

Jeffrey Mei

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RESEARCH EXPERIENCE



Portfolio

Graduate Research Assistant. MIT/WHOI, Woods Hole, MA, 2015-present

- Applied convolutional neural networks to sea ice imagery to infer ice thickness from topography and interactively visualized the learned filters using OpenCV and PyTorch
- Collected sea ice thickness data using surface topography laser (lidar) scans during 3-month winter fieldwork in Antarctica
- Created an interactive GUI for processing sea ice imagery (segmentation, floe delineation) using OpenCV
- Investigated sea ice thickness statistical distribution using extreme value theory
- Visualized and compiled satellite data into interactive plots using Holoviews and Bokeh modules at ICESat-2 Hack Week, sponsored by the University of Washington
- Authored peer-reviewed publication in *The Cryosphere* ([doi:10.5194/tc-2019-140](https://doi.org/10.5194/tc-2019-140), "Estimating Early-Winter Ice Thickness From Deformed Ice Morphology.")

Undergraduate Research Assistant. NYU Abu Dhabi, 2014-2015

- Developed a novel method for localizing glacial collapse using signal processing
- Visualized seismic spectrograms using Python and created a frequency bandpass filter, with automated detection of seismic shock wave onset
- Authored peer-reviewed publication in *The Cryosphere* ([doi:10.5194/tc-11-609-2017](https://doi.org/10.5194/tc-11-609-2017), "Calving localization at Helheim Glacier using multiple local seismic stations.")

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA

Woods Hole Oceanographic Institution, Woods Hole, MA

Ph.D., MIT-WHOI Joint Program in Applied Ocean Science & Engineering, expected August 2020, GPA: 4.7/5.0

- Dissertation: "Morphological Approaches To Understanding Sea Ice Thickness"

New York University Abu Dhabi, Abu Dhabi, UAE

B.S. *cum laude*, May 2015. Major in Physics and Mathematics, GPA: 3.8/4.0

- New York University Honors Scholar, 2015
- Semester study abroad at NYU Berlin/Humboldt-Universität zu Berlin, Spring 2013
- Awarded full scholarship to NYU Abu Dhabi, 2011-2015

TEACHING AND LEADERSHIP EXPERIENCE

Elements of Modern Oceanography, MIT, Fall 2018

Teaching Assistant

- Explained physical oceanographic concepts to first-year graduate students, including some with no prior physics experience
- Improved scientific rigor of students' research projects with one-on-one feedback

Summer Math Review, WHOI, 2017-2018

Organizer and instructor

- Organized courses and assigned instructors for summer math review for incoming graduate students with a variety of math backgrounds
- Prepared class notes (LaTeX) for and taught classes in ordinary and partial differential equations, data analysis, numerical methods

MIT Badminton Club, MIT, 2016-2020

Treasurer 2016-2019, President 2019-2020

- Managed club financials, including equipment ordering and fundraising
- Oversaw player registration, facilities reservations and liaised with sponsors for the Boston Open (2nd-largest badminton tournament in the USA)

OTHER SKILLS

Fluent in English, German, Mandarin Chinese; conversant in Russian

Experienced with Python (NumPy/SciPy/OpenCV/PyTorch/Pandas), SQL, LaTeX, Linux
PADI-certified Open Water Diver