

Andrew D. Mullen

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SUMMARY

- Engineer with 10+ years of experience advancing imaging, sensing, and robotics on NASA and NSF projects.
- Developed systems for exploration and perception in extreme polar, marine, and planetary analog environments.
- Led multidisciplinary teams integrating embedded optical, mechanical, electrical, and computational elements.
- Managed full project lifecycles, from concept and fabrication to deployment and automated image analysis.

EDUCATION

2018	Ph.D.	Electrical Engineering	University of California San Diego
2015	M.S.	Oceanography	University of California San Diego, Scripps Inst. of Oceanography
2011	B.S.	Civil Engineering	University of Notre Dame, <i>Magna Cum Laude</i>

PROFESSIONAL EXPERIENCE

2022-2025 Senior Research Engineer / Visiting Research Scientist, Cornell University

- Led design of NASA-funded sensor package for deep-sea robotic exploration. Developed electromechanical systems and real-time data visualization pipeline. Coordinated technical teams over 10 successful ROV deployments.
- Lead field engineer on Arctic studies, testing geophysical sensors on mobile platforms for planetary analog research.

2019-2021 Postdoctoral Fellow, NASA Postdoctoral Program & Georgia Institute of Technology

- Engineer on NASA-funded underwater robot. Collaborated with interdisciplinary team to develop and deploy vehicle which integrates multiple sensors (optical, sonar, imu) with battery power and actuation. Conducted three Antarctic campaigns (38+ weeks total, -25°C, up to 1300 km from base), contributing to 50+ underwater robotic missions.
- Led collaboration with NASA JPL developing an autonomous submersible microscop. Designed embedded optics, electromechanics, and computer vision image processing. Deployed in Antarctica as an analog for ocean worlds.
- Co-led 21-member team to design a conceptual multi-instrument payload design for future NASA Europa missions.

2012-2018 National Science Foundation Graduate Research Fellow, UC San Diego

- Developed underwater imaging systems with embedded optical, computing, and electromechanical elements.
- Directed 90+ deployments utilizing robotics and scuba; led technical teams and resolved real-time challenges.
- Built computer vision pipeline for particle tracking velocimetry and collaborated on machine learning classification.

MANAGEMENT & OPERATIONS

- Management: Defined requirements, coordinated stakeholders, created timelines, and led rapid development cycles.
- Engineering Integration: Directed subsystem design, manufacturing, and validation from units to integrated systems.
- Field Operations: Managed logistics and planning for deployments using underwater robotics, marine vessels, and diving. Completed 15+ campaigns across Antarctica, Arctic, Red Sea, Caribbean and Pacific regions.

TECHNICAL SKILLS

- Computing: computer vision, image processing, data analysis, signal processing [Python, OpenCV, Matlab]
- Optics: imaging system design, computational imaging, microscopy, optomechanics, optoelectronics [Zemax]
- Mechanics: mechanical structures design, pressure housing, robotic payloads [SolidWorks, 3D Printing]
- Electronics: embedded cameras, sensors, computers, microcontrollers, PCB design [Eagle, Python, Arduino]

PUBLICATION & AWARD HIGHLIGHTS

- Peer-Reviewed Journals: *Nature*, *Nature Communications*, *Science Advances*, *Nature Geoscience*, *Planetary Science*
- Media Coverage: *New York Times*, *BBC*, *Washington Post*, *Wall Street Journal*, *PBS*, *Scientific American*
- Awards: Antarctic Service Medal, NASA Postdoctoral Fellowship, NSF Graduate Research Fellowship (2012), Microscopy Today Innovation Award (2017), Link Ocean PhD Fellowship (2014), UC Regents Fellowship (2011)