

Emily Newman

contact info redacted

Education

University of Colorado Boulder

August 2026 - present

Ph.D. Robotics

Advised by Prof. Morteza Lahijanian and Prof. Nisar Ahmed

Carnegie Mellon University

August 2015 - May 2019

B.S. Computer Science and Robotics

GPA 3.59, University Honors

Relevant Experience

Software Engineering Institute at Carnegie Mellon University

Autonomy Engineer

September 2024 - May 2026

- Led a team to develop analytical test and evaluation methods for autonomous naval vehicles.
- Proposed a project for autonomous satellite rendezvous proximity operation simulation and metric development. Progressed through two rounds of board review.
- Implemented a reference architecture to govern machine learning model output and performed experiments on a Turtlebot, showcasing the architecture's ability to restrict action based on configured filters.
- Created a rubric for evaluating MLOps platforms in support of acquisitions.
- Developed a ROS node and integrated with Isaac Sim to demonstrate drone planning in simulation.
- Performed analytical study of autonomous systems for the Navy. Analyzed test report data provided from stakeholders. Wrote and delivered technical reports to the customer.

NASA Jet Propulsion Laboratory

Software Systems Engineer

August 2019 - August 2024

- Rover Planner and leader of the RP Scripts Working Group for the Mars Science Laboratory (Curiosity) Surface Operations team.
- Ground Data Systems Lead for the Cooperative Autonomous Distributed Robotic Exploration (CADRE) mission, intended to demonstrate collaborative autonomy between three lunar rovers.
- Led a research task to develop a multi-mission telemetry visualization digital twin framework.
- Developed and deployed the Python-based telemetry processing component that provided data for visualizing the Mars 2020 landing. Served as operational lead for the visualization on landing day, which was viewed by millions of people via NASA TV.
- Led the implementation of a web-based 3D visualization interface for a system used to analyze cybersecurity vulnerabilities in computer networks. Using React, Typescript, BabylonJS.
- Mentor to interns; summer 2020, summer 2021, summer 2022, summer 2023

Amazon Robotics

Software Engineering Intern

Summer 2018

- Designed and implemented a physics simulation system dedicated to the simulation of box stacking. Used this simulation to independently research the effects of box characteristics on the dynamic and static stability of a stack. The simulation was used to assist in the design of future technologies for Amazon warehouses.

Google

Software Engineering Intern

Summer 2017

- Developed and deployed a full stack web app enabling Google engineers and users to review Google feeds for quality improvement. Work involved creating backend code that interfaced with relational databases, & a front-end server.

NASA Jet Propulsion Laboratory

Software Engineering Intern

Summer 2016

- Contributed to a software package simulating autonomous, collaborative swarms of naval vehicles. Responsible for implementing user-interactive features for visualization and scripts for simulating the overall swarm-control functions.

Publications

H. Dor, **E. Newman** and J. Huang, "Proximeter: An Automated Rover Arm Placement Safety Evaluation Tool", 2026 IEEE Aerospace Conference, Big Sky, MT, USA, 2026, pp. 1-8, doi: [10.1109/AERO66936.2026.11519963](https://doi.org/10.1109/AERO66936.2026.11519963).

A. Schellenberg*, **E. Newman***, C. Loughin and T. Brooks, "Conduct Governance Assurance - An Architecture Implementation for High-Risk Autonomous Systems," 2025 IEEE Engineering Reliable Autonomous Systems (ERAS), Worcester, MA, USA, 2025, pp. 1-8, doi: [10.1109/ERAS63351.2025.11135698](https://doi.org/10.1109/ERAS63351.2025.11135698).

- *Presented at IEEE ERAS Conference 2025*

E. Newman et al., "Maintaining Mars Rover Operations Software on a Budget," 2024 IEEE 10th International Conference on Space Mission Challenges for Information Technology (SMC-IT), Mountain View, CA, USA, 2024, pp. 67-77, doi: [10.1109/SMC-IT61443.2024.00015](https://doi.org/10.1109/SMC-IT61443.2024.00015).

