Narek Harutyunyan

narek_harutyunyan@brown.edu | +1 (857) 404-2113 | LinkedIn | Google Scholar

Education

Brown University **Expected May 2026**
Bachelor of Science in Computer Engineering | GPA: 4.0 Providence, RI
Relevant Courses: *Deep Learning* | *Computer Systems* | *Artificial Intelligence* | *Data Structures and Algorithms* | *Coordinated Mobile Robotics (Graduate Level)* | *Linear System Analysis* | *Circuits and Signals* | *Multivariable Calculus* | *Linear Algebra*

Skills

Technical: Python, C, MATLAB, ROS, Gazebo, Isaac Sim, TensorFlow, PyTorch, Linux, Git
Robotics Platforms: Crazyflie drones, Boston Dynamics Spot, iRobot Create3, Unitree quadrupeds
Languages: Armenian (native), Russian (fluent), French (beginner)

Research Experience

Summer Undergraduate Research Fellowships (SURF) **May 2025 – Present**
California Institute of Technology | *Dr. Soon-Jo Chung* | *ARCL Lab* *Pasadena, CA, USA*
- Developing RL policies with contraction theory layers for stability guarantees in quadruped stabilization/locomotion on a moving platform. Implemented in Isaac Sim and deployed on Unitree Go1.

Robotics Institute Summer Scholar Program (RISS) **May 2024 – July 2025**
Carnegie Mellon University | *Dr. Sebastian Scherer* | *AirLab* *Pittsburgh, PA, USA*
- Designed a generative RL exploration framework guided by human study insights and predicted environment context.
- Achieved up to 18.8% improvement over state-of-the-art baselines on real-world indoor maps.

Undergraduate Teaching and Research Awards (UTRA) **May 2023 – May 2024**
Brown University | *Dr. Nora Ayanian* | *ACT Lab* *Providence, RI, USA*
- Analyzed quadcopter downwash interactions using Particle Image Velocimetry and MATLAB to improve close-proximity flight stability.
- Engineered an aerial painting quadrotor with custom 3D-printed components and developed Python wrappers for user-friendly control via the Crazyswarm library.

Teaching Experience

Creating Art with Teams of Robots | *Head Teaching Assistant* **January – December 2024**
- Mentored over 27 students weekly in laboratory sessions and final project development, delivering hands-on guidance while fostering collaborative learning and ensuring successful project execution.
- Developed and evaluated final project concepts using Crazyflie quadcopters and ground robots, incorporating the innovative painter drone designed in previous ACT Lab research.

Introduction to Engineering | *Teaching Assistant* **September – December 2023**
- Coached over 40 students in engineering projects, including chair construction, door locking mechanisms, and electric guitar building.
- Led hands-on workshops for 100+ students on MATLAB, Fusion 360, rapid prototyping (3D printing, laser cutting), machine shop skills, engineering statics, and Arduino-based electronics.

Publications and Posters

[1] "MapExRL: Human-Inspired Indoor Exploration with Predicted Environment Context and Reinforcement Learning" | **Narek Harutyunyan**, Brady Moon, Seungchan Kim, Cherie Ho, Adam Hung, Sebastian Scherer | *Accepted for ICRA 2025 Workshop (under review for ICAR 2025)* | Paper | Website

[2] "Downwash Dynamics: Impact of Quadrotor Separation on Forces, Moments, and Velocities for Dense Formation Flight" | Anoop Kiran, **Narek Harutyunyan**, Nora Ayanian, Kenneth Breuer | *AIAA AVIATION FORUM AND ASCEND 2024* | Paper