

# Andrew D. Mullen

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## 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-Present	Senior Research Engineer	Cornell University
2018-2022	Postdoctoral Fellow	Georgia Institute of Technology, NASA Postdoctoral Program
2019, Summer	Visiting Postdoc Researcher	NASA Jet Propulsion Lab

## SUMMARY

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- Engineer and scientist with over 10 years of experience on NASA and NSF technology development projects.
- Designed and built scientific tools integrating optics, computing, electrical engineering, and mechanical design.
- Experienced as a member and leader of cross-functional teams developing tools from concept to field deployable systems; then operating these instruments in harsh polar and marine field settings.

## AWARDS & HONORS

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2021	Antarctic Service Medal	2013	BSF Rahamimoff Travel Grant
2018	NASA Postdoctoral Program Fellowship	2012	NSF Graduate Research Fellowship Program
2017	Microscopy Today Innovation Award	2011	University of California Regents Fellowship
2014	Link Ocean Engineering Ph.D. Fellowship	2009	NOAA Hollings Scholarship

## PUBLICATIONS

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

## PRIOR WORK

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- *Icefin Robot*: Engineer on three Antarctic campaigns deploying custom underwater robot 'Icefin'. Team surveyed previously inaccessible sub-glacial environments providing critical measurements for modeling sea level rise.
- *Digital Holographic Microscope (DHM)*: Led collaboration with Georgia Tech & NASA JPL developing a submersible DHM. Observed microbial life in Antarctica an analog for future "ocean world" exploration.
- *Subsurface Science & Search for Life on Ocean Worlds*: Co-led design of conceptual payload for NASA mission to Europa. Coordinated 21 member team, surveying state-of-the-art technologies from earth and space science.
- *Benthic Underwater Microscope*: Jointly developed first system to image seafloor subjects such as corals underwater at micron-scale. Payload integrates optics, illumination, focus tunable lens, and electronics.
- *Micro-Particle Tracking Velocimetry*: Developed system to measure micro-scale fluid dynamics in the ocean. Implemented dark-field illumination with precision timing, and developed particle tracking code.
- *Towed Microscope*: Engineering lead on integration and deployment of towed microscopic imaging system. Deployed system to investigate the transport and dispersion of eggs following mass Grouper spawning.

## TECHNICAL SKILLS

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- Computing: data analysis, image processing, computer vision [*Python*, *Matlab*]
- Electrical: PCB design, implementation of embedded computers and micro-controllers [*Eagle*, *Python*]
- Mechanical: mechanical design, pressure housing design, 3D printing [*Solid Works*]
- Optical: imaging systems, microscopy, holography, computational imaging
- Fluidic: PIV & PTV observations, fluid dynamics, water sampling systems