ZACHARY CHARLICK

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EDUCATION

Duke University *08/2021 - Present*

Bachelor of Science in Electrical and Computer Engineering, Bachelor of Science in Computer Science - GPA 3.987

Relevant coursework: Robot Design, Robotics & Automation, Independent Robotics Exploration, Machine Learning & Deep Neural Networks, Advanced Computer Architecture, Operating Systems, Signals & Systems, Semiconductors, Fields & Waves

PUBLICATION (PRE-PRINT)

Currently under review at IEEE ICRA 2025. ** These authors contributed equally to this work*

Ringel, R.P.*, Charlick, Z.S.*, Liu, J.*, Xia, B. and Chen, B., 2024. Text2Robot: Evolutionary Robot Design from Text Descriptions. arXiv preprint arXiv:2406.19963.

EXPERIENCE

Pratt Research Fellow *08/2023 - Present*

Dr. Boyuan Chen (Mentor), Duke University General Robotics Lab

- Conducts research through the Pratt Fellowship on emergent AI tools, including generative 3D mesh models, to co-optimize robot morphology and locomotion policies, culminating in a first-author paper (preprint pending submission). Additionally explored hive robotics, focusing on bio-inspired swarm behavior. The fellowship program includes three semesters of independent study and a summer research intensive.

Summer Research Intern *05/2023 - 08/2023*

Dr. Leslie Collins (Mentor), Research Experiences for Undergraduates, Duke University Applied Machine Learning Lab

- Harnessed machine learning to cluster phonemes and generated real-time "phoneme cluster" masks, leading to enhancements in speech clarity for cochlear implant users.

Teaching Assistant *08/2022 - Present*

Duke University - Electrical & Computer Engineering Department, Mechanical Engineering Department

- Facilitates weekly labs and office hours with a focus on robotics, programming, and circuit design. Courses TA'd include ECE110 (Introduction to Electrical Engineering), ECE250 (Computer Architecture), and ECE590 (Robot Studio). Recognized with two year-long achievement awards for excellence in teaching assistance.

Software Engineering Intern *05/2022 - 08/2022*

Patriot Software, Payroll Software in Canton, OH

- Designed a PostgreSQL database and developed C# API endpoints to optimize a tax calculation workflow, ensuring seamless user experience across different states. Executed comprehensive unit and integration testing to ensure and maintain quality standards.

Robot Studio Student *01/2023 - 05/2023*

Dr. Boyuan Chen (Professor), Duke University ECE 590

- Pioneered the hardware and software design of a bio-inspired walking robot. Employed SolidWorks CAD, 3D printing, and Python programming to materialize the design, resulting in a dynamically moving robot with a sinusoidal gait and captivating dance routine.

LEADERSHIP

President, The Pitchforks of Duke University *08/2021 - Present*

Duke University's oldest, award-winning all-male a cappella group.

- Lead and supervise The Pitchforks' subdivisions, including international tours and performances for government officials and professional sports teams, delegating tasks, and maintaining group accountability, morale, and effectiveness.

Vice President, Line Monitors of Duke Men's Basketball *08/2022 - Present*

- Manages ticketing and cultivates student engagement for Duke Men's Basketball. Serves as the student liaison with Duke Athletics for game time logistics and emergencies.

HONORS AND ACHIEVEMENTS

Pratt Research Fellowship *(2023-2025)*, Innovation Award - ALIFE Virtual Creatures Competition at the University of Copenhagen *(2024)*, 1st Place Winner - ECE Independent Study Poster Session, Duke University *(2024)*, Tau Beta Pi Honor Society (2023), Outstanding Undergraduate Teaching Assistant Award, Duke University *(2023 & 2024)*, Dean's List with Distinction *(2021-2024)*, Dean's List *(2023)*

TECHNICAL SKILLS

ROS 2, Gazebo, Isaac Gym, MoveIt, Python, C++, Java, HTML (4.0), Reinforcement Learning, Evolutionary Algorithms, PyTorch, Matplotlib, Arduino, Raspberry Pi, Fusion 360, SolidWorks, MATLAB, Adobe Premiere, Adobe Photoshop