

Jeffrey Mei, Ph. D.

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WORK/RESEARCH EXPERIENCE

Senior Machine Learning Scientist

December 2020 –

Wayfair LLC, Boston MA 02116, USA

- Developed transformer model using self-attention with customers' browse contexts to serve product recommendations, increasing order rates by **1%** and annual gross revenue by **\$67M** (RecSys '22 [publication](#); [CARS](#) workshop [keynote](#)) (Airflow, Google Cloud Platform, PyTorch, git, Docker)
- Created [interactive tool](#) (bokeh) to interpret and visualize learned item embeddings, and demonstrated that the model was implicitly learning product style, material, price and popularity attributes
- **Doubled** personalization rate by expanding model to transfer its learned attributes (e.g. style, material, functionality, price) across different types of furniture
- Implemented distributed multi-GPU training (PyTorch Lightning), reducing training time by **75%**

Graduate Research Assistant

June 2015 – September 2020

MIT/WHOI Joint Program, Cambridge MA 02139, USA

- Created a convolutional neural network from scratch to analyze sea ice imagery to infer ice thickness and snow depth from surface topography, reducing error in sea ice thickness estimates by **60%** (PyTorch, OpenCV) (peer-reviewed publications in [J. Remote Sensing](#) and [The Cryosphere](#))
- Interpreted learned filters to demonstrate that the ConvNet was learning to distinguish textural features based on their surface roughness
- Developed a novel textural segmentation algorithm to distinguish different deformed sea ice surfaces, which increased snow depth data available to researchers by **10x** via textural extrapolation
- Wrote automated algorithms (OpenCV) to align **terabytes** of open-source NASA altimetry data with **>200,000** camera images, identify areas of open water and interpolate elevations onto a grid
- Collected sea ice data using surface laser (lidar) scans during 3-month winter fieldwork in Antarctica

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA

June 2015 – September 2020

Woods Hole Oceanographic Institution, Woods Hole, MA

Ph. D., Mechanical Engineering (major: Oceanographic Engineering; minor: Data Science)

- [Dissertation](#): "Morphological Approaches To Understanding Antarctic Sea Ice Thickness" ([video](#))

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

OTHER SKILLS

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

Experienced with Python (numpy/sklearn/pytorch/pandas), SQL, OpenCV, Linux/Unix, bash, git, GCP (Google Cloud Platform), Docker, AWS (Amazon Web Services), Apache Airflow, Aerospike, Presto