E. Newman, J. Sellin, J. Huang, C. Huang, M. Pomerantz and D. Celik, "Web-based 3D Visualization for Flight Mission Network Cybersecurity Analysis," 2023 IEEE 9th International Conference on Space Mission Challenges for Information Technology (SMC-IT), Pasadena, CA, USA, 2023, pp. 35-44, doi: [10.1109/SMC-IT56444.2023.00013](https://doi.org/10.1109/SMC-IT56444.2023.00013).

E. Newman, J. Huang, M. Pomerantz and J. Sellin, "Multi-Project Telemetry-based Digital Twin Environment for Space-Mission Development, Analysis, and Operations," 2023 IEEE Aerospace Conference, Big Sky, MT, USA, 2023, pp. 1-12, doi: [10.1109/AERO55745.2023.10116025](https://doi.org/10.1109/AERO55745.2023.10116025).

- *Presented at IEEE Aerospace 2023*

M. I. Pomerantz, M. A. Hans, M. W. Sandoval, **E. P. Newman**, S. D. Wenzel and C. Huang, "High Performance, Web-Based, Real-Time Telemetry Visualization for Deep Space Mission Support and Operations," 2021 IEEE 8th International Conference on Space Mission Challenges for Information Technology (SMC-IT), Pasadena, CA, USA, 2021, pp. 53-60, doi: [10.1109/SMC-IT51442.2021.00014](https://doi.org/10.1109/SMC-IT51442.2021.00014).

- *Presented at SMC-IT 2021*
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Presentations

E. Newman and V. Turri, “An Introduction to the MLOps Tool Evaluation Rubric”, [Software Engineering Institute YouTube channel](#), April 2025.

Awards

2024 Tartan On The Rise - Celebrates CMU graduates of the last decade for their personal and professional accomplishments and record of innovation, leadership, impact and career achievements.

2024 JPL Robotics Nova Award - Presented by JPL Robotics (Section 347) for developing and supporting software to support community engagement across the Autonomous Systems division.

2023 NASA Space Act Award - Presented by the NASA Inventions and Contributions Board for the development of a significant scientific or technical contribution, on the Multi-Mission Digital Twin Telemetry Processing for Visualization project.

2023 Team Award Mars 2020 - Presented to the Ground Data Systems TargetWizard implementation team for innovative design and implementation of the TargetWizard capability.

2023 Team Award MSL - Presented to the R13 Flight Software Release Team for achievement in delivery, testing, and installation of R13 Flight Software to the Curiosity rover’s primary computer.

2021 Team Award Mars 2020 - Presented to the Entry, Descent, and Landing team for successfully landing the Perseverance rover on Mars.

2019 Senior Leadership Recognition - Recognizes graduating seniors who made significant contributions to the community during their time at Carnegie Mellon.

2017 Boeing Leadership Recognition Scholarship - Acknowledges and rewards academically successful students who have also demonstrated effective campus citizenship and teamwork abilities/characteristics through personal initiative and extracurricular activities.

Skills

Proficient: Python, C++, ROS, Matlab, JavaScript, TypeScript, React, Bash, Linux systems, Unix systems, full-stack web development, 3D visualization, Isaac Sim, Turtlebot platform

Familiar: Clearpath Jackal platform, Solidworks, AWS, C, Blender, lighting design, theatrical power management, 3D printing, laser cutting

Certifications

TS/SCI Eligible

as of September 2025

Wilderness First Aid - NOLS

as of October 2025

Level 1 Avalanche Training - AIARE

as of May 2023

Teaching Experience

University of Colorado Boulder

Teaching Assistant

Computational Methods (MCEN 3030)

August 2026 - present

Carnegie Mellon University

Teaching Assistant

Principles of Imperative Computation (15-122)

August 2016 - May 2017

Leadership Experience

CMU Explorers Club

Carnegie Mellon University

Led a community organization to facilitate providing students access to the outdoors.

- (2025-26) Club President

Early Career Community

NASA Jet Propulsion Laboratory

Organized events to support networking and connections between early career hires at JPL. Interfaced with the Office of Diversity and Inclusion to represent the needs of early career hires.

- (2021-2022) Ambassador (elected)
- (2022-2024) Co-President (elected)

AB Tech

Carnegie Mellon University

Managed a student-run event production company of over 40 members which served at least 200 events a year.

- (2016-18) Executive Board
- (2018-19) Head of Tech (elected)