

Wilson Gregory

wgregor4@jhu.edu

<https://www.cis.jhu.edu/~wgregor4/>, <https://github.com/WilsonGregory>

EDUCATION:

Johns Hopkins University, Baltimore, MD. 5th Year PhD Student, Applied Math and Statistics 2021-Present

- **Advisor:** Soledad Villar

Rensselaer Polytechnic Institute (RPI), Troy, NY. B.S. in Computer Science and Mathematics 2018

- **GPA: 3.89**, Graduated *Magna Cum Laude*

PUBLICATIONS:

* indicates equal contribution

Journal Publications:

- **ginjax: E(d)-Equivariant CNN for Tensor Images**, W.G. Gregory, K.W.K. Wong, D.W. Hogg, S. Villar, The Journal of Open Source Software. 2025
- **Equivariant geometric convolutions for dynamical systems on vector and tensor images**, W.G. Gregory, D.W. Hogg, B. Blum-Smith, M.T. Arias, K.W.K. Wong, S. Villar, Philosophical Transactions of the Royal Society A. 2025
- **MarkerMap: nonlinear marker selection for single-cell studies**, W.G. Gregory*, N. Sarwar*, G.A. Kevrekidis*, S. Villar, B. Dumitrescu, NPJ Systems Biology and Applications. 2024

Workshop Papers:

- **Robust emulator for compressible navier-stokes using equivariant geometric convolutions**, W.G. Gregory, D.W. Hogg, K.W.K. Wong, and S. Villar. NeurIPS ML4PS workshop. 2024
 - Won Best Paper Award for the ML4PS Workshop

Preprints

- **Learning equivariant tensor functions with applications to sparse vector recovery**, W.G. Gregory, J. Tonelli-Cueto, N.F. Marshall, A.S. Lee, S. Villar, [arXiv:2406.01552](https://arxiv.org/abs/2406.01552) 2024

INVITED TALKS AND WORKSHOPS:

- **Computational Real Algebraic Geometry**, SIAM Conference on Applied Algebraic Geometry 2025
- **Special Session on Symmetric Subspace Configurations**, Constructive Functions 2025
- **BIRS-CMO Mathematics of Deep Learning Workshop** 2024
- **Machine Learning for Science: Mathematics at the Interface of Data-driven and Mechanistic Modelling**, Mathematisches Forschungsinstitut Oberwolfach Workshop 2324 2023
- **AMS Special Session on Harmonic Analysis and its Applications to Signals and Information III**, AMS Spring Sectional Meeting 2023

GRANTS AND AWARDS:

- **NeurIPS ML4PS Best Paper Award** 2024
- **Duncan Research Award**, Travel Grant to attend NeurIPS 2024
- **US Junior Oberwolfach Fellow**, Travel Award 2023
- **RPI IDEA Datathon**, First Place Team 2018
- **RPI IDEA Datathon**, Honorable Mention Team 2017

TEACHING AND MENTORSHIP:

Johns Hopkins University

- **Graduate Teaching Assistant**, Equivariant Machine Learning (EN.553.743) 2025
- **Instructor**, HEART: Improving Climate Change Models with Machine Learning (EN.500.111) 2024
- **Graduate Teaching Assistant**, Software Engineering for Data Science (EN.553.689) 2024
- **WISE Mentor**, Project “Charged Particles Machine Learning Emulator” 2024
- **WISE Mentor**, Project “Detecting Gerrymandering Using Computer Algorithms” 2022
- **Graduate Teaching Assistant**, Topics in Trustworthy Machine Learning (EN.553.799) 2022

- **Graduate Teaching Assistant**, Multilinear Algebra (EN.553.694) 2021

Rensselaer Polytechnic Institute

- **Undergraduate Teaching Assistant**, Data Structures (CS 1200) 2015-2018

PROFESSIONAL EXPERIENCE:

Current Surgical, Washington, D.C.

INMAS Machine Learning Intern 2025

Cut+Dry, San Francisco, CA

Senior Software Engineer 2020-2021

Software Engineer 2018-2020

U.S. Department of Defense, MD

Computer Science Intern 2017

General Dynamics Mission Systems, Taunton, MA

Software Quality Assurance Intern 2016

SOFTWARE:

- ginjax: Equivariant convolutions for machine learning on tensor fields
<https://github.com/WilsonGregory/ginjax>
- TensorPolynomials: Compute general polynomials from tensors to tensors in JAX.
<https://github.com/WilsonGregory/TensorPolynomials>