

# M. Jeffrey Mei

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## EDUCATION

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**Massachusetts Institute of Technology**

September 2015 - August 2020 (expected)

**Woods Hole Oceanographic Institution**

Ph.D., MIT-WHOI Joint Program in Applied Ocean Science & Engineering

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

**New York University Abu Dhabi**

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, Spring 2013

- Full scholarship, 2011-2015

## RESEARCH EXPERIENCE

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**Graduate Research Assistant, MIT/WHOI**

September 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 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

- Authored peer-reviewed publication in *The Cryosphere*, "Estimating Early-Winter Ice Thickness From Deformed Ice Morphology." (doi.org/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 using Python and created a frequency bandpass filter, with automated 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

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**12.720 Elements of Modern Oceanography, MIT**

Fall 2018

*Teaching assistant*

- Explained physical oceanographic 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 and taught classes in 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)

## SKILLS AND INTERESTS

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

Experienced with Python (NumPy/SciPy/OpenCV/PyTorch/Pandas), SQL, L<sup>A</sup>T<sub>E</sub>X, Linux/Unix, bash