

M. Jeffrey Mei

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EDUCATION

Massachusetts Institute of Technology, Cambridge, MA June 2015 - September 2020 (expected)

Woods Hole Oceanographic Institution, Woods Hole, MA

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

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

New York University Abu Dhabi, Abu Dhabi, United Arab Emirates

August 2011 - May 2015

B.S. *cum laude*, Physics and Mathematics. GPA: 3.8/4.0

- New York University Honors Scholar, 2015

- Semester study abroad at NYU Berlin/Humboldt-Universität zu Berlin (Germany), Spring 2013

- Full scholarship, 2011-2015

RESEARCH EXPERIENCE

Graduate Research Assistant, MIT/WHOI

September 2015-present

- Applied convolutional neural networks to sea ice imagery to infer ice thickness and snow depth from surface topography and interactively visualized the learned filters (OpenCV, PyTorch and AWS EC2)

- Developed textural segmentation algorithm to distinguish different deformed sea ice surfaces (OpenCV)

- Collected sea ice 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) (OpenCV)

- Investigated sea ice thickness statistical distribution using extreme value theory

- Authored peer-reviewed publication in *The Cryosphere*, "Estimating Early-Winter Ice Thickness From Deformed Ice Morphology." (doi:10.5194/tc-13-2915-2019)

Undergraduate Research Assistant, NYU Abu Dhabi

2013-2015

- Developed a novel method for localizing glacial collapse using signal processing and hyperbolic geometry

- Visualized seismic spectrograms and bandpass-filtered signals to automate detection of seismic shock wave onset

- Authored peer-reviewed publication in *The Cryosphere*, "Calving localization at Helheim Glacier using multiple local seismic stations." (doi:10.5194/tc-11-609-2017)

TEACHING AND LEADERSHIP EXPERIENCE

12.720 Elements of Modern Oceanography, MIT

Fall 2018

Teaching assistant

- Explained physical oceanography concepts to first-year graduate students 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

- Prepared class notes for and taught ordinary/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/sklearn/PyTorch/Pandas), SQL, AWS, OpenCV, L^AT_EX, Linux/Unix, bash