Edward M. Berman (he/him)

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Education

- **Northeastern University** (2nd year) — Boston, MA
  Bachelor of Science Physics, Bachelor of Science Mathematics — *06/25*
  - **Graduate Coursework**: Riemannian Optimization
  - **Advanced Coursework**: Advanced Linear Algebra, Advanced Probability and Statistics Thermodynamics and Statistical Mechanics, Electricity and Magnetism I

Involvement: Mathematics Engagement and Mentorship Association (Executive Board) | Directed Reading Program, Reading *The Mathematical Theory of Finite Element Methods* | Course Assistant Math 2331 Linear Algebra (Fall 2022)

Projects and Publications

- **Machine Learning Model Discovery, Connecting Random Walks and Partial Differential Equations**: Available: https://github.com/EdwardBerman/DataDrivenModelDiscovery Expository Paper.
- **Mars ISRU Research Proposal**: Available: Rasc-al Proposal
- **Educational Youtube Channel**: Eddie Explains

Research

Interests: Lensing and Inverse Problems · Machine Learning, Optimization, and Statistics · Computational Physics

- **McCleary's Group, Northeastern College of Science** — Boston, MA
  Research Assistant — *01/22 - Present*
  - **Topic**: Parameter Estimation for the Point Spread Function.
  - **Accomplished**: Developing a pipeline to model the Point Spread Function with PIFF and Astropy libraries. Calibrating software on synthetic data and using James Webb Space Telescope Data to generate our model.
- **Copos Lab, Northeastern College of Science** — Boston, MA
  Independent Research Course — *08/22 - 12/22*
  - **Topic**: Partial Differential Equation Machine Learning Discovery.
  - **Accomplished**: Implemented monte carlo methods to generate synthetic data of heat flow with Matlab. Architected a Neural Network using TensorFlow to find the partial differential equation governing fluid flow according to the synthetic heat data.
- **Airforce Research Laboratory & Griffiss Institute** — Rome, NY
  Internship — *06/22 - 08/22*
  - **Topic**: Deep Learning Image Classification and Segmentation.
  - **Accomplished**: Worked in the information directorate under Dr.Qing Wu on evaluating how different models performed on the xView3 dataset. Selected as one of the top interns to present my research and internship experience at an inaugural Symposium event.

Conferences and Invited Talks

- **Brown Symposium for Undergraduates in the Mathematical Sciences**: (Providence RI, Upcoming)
- **VICEROY Symposium**: (Arlington VA, August 17th, 2022)

Honors and Awards

- **Dean's Scholarship**: $12,000 Annual Merit Scholarship from Northeastern (April 2021)
- **Dean's List**: Exceeded 3.5 GPA with 16 credit hours (Fall 2022)

Skills

- **Languages**: Python, Java, Julia, Matlab, R; HTML, CSS, JS
- **Libraries**: TensorFlow, Manopt, Astropy; Numpy, Pandas, Matplotlib
- **Platforms**: bash, Linux, LaTeX, git