Andrew D. Mullen

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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, *Magna Cum Laude*

PROFESSIONAL EXPERIENCE

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

- Engineer with over 10 years of experience on NASA and NSF projects developing technology for exploration.
- Designed and built scientific tools integrating optics, computing, electrical engineering, and mechanical design.
- Member of interdisciplinary teams operating instruments in extreme polar and marine environments.

AWARDS & HONORS

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

PUBLICATIONS

- 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 by: *New York Times, BBC*, *Washington Post*, *Wall Street Journal, PBS*, *Scientific American*

PRIOR WORK

- *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

- 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: particle tracking velocimetry observations, fluid dynamics, water sampling systems