

# Andrew D. Mullen

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## SUMMARY

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- Engineer with over 10 years of experience on NASA and NSF projects building tools for ocean and space science.
- Focus on developing imaging and sensing systems for robotic for exploration of harsh environments.
- Experience managing full project lifecycles from instrument design and fabrication through field deployment.
- Member and leader of cross-functional teams conducting work in polar, marine and analog planetary settings.

## EDUCATION

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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

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

- Managed development and deployment of custom multi-sensor package for ROV exploration of deep-sea brines.
- Lead field engineer for geophysical studies of planetary analog ground ice formations in the Arctic.

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

- Led collaboration between Georgia Tech & NASA JPL developing a submersible Digital Holographic Microscope. Demonstrated system capabilities by observing microbial life in Antarctica, an analog for “ocean worlds”.
- Co-led design of conceptual instrument payload for NASA mission to Europa. Coordinated 21-member team, surveyed state-of-the-art technologies, presented life detection payload integrating multiple sensors.
- Engineer on three Antarctic campaigns deploying underwater robot ‘Icefin’. Team surveyed previously inaccessible sub-glacial environments providing critical measurements for modeling sea level rise.

2012-2018 Graduate Research Fellow, UC San Diego

- Jointly developed and deployed first system to image seafloor corals in the ocean at micron-scale.
- Led development of imaging system to measure micro-scale fluid dynamics in the ocean using particle tracking.

## AWARDS & HONORS

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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

## PUBLICATION HIGHLIGHTS

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- 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*

## MANAGEMENT & OPERATIONS

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- Management: Led engineering and science initiatives, written funding proposals, coordinated multi-institution efforts, developed project concepts, managed timelines and budgets, documented results through publication.
- Field Operations: Managed equipment logistics, operations planning, and team collaboration. Performed work utilizing – SCUBA, underwater robotics, research vessels, remote field camps.
- Field Seasons: Antarctica (x3), Arctic (x4), Red Sea (x2), Caribbean (x2), West Africa (x2), Pacific (x3)

## TECHNICAL SKILLS

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