Harris Hardiman-Mostow

Department of Mathematics
University of California, Los Angeles
Los Angeles, CA 90095
Email: hhm@math.ucla.edu
LinkedIn: linkedin.com/in/hardiman-mostow

EDUCATION

Ph.D. in Mathematics   Sept 2021–June 2026 (expected)
University of California, Los Angeles   Los Angeles, CA
Advisor: Andrea Bertozzi. Advanced to Candidacy 11/8/2024.
GPA: 3.93/4.0

M.A. in Mathematics   June 2023
University of California, Los Angeles   Los Angeles, CA
GPA: 3.92/4.0

B.S. in Mathematics, B.S. in Mechanical Engineering   May 2021
Tufts University   Medford, MA
Summa Cum Laude (3.96/4.0 GPA)
Advisor: James Murphy

EXPERIENCE

NSF Graduate Fellow   September 2023–Present
Graduate Researcher   June 2022–August 2023
UCLA Department of Mathematics   Los Angeles, CA

- Researching deep learning, graph-based learning, and mechanistic explainable AI in sequence learning, with applications to remote sensing and hydrology.

Graduate Research Intern   July–September 2024
NASA Jet Propulsion Lab   Los Angeles, CA
Mentors: Dr. Charlie Marshak and Dr. Al Handwerger

- Built a novel transformer-based deep learning model to map landslide, fire, and flood damage extents using synthetic aperture radar (SAR), outperforming previous works, both deep and classical.
- My work is now the primary algorithm in JPL's SAR Disturbance Product.

Graduate Data Science Intern   Summer 2021
The MITRE Corporation   Bedford, MA

- Researched and implemented unsupervised algorithms for multivariate online and batch-based drift detection in time series data.

Undergraduate Researcher   May 2020–May 2021
Tufts University Department of Mathematics   Medford, MA

- Researched and implemented machine learning algorithms for signal reconstruction and anomaly detection in sparse spatio-temporal data. 2nd place in NSF Algorithms for Threat Detection Data Challenge.

PUBLICATIONS

Submitted:

2. **H. Hardiman-Mostow**, C. Marshak, A. Handwerger. Deep Self-Supervised Global Disturbance Mapping with Sentinel-1 OPERA RTC Synthetic Aperture Radar. Submitted to *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing.* arXiv:2501.09129.

1. J. Brown*, B. Chen*, **H. Hardiman-Mostow***, J. Calder, and A.L. Bertozzi. GLL: A Differentiable Graph Learning Layer for Neural Networks. Submitted to *Journal of Machine Learning Research.* arXiv:2412.08016.

Accepted:

2. J. Brown, B. Chen, **H. Hardiman-Mostow**, A. Weihs, A.L. Bertozzi and J. Chanussot. Material identification in complex environments: neural network approaches to hyperspectral image analysis. *IEEE WHISPERS*, 2023.

1. J. Enwright*, **H. Hardiman-Mostow***, J. Calder, and A.L. Bertozzi. Deep semi-supervised label propagation with applications to SAR image classification. *SPIE Conference on Defense and Commercial Sensing*, 2023.

*Co-first authors, listed alphabetically

PRESENTATIONS

2. "Deep Self-Supervised Global Disturbance Mapping with Sentinel-1 OPERA RTC," Science Understanding through Data Science (SUDS) Conference, California Institute of Technology, Pasadena, CA. August 2024.

1. "Anomaly Detection in Sparsely Sampled Traffic Flow," NSF Algorithms for Threat Detection Annual Workshop, University of Washington, Seattle, WA. November 2020 (Online).

GRANTS AND AWARDS

Grants and Fellowships:

- **NSF Graduate Research Fellowship** (2023-2026). $149,000. The USA's oldest fellowship program for graduate students in STEM. Alumni include 42 Nobel laureates and more than 450 members of the National Academy of Sciences.

- **National Defense Science and Engineering Graduate (NDSEG) Fellowship**. $136,000 (declined). Highly competitive graduate STEM fellowship sponsored by the DoD (acceptance rate of approximately 7%).

- **NSF MENTOR Fellowship** (UCLA, 2021-2022). $34,000. NSF training grant funding early-career PhD students interested in data science.

- **Tufts Summer Scholars Grant** (Tufts, 2020). $5,500. Awarded to student-professor pairs to fund summer research projects.

Honors and Awards:

- **Frederick Melvin Ellis Prize** (Tufts, 2021), awarded to students who have "demonstrated marked athletic versatility, a modest manner, successful academic achievement, and the potential for effective leadership."
- **Ralph S. Kaye Memorial Prize** (Tufts, 2021), awarded to the top mathematics student.
- **Tau Beta Pi** (Tufts, 2019), the national engineering honor society. Membership is awarded to 3rd year undergraduates in the top $1/8^{th}$ of their class.
- **Dean's List** (Tufts, all semesters)

TEACHING

UCLA
Teaching Assistant:
- Math 33A (Linear Algebra). Spring 2023.
- Math 33B (Differential Eqautions). Spring 2023.
- Math 31B (Integration and Infinite Series). Winter 2023.

Student evaluations available upon request.

Tufts University
- Teaching Assistant, ES-2 (Introduction to Computing in Engineering). Spring 2019.

LEADERSHIP AND SERVICE

Graduate Representative   September 2022–June 2023
UCLA Dept. of Mathematics Equity, Diversity, and Inclusion (EDI) Committee

- Reformed the qualifying exam system to improve fairness and implemented a peer mentorship program for first-year graduate students.

Tufts Men's Varsity Rowing   September 2017–May 2021
Team Captain, Sept 2019–May 2021

- First-Team All-Conference, Spring 2021. Conference All-Academic Team, Spring 2019, 2020, 2021.
- Committed 20 hours per week to racing and training, year-round.
- Aided in creating a new team leadership position to coordinate trainings aimed at combating bias.

SKILLS

- **Programming:** Python (including numpy, PyTorch, sklearn, matplotlib), MATLAB.
- **Software:** LaTeX, Microsoft Office, Mathematica.