Daniel F. McGann

Robotics Institute, Carnegie Mellon University

5000 Forbes Avenue

Pittsburgh, PA 15213

danmcgann@cmu.edu

danmcgann.com

EDUCATION

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

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

RESEARCH INTERESTS

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

RESEARCH EXPERIENCE

2020 – pres. **Carnegie Mellon University**, *Robot Perception Lab*
Graduate Research Assistant advised by Dr. Michael Kaess
Researching methods for 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.

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).

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

PUBLICATIONS

2022   [C3]   **Daniel McGann**, John Rodgers, Michael Kaess "Robust Incremental Smoothing and Mapping" **In review for the** *International conference in Robotics and Automation (ICRA)*, 2022

2021   [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)*, 2021

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

<div align="right">* Equal Contribution</div>

TEACHING

2022   **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

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>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.