RUI CHEN

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EDUCATION

Massachusetts Institute of Technology — Cambridge, MA
Woods Hole Oceanographic Institution — Woods Hole, MA
Ph.D. Candidate, MIT-WHOI Joint Program — Expected June 2021
Applied Ocean Science and Engineering — GPA: 4.9/5
National Science Foundation Graduate Research Fellowship

Northwestern University — Evanston, IL
B.A. with Honors, *Magna Cum Laude* — June 2016
Majors in Integrated Science, Physics, Earth Science — GPA: 3.88/4
NOAA Ernest F. Hollings Undergraduate Scholarship
Outstanding Student in Physics (2014, 2015)
Inductee, Phi Beta Kappa Society

ACADEMIC RESEARCH

Current Research Interests: Underwater Acoustics, Arctic Ocean Ambient Noise, Source Localization, Signal Processing, Machine Learning, Statistical Modeling.

Arctic Ocean Ambient Noise — MIT-WHOI, July 2016 - Present

· Explores the feasibility of extracting useful environmental information from Arctic Ocean ambient noise to better inform underwater communication and navigation strategies in the region.
· Analyzed recorded data to characterize the spectral, spatial, and temporal features of ambient noise.
· Demonstrated how recent Arctic environmental changes are reflected in differences in noise characteristics.
· Developed robust machine learning techniques to estimate range of surface noise sources in an Arctic propagation environment.

Arctic Ice Cover Monitoring — MIT-WHOI, Dec. 2018 - Present

· Evaluates the ability to monitor local ice cover activity with a planar geophone array.
· Implemented an event detection algorithm based on short/long time-window averaging and a localization method using time-difference-of arrival.
· Developing machine learning approaches to automatic event detection using extracted features from previously discovered events.

Cold, Diffuse Interstellar Clouds — Northwestern University, 2014 - 2016

· Examined the formation mechanism of abnormally cold interstellar clouds in a hot region of space.
· Extracted and analyzed star UV spectrum data from telescope databases to determine cloud distance and density.
· Calculated gas pressure within interstellar clouds to postulate their formation mechanism.

Tsunami Danger Threshold Modeling — National Tsunami Warning Center, 2015

· Developed a current velocity threshold for Tsunami warning issuance.

· Employed a 1-D shallow water model to simulate Tsunami events and quantified their human and economic impacts.

TEACHING

Teaching Assistant MIT Course 2.681, Fall, 2018

· Led review sessions to explain course materials; deconstructed complex topics to simpler ideas so that they are better understood by students.
· Actively responded to student questions and assisted in organizing student projects.

Tutor Northwestern University, 2014 - 2016

· Mentored students in the Physics and Integrated Science departments on many subjects such as physics, math, and chemistry.
· Advised younger students with on coursework selection and post-undergraduate plans.
· Assisted applicants with revising resumes/CVs and personal/research statements for academic applications.
· Awarded the 2016 Integrated Science department Student Service Award.

LEADERSHIP AND VOLUNTEERING

MIT Concert Band May 2019 - Present
Webmaster

· Actively maintains and updates the concert band website.

Weinberg College Student Advisory Board Northwestern Univeristy, 2015 - 2016
Representative

· Gathered student feed-backs on curriculum and college policies and communicated their concerns to university administration.
· Organized social events for students in the Integrated Science Program such as formals and educational field trips.

Northwestern University Marching Band 2012 - 2016
Clarinetist

· Performed with the band at all Northwestern home football games and most Northwestern basketball games; developed excellent time management and organization skills.
· As a senior, led the clarinet section in pre-game preparations and planned social events to help new members integrate into both the band and Northwestern in general.

Charles B. Wang Community Health Center Queens, NY, 2010 - 2012
Volunteer

· Promoted health center events and youth educational programs to patients with young children.
· Organized the health centers online patient database.

SKILLS AND INTERESTS

Computer: Proficient in MATLAB, Python (Numpy, Scipy, Scikit-Learn, Tensorflow, Keras), LaTeX.
Language: Fluent in Mandarin Chinese.
Interests: Clarinet performance, cooking, hiking.

PUBLICATIONS AND PRESENTATIONS

Publications:

R. Chen, A. Poulsen, and H. Schmidt. Spectral, spatial, and temporal characteristics of underwater ambient noise in the Beaufort Sea in 1994 and 2016. J. Acoust. Soc. Am., 145(2):605614, 2019.

Presentations:

R. Chen, A. Poulsen, and H. Schmidt. Beaufort Sea ambient noise characteristics in 1994 and 2016. Acoustical Society of America Fall Meeting (2018).

R. Chen and D. Wang. A study on the Tsunami warning thresholds based on Tsunami currents. American Geophysical Union Fall Meeting (2015).