Daniel F. McGann

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EDUCATION

2020 – pres. **Carnegie Mellon University** *Pittsburgh, PA*
Ph.D. in Robotics advised by Dr. Michael Kaess
GPA: 4.12/4

2016 – 2020 **Northeastern University** *Boston, MA*
B.S. in Computer Science with minor in Computer Engineering
GPA: 4.0/4

RESEARCH INTERESTS

Simultaneous Localization and Mapping (SLAM), State Estimation, Robust Inference, Robust Optimization, Multi-Agent Systems, Resilient Autonomy, Space Robotics, Underwater Robotics

RESEARCH EXPERIENCE

2020 – pres. **Carnegie Mellon University**, *Robot Perception Lab*
Graduate Research Assistant advised by Dr. Michael Kaess
Researching methods fully distributed SLAM under sparse communication constraints. Past research topics include GPS denied localization as well as robust inference for SLAM in ambiguous environments.

2017 – 2019 **Northeastern University**, *Robotics and Intelligent Vehicles Lab*
Undergraduate Researcher advised by Dr. Taskin Padir
Studied systems design for robotic missions to Mars. Led interdisciplinary team of students who designed, constructed, and tested a robotic system tasked with collecting water from subsurface Martian ice deposits.

PUBLICATIONS

2023 [C3] **Daniel McGann**, John G. Rogers III, Michael Kaess, "Robust Incremental Smoothing and Mapping (riSAM)," *International conference in Robotics and Automation (ICRA)*, 2023 🔗

2022 [C2] Yehonathan Litman*, **Daniel McGann***, Eric Dexhimer, Michael Kaess, "Global Visual-Inertial Ground Vehicle State Estimation via Image Registration," *International conference in Robotics and Automation (ICRA)*, 2022 🔗

2019 [C1] Elisa Danthinne*, Emilia Kelly*, **Daniel McGann***, Patrick Moore*, Andrew Panasyuk*, Benjamin Zinser*, Taskin Padir, "Design and Experimental Validation of a Martian Water Extraction System," *IEEE Aerospace Conference*, 2019 🔗

* Equal Contribution

INDUSTRY EXPERIENCE

2022 **NASA Goddard Space Flight Center**, *Engineering and Technology Directorate*
Research Intern
Explored surface optical navigation techniques for Lunar localization of rovers and crewed extra vehicular activities (EVA's). Manuscript for publication in progress.

2020	**NASA Jet Propulsion Laboratory**, *Robot Interfaces and Visualization Group*
	Software Engineering Intern
	Expanded the scope and precision of Surface Simulation (Ssim) a software package that validates daily rover command sequences for the Mars 2020 Mission.
2019 – 2020	**Square Robot**, *Engineering Team*
	Robotics Software Engineering Co-op
	Developed software for an autonomous underwater vehicle. Key contributions include designing an autonomous exploration system for mapping new environments, implementing new software features, improving existing code, and operating the vehicle in field trials.
2018	**MIT Lincoln Laboratory**, *Control and Autonomous Systems Group*
	Software Engineering Co-op
	Designed a software framework using NASA's Core Flight System to enable the operation of constellations of cube satellites. Implemented and tested the framework in C for use with satellite simulators.

FELLOWSHIPS AND AWARDS

2022	**Graduate Research Fellowship Award**
	National Science Foundation
2020	President's Award (Awarded to top ten students of graduating class)
	Northeastern University
2019	Robert J. Shillman Award for Engineering Excellence
	Northeastern University Department of Electrical and Computer Engineering
2018	Michael B. Silevitch Exemplary Engineering Leadership Award
	Northeastern University Department of Electrical and Computer Engineering

TEACHING

2022, 2023	Teaching Assistant, Robot Localization and Mapping, *Carnegie Mellon University*
	Assisted teaching lectures, held office hours, and graded student assignments and projects.
2017 – 2018	Tutor, Fundamentals of Computer Science, *Northeastern University*
	Assisted with the teaching of labs, held office hours, and graded student assignments.
2015 – 2016	Tutor, *Westcott Community Center*
	Helped students with homework during an after-school program serving students from City of Syracuse public middle schools.

PRESENTATIONS AND TALKS

2022	*Robust Incremental Smoothing and Mapping*
	Carnegie Mellon University Robotics Institute - Qualifier Talk
2019	*Northeastern University Prospecting Underground Distilling Liquid Extractor (NU PUDLE)*
	NASA RASC-AL Mars Ice Challenge Poster Presentation
2018	*Northeastern University Planetary Articulating Water Extraction System (NU PAWES)*
	NASA RASC-AL Mars Ice Challenge Poster Presentation

OTHER SKILLS AND ACTIVITIES

<u>Professional Services</u>

2022	IEEE Robotics and Automation Letters (RA-L) Reviewer

<u>Mentorship</u>

2022 – pres.	Robotics Institute Robo-Buddies Mentor Pairs incoming students with current students to provide mentorship for new students as they join the robotics community at CMU.

<u>Leadership</u>

2022 – pres.	SCUBA Diving Chair for Carnegie Mellon University's Explorers Club
2018 – 2020	Founder and President of Northeastern University's Students for the Exploration and Development of Space (SEDS).
2019 – 2020	President of Northeastern University Swim Club.

<u>Outreach</u>

2019	Boston Museum of Science, *Moon Landing 50th: One Giant Anniversary* Public education event to discuss current research for robotic exploration of space with the Boston Community.
2018 – 2019	HubWeek, *Robot Block Party* Public engagement event on robotics and robotics research.
<u>Misc:</u>	NAUI SCUBA diver, backpacker, skier, climber, and film photographer.