

RUI CHEN

Boston, MA ◇ 917-622-8272 ◇ ruic@mit.edu ◇ ruipo.github.io

EDUCATION

Massachusetts Institute of Technology (MIT)
Woods Hole Oceanographic Institution (WHOI)
Ph.D. Candidate, MIT-WHOI Joint Program
Applied Ocean Science and Engineering
National Science Foundation Graduate Research Fellowship

Cambridge, MA
Woods Hole, MA
Expected June 2021
GPA: 4.9/5

Northwestern University
B.A. with Honors, *Magna Cum Laude*
Majors in Integrated Science, Physics, Earth Science
NOAA Ernest F. Hollings Undergraduate Scholarship

Evanston, IL
June 2016
GPA: 3.88/4

RESEARCH

Research Interests: underwater acoustics, signal processing, machine learning, statistical modeling

Arctic Ocean Underwater Ambient Noise
Graduate Research Assistant, MIT-WHOI

July 2016 - Present
Cambridge, MA

- Investigate the effect of Arctic environmental changes on its underwater soundscape and acoustic propagation
- Characterize the spectral, spatial, and temporal features of ambient noise time series data collected during past Arctic expeditions using techniques such as wavenumber-frequency analysis, beamforming, and probabilistic transient event detection to identify how the noise pattern has changed over time (Matlab, Python)
- Model underwater acoustic propagation with varying environmental parameters using wavenumber integration and normal modes to correlate changes in the noise pattern to environmental shifts (OASES, Bellhop, Kraken)
- Develop a convolutional neural network approach to estimate the range of surface noise sources (Tensorflow, Keras, Scikit-Learn)
- Employ hierarchical clustering to automatically group transient noise features detected in data spectrograms (OpenCV, Python)

Arctic Ice Cover Cryo-seismic Monitoring
Graduate Research Assistant, MIT-WHOI

December 2018 - Present
Woods Hole, MA

- Collaborate with WHOI scientist to monitor Arctic ice cover activity near the coast of northern Alaska with a deployed planar geophone array to better understand ambient noise generation
- Design and implement an event detection algorithm built on match filtering combined with short/long time-window averaging and a localization technique using time-difference-of-arrival (Matlab, Python)

Cold, Diffuse Interstellar Clouds
Undergraduate Research Assistant, Northwestern University

September 2014 - June 2016
Evanston, IL

- Extracted and analyzed star UV spectrum data from telescope databases to determine cloud distance and density using the image reduction and analysis facility program (IRAF) to better understand star formation within these clouds

Tsunami Danger Threshold Modeling
Research Intern, Pacific Tsunami Warning Center

Summer 2015
Honolulu, HI

- Formulated a current velocity threshold for tsunami warning issuance by employing a 1-D shallow water model to simulate tsunami events and quantifying the human and economic impacts of the waves (Matlab)

TEACHING & ADVISING

Graduate Peer Career Advisor

MIT, September 2019 - Present

- Conduct >50 individual career advising appointments with undergraduate and graduate students to review resumes/cover letters and offer career counseling

Course Facilitator

MIT edX, November 2019 - May 2020

- Prepared and facilitated weekly online lessons with 20 students on machine learning topics following the ICAP framework

Teaching Assistant

MIT Environmental Ocean Acoustics Course, Fall 2018

- Led review sessions and prepared notes to explain course materials and coding projects; deconstructed complex topics to simpler ideas so that they are better understood by students

SKILLS

Computer: Proficient in Matlab, Python, C++, OASES, Bellhop, Kraken, Linux/Unix, L^AT_EX.

Language: Native fluency in English, Mandarin Chinese.