered growth plan.
- **Interviews of JHU Health Educator in Health Promotion & Well-Being**, Student Interviewer June 2023
  Interviewed multiple candidates on behalf of the Provosts' Office to ensure candidates properly addressed students' health concerns and promoted wellness in a manner that was enticing and impactful.
- **WSE and KSAS Doctoral Hooding Ceremonies**, Speaker May 2023
  Addressed all Engineering and Arts and Sciences Ph. D. graduates at their hooding ceremony.
- **Interviews of JHU Health Educator for Alcohol and Drug Initiatives**, Interviewer Mar. 2023
  Interviewed multiple candidates on behalf of the Provosts' Office to ensure candidates properly educated students about matters related to drugs and alcohol in a manner that was enticing and impactful.
- **JHU Annual Lighting of the Quads,** Student Speaker Dec. 2022
  Addressed over 400 graduates and undergraduates at Hopkins with congratulations on the finished semester.
- **Interviews of JHU WSE Assistant Dean for Student Affairs**, Interviewer July 2022
  Interviewed multiple candidates on behalf of the Whiting School of Engineering to ensure candidates properly addressed student extracurricular development needs.

HONORS AND AWARDS

Johns Hopkins PHutures Fresh Voice of the Year Award Apr. 2023
Awarded for my work on the JHU PHutures #100 Alumni Voices podcast where I interviewed 20 JHU alumni. This podcast was made widely available via Spotify and other podcast platforms.

Distinguished Graduate Student Fellowship, JHU Kavli NDI May 2021
Competitive graduate fellowship ($40,000 per year for 2 years) for mid- and advanced stage graduate student trainees at Johns Hopkins University to pursue cross-disciplinary research in neuroscience, engineering, and data science.

Honorable Mention, National Science Foundation GRFP Apr. 2020
Competitive nationwide graduate research fellowship program (GRFP); only 2076 awards and 1787 honorable mentions in 2020.

JHU Mechanical Engineering Department Fellowship July 2019
Full stipend and tuition fellowship for one year, granted to select PhD applicants in Mechanical Engineering.

University of Alabama Capstone Engineering Society ECE Outstanding Senior Award Apr. 2019
Prestigious award given to one outstanding senior by University of Alabama ECE departmental staff each semester.

ECE Undergrad Research Fellows Apr. 2018
Granted for two semesters of research under Dr. Aijun Song in the University of Alabama ECE department.

Presidential Scholarship Fall 2016
Full tuition for the rest of my tenure at the University of Alabama, awarded my sophomore year for test scores, GPA, and school involvement.

President's List Spring 2016
Awarded for maintaining a 4.0 GPA or above each semester, every semester from Spring of 2016 to Fall of 2019.

ADVISING AND MENTORING

Undergraduate Students:

- Isabella Diaz, B.S. Behavioral Biology. Advised**:** January 2023 – Present
- Luzhou Zhang, B.S. Neuroscience. Advised**:** January 2023 – December 2023
- XingYao Wang, B.S. Molecular and Cellular Biology, Advised**:** July 2022 – Present
- Myles Gosha, NSF REU student in Biology. Advised: June 2023 – August 2023
- Laura Panlilio NSF REU student in Biology. Advised: June 2023 – August 2023
- Deshaun Mosley, NSF REU student in Electrical and Computer Engineering. Advised**:** June 2021 – Aug. 2021

TEACHING EXPERIENCE

Invited Presenter: JHU Project Bridge Science Gong Show, Baltimore MD Apr. 2023
Mechanical Engineering PhD Researcher, Advisor: Dr. Noah Cowan

- Presented my research on bat echolocation to a non-technical audience (30 attendees) via a JHU Project Bridge event.

Teaching Assistant: Math Methods, Johns Hopkins University, Baltimore, MD Fall 2020/2021
Mechanical Engineering PhD Teaching Assistant, Advisor: Dr. Dennice Gayme

- Served as one of two teaching assistants (TA) for the graduate level course 'Mathematical Methods for Engineering', a fast-paced, intensive course taken by all Mechanical Engineering graduate students.
- Taught two-three full lectures per semester on a course relevant topic.

Invited Lecture: HEART Course, Johns Hopkins University, Baltimore, MD Oct. 2022
Mechanical Engineering PhD Researcher, Professor: Dr. Gorkem Secer

- Gave a lecture to multidisciplinary cohort of freshman undergraduates students at Johns Hopkins on my research in bat use of airflow sensing for flight control.

Invited Lecture: Electric Networks, University of Alabama, Tuscaloosa, AL Apr. 2018
Electrical and Computer Engineering Undergraduate, Advisor: Dr. Robert Scharstein

- Presented a lecture on electromagnetic reciprocity in an Electric Networks course at the University of Alabama as part of an honors project through the University of Alabama Honors College.

Invited Lecture: Discrete Mathematics, University of Alabama, Tuscaloosa, AL Nov. 2017
Electrical and Computer Engineering Undergraduate, Advisor: Dr. Robert Moore

- Presented a lecture on mathematical infinities a Discrete Mathematics course at the University of Alabama as part of an honors project through the University of Alabama Honors College.

TECHNICAL SKILLS

Languages: Matlab, C/C++, R, Python, Visual Basic, Assembly, Fanuc Robot Coding, Quartus
Softwares: Matlab, ROS, Simulink, SolidWorks, RStudio, AutoCad, PSpice, LTSpice, Halcon Vision Software

COMMUNITY SERVICE

- **Charles Village Civic Association** Charles Village in Baltimore, Maryland July 2020 – May 2024
- **Donations via the Free and Accepted Masons,** Tuscaloosa, Alabama Sept. 2017 - Present

REFERENCES

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