

Andrew D. Mullen

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SUMMARY

- Engineer with over 10 years of experience on NASA and NSF projects building tools for Earth and space science.
- Developed imaging and sensing systems for robotic exploration of extreme environments.
- Managed full project lifecycles, from concept and fabrication to deployment in polar and planetary analog settings.
- Led cross-discipline teams integrating mechanical, electrical, and computing systems to achieve mission success.

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

2022-2024 Senior Research Engineer / Visiting Research Scientist, Cornell University

- Directed development and operation of a custom multi-sensor package for robotic exploration of deep-sea brines.
- Lead field engineer on geophysical studies in the Arctic, testing instrumentation on planetary analog ground ice.

2018-2022 Postdoctoral Fellow, NASA Postdoctoral Program & Georgia Institute of Technology

- Engineer on 'Icefin' underwater robot, including three Antarctic field seasons. Collaborated to prepare, troubleshoot, and operate vehicle – enabling surveys of unexplored sub-glacial regions and advancing sea level rise research.
- Led the design and fabrication of a submersible Digital Holographic Microscope in collaboration with NASA JPL. Demonstrated system capabilities observing microbial life in Antarctica, an analog for "ocean worlds" life detection.
- Co-led 21-member team which designed a conceptual multi-instrument payload for NASA mission to Europa.

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

- Designed custom underwater imaging systems integrating mechanical, electrical, and computing elements.
- Led marine field operations collaborating with international partners and solving technical challenges in real-time.
- Developed computer vision techniques to analyze microscale imaging and image velocimetry data.

AWARDS & HONORS

2021	Antarctic Service Medal	2014	Link Ocean Engineering Ph.D. Fellowship
2018	NASA Postdoctoral Program Fellowship	2012	NSF Graduate Research Fellowship Program
2017	Microscopy Today Innovation Award	2011	University of California Regents Fellowship

MANAGEMENT & OPERATIONS

- Project Management: Coordinated stakeholders, defined requirements, planned work scopes, created timelines and Gantt charts, reviewed engineering drawings, managed engineering changes, reported progress and results.
- Engineering integration: Directed subsystem design, manufacturing, and testing – from units to integrated system.
- Field Operations: Managed logistics, planning, and coordination for deployments using underwater robotics, research vessels, and diving. Completed 15 + campaigns across Antarctica, Arctic, Red Sea, Caribbean and Pacific regions.

TECHNICAL SKILLS

- Mechanical: design of mechanical structures, pressure housing, and robotic system payloads [SolidWorks]
- Electrical: implementation of embedded cameras, computers, and micro-controllers; PCB design [Eagle, Python]
- Computing: image processing, computer vision, data analysis [Python, Matlab]
- Optical: imaging system design, computational imaging, microscopy [Zemax]

PUBLICATION HIGHLIGHTS

- Peer-Reviewed Journals: *Nature*, *Nature Geoscience*, *Nature Communications*, *Science Advances*, *Planetary Science*
- Conference Papers: *Optical Society of America*, *IEEE Oceanic*, *American Institute of Aero and Astronautics*
- Media Coverage: *New York Times*, *BBC*, *Washington Post*, *Wall Street Journal*, *PBS*, *Scientific American*