

Andrew D. Mullen

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SUMMARY

- Engineer with over 10 years of experience on NASA and NSF projects developing imaging and robotic systems.
- Led the design of custom instruments integrating optical, electrical, mechanical, and software elements.
- Member and leader of cross-functional teams conducting research in harsh polar and marine environments.

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-Present Senior Research Engineer / Visiting Research Scientist, Cornell University

- Managed development of a custom science package used in robotic exploration of deep-sea brines.
- Lead field engineer for geophysical studies of planetary analog ice formations in the Arctic.

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

- 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”.
- Engineer on three Antarctic campaigns deploying underwater robot ‘Icefin’. Team surveyed previously inaccessible sub-glacial environments providing critical measurements for modeling sea level rise.
- 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.

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.

MANAGEMENT & TECHNICAL LEADERSHIP EXPERIENCE

- Management: developed project concepts, written funding proposals, coordinated stakeholders, led engineering teams, defined requirements, managed timelines and budgets, documented results through publication
- Instrument Development: experienced with full product lifecycle including project conception, product design, modeling and CAD, component procurement, fabrication, testing, lab validation, and field deployment
- Field Operations: organized logistics, developed operations plans, ran technical equipment, collaborated with international teams; conducted over 15 field research seasons including polar, ship and SCUBA work

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

PUBLICATION HIGHLIGHTS

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

TECHNICAL SKILLS

- Software: data analysis, image processing, computer vision, embedded controls software [*Python*, *Matlab*]
- Electrical: PCB design, embedded computer and micro-controller implementation [*Eagle*, *Python*]
- Mechanical: mechanical design, pressure housing design, 3D printing [*Solid Works*]
- Optical: microscopy, holography, computational imaging, opto-mechanics, opto-electronics