

# Ronan Perry

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## Education

### Johns Hopkins University

M.S.E. BIOMEDICAL ENGINEERING

Baltimore, MD

May 2020

- **GPA:** 4.0/4.0
- **Concentration:** Biomedical Data Science
- **Thesis Title:** *Manifold-aware Forests: Closing the Gap to Convolutional Neural Networks*

### Johns Hopkins University

B.S. APPLIED MATHEMATICS & STATISTICS

Baltimore, MD

Dec 2019

- **GPA:** 3.93/4.0
- **Awards:** Dean's List 2016-2019, Departmental honors

### Technical University of Denmark

STUDY ABROAD EXPERIENCE

Copenhagen, DK

Fall 2018

## Research Experience

### Max Planck Institute for Intelligent Systems

FULBRIGHT SCHOLAR

Studying causal inference methods.

Tuebingen, Germany

Sept 2021 - Current

### NeuroData Lab, Johns Hopkins University

RESEARCH ASSISTANT

Open source development of non-parametric and powerful statistical inference methods suitable for high dimensional and structured data, with hypothesis testing capabilities, theoretical results, and applications to neuroimaging data.

Baltimore, MD

Jan. 2019 - July 2021

### Medical Image Processing Lab, Ecole Polytechnique Federale de Lausanne

RESEARCH INTERN

Created MATLAB image segmentation pipeline for raw fMRI data and identified downstream spatial-temporal correlation patterns.

Geneva, Switzerland

May 2018 - Aug 2018

### Popel Systems Biology Lab, Johns Hopkins Medical Institute

RESEARCH ASSISTANT

Collected data on non-small cell lung cancer from literature and fit a MATLAB model of the immune response.

Baltimore

Sept 2018 - Dec 2018

### Fei Lab, Boyce Thompson Institute

RESEARCH INTERN

Developed Perl and Bash scripts to process raw genomic data and identified patterns of recombination.

Ithaca NY

June 2015 - Aug 2015

## Professional Experience

### Rheonix Inc.

SOFTWARE DEVELOPMENT INTERN

Optimized image classifier and automated hardware failure identification system.

Ithaca, NY

May 2017 - Aug 2017

### Earth & Planetary Sciences, Cornell University

TEMPORARY SERVICE TECHNICIAN

Created OCR algorithm to match dates in video footage with metadata.

Ithaca, NY

Aug 2016 - Sep 2016

### URSA Space Systems

SOFTWARE DEVELOPMENT INTERN

Improved ship detection algorithm for satellite images and created a matching optimization algorithm.

Ithaca, NY

Apr 2016 - Aug 2016

## Teaching

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2019	<b>Teaching Assistant</b> , Applied Math 430: Intro to Statistics	Johns Hopkins
2018	<b>Teaching Assistant</b> , Applied Math 420: Intro to Probability	Johns Hopkins
2017	<b>Peer Group Tutor</b> , Multivariate Calculus	Johns Hopkins
2018-19	<b>SPLASH Teacher</b> , Planned and taught custom classes for local high schoolers	Johns Hopkins

## Awards

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2021	<b>Finalist</b> , Fulbright Research Fellowship	Germany
2020	<b>Fellow</b> , Impact Fellowship	NYC
2019	<b>1st Place</b> , IDIES Machine Learning Visualization Hackathon	Johns Hopkins
2017	<b>Judge Choice</b> , MedHacks Hackathon	Johns Hopkins

## Open source Software

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<b>mvlearn</b>	[Owner] A <i>Python</i> package for multiview learning methods. Available at <a href="https://mvlearn.github.io">mvlearn.github.io</a>
<b>hyppo</b>	[Contributor] A <i>Python</i> package for multivariate hypothesis testing. Available at <a href="https://hyppo.neurodata.io/">https://hyppo.neurodata.io/</a>
<b>graspologic</b>	[Contributor] A <i>Python</i> package for modeling and inference on graph-valued data. Available at <a href="https://graspologic.readthedocs.io/">https://graspologic.readthedocs.io/</a>
<b>proglearn</b>	[Contributor] A <i>Python</i> package for lifelong learning neural networks and random forests. Available at <a href="https://proglearn.neurodata.io/">https://proglearn.neurodata.io/</a>

## Publications

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### Published

- [1] **Ronan Perry**, Gavin Mischler, Richard Guo, Theodore Lee, Alexander Chang, Arman Koul, Cameron Franz, Hugo Richard, Iain Carmichael, Pierre Ablin, Alexandre Gramfort, and Joshua T. Vogelstein. “mvlearn: Multiview Machine Learning in Python”. In: *Journal of Machine Learning Research* 22.109 (2021), pp. 1–7. ISSN: 1533-7928.

### Preprints

- [1] **Ronan Perry**, Ronak Mehta, Richard Guo, Jesús Arroyo, Mike Powell, Hayden Helm, Cencheng Shen, and Joshua T. Vogelstein. “Random Forests for Adaptive Nearest Neighbor Estimation of Information-Theoretic Quantities”. In: *arXiv:1907.00325 [cs, stat]* (Sept. 2021). arXiv: 1907.00325.
- [2] **Ronan Perry**, Adam Li, Chester Huynh, Tyler M. Tomita, Ronak Mehta, Jesus Arroyo, Jesse Patsolic, Benjamin Falk, and Joshua T. Vogelstein. “Manifold Oblique Random Forests: Towards Closing the Gap on Convolutional Deep Networks”. In: *arXiv:1909.11799 [cs, stat]* (Aug. 2021). arXiv: 1909.11799.
- [3] Sambit Panda, Cencheng Shen, **Ronan Perry**, Jelle Zorn, Antoine Lutz, Carey E. Priebe, and Joshua T. Vogelstein. *Nonparametric MANOVA via Independence Testing*. 2020. arXiv: 1910.08883 [stat.ML].

### Conference Abstracts

- [1] **Ronan Perry**, Loic Daumail, Jelle Zorn, Sebastien Czajko, Daniel S. Margulies, Joshua T. Vogelstein, and Antoine Lutz. *Permutation-corrected independence testing for high-dimensional fMRI data*. Neuromatch 3.0, Oct. 2020.
- [2] **Ronan Perry**, Loic Daumail, Jelle Zorn, Daniel S. Margulies, Joshua T. Vogelstein, and Antoine Lutz. *Identifying Differences Between Expert and Novice Meditator Brain Scans via Multiview Embedding*. OHBM, June 2020.