

# Jonathan Huml

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## EDUCATION

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- **Harvard University** 2021-2023
  - *Master's in Computational Science and Engineering (M.E.), GPA: 4.0*
  - *Thesis (supervised by Dr. Demba Ba): Geometry-Aware Sparse Coding*
- **University of North Carolina-Chapel Hill** 2016-2020
  - *Mathematics (B.A.), Statistics (B.S.), GPA: 3.7*
  - *Thesis (supervised by Dr. Michael Aguilar): Nonparametric Markowitz Optimization*

## EXPERIENCE

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- **Computation, Representation, and Inference in Signal Processing Group @ Harvard** 2021-Present
  - *Research Assistant*
    - **Research:** Deep learning theory and programming, especially PyTorch with CUDA
    - **Lab Duties:** Presenting research papers during group meetings, preparing slides for personal meetings with principal investigator (Dr. Demba Ba), writing and submitting publications
- **Drug Information Association Adaptive Design Scientific Working Group** 2020-2021
  - *Research Associate*
    - **Research:** Formulate a patient-centered statistical basis for regulatory guidance when designing adaptive clinical trials. Our work culminated in a book chapter (see publications)
- **IQVIA** 2019
  - *Data Science Intern*
    - **Project:** Text analysis program to automate quality report classification
    - **Tasks:** Build an application to allow users to upload documents and route quality assurance reports to the correct departments with machine learning (using Keras)
- **Grant Lab @ North Carolina State University** 2019-2020
  - *Undergraduate Researcher*
    - **Project:** Build an autonomous wheelchair
    - **Tasks:** In contrast to work at UNC, this work was much more software focused. Used Raspberry Pi and TensorFlow framework for neural computer vision tasks
- **UNC Makerspace and Machine Shop** 2017 - 2019
  - *Builder*
    - **Project:** Budgeted, managed a project to build a high performance, low-cost wheelchair
    - **Tasks:** Build hardware systems (motors, boards, etc.), write software for microcontrollers, implement computer vision algorithms to make the wheelchair capable of detecting and avoiding objects

## WORKSHOP AND CONFERENCE PAPERS

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1. **JR Huml**, W. Pan, F. Doshi-Velez. "Which Off-Policy Evaluation (OPE) Method, and When?" *Reinforcement Learning at Harvard*. 2022.
2. **JR Huml**, A. Tasissa, D. Ba. "Local Geometry Constraints in V1 with Deep Recurrent Autoencoders." *Shared Visual Representations in Human & Machine Intelligence (NeurIPS)*. 2022.
3. **JR Huml**, A. Tasissa, D. Ba. "Sparse, Geometric Autoencoder Models of V1." *Symmetry and Geometry in Neural Representations (NeurIPS)*. 2022.
4. **JR Huml**, A. Tasissa, D. Ba. "Clustering Inductive Biases with Unrolled Networks." *Computational and Systems Neuroscience (COSYNE)*. 2023.

## JOURNAL PUBLICATIONS

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1. Z. Antonijevic, RA Beckman, **JR Huml**, Y. Liu, C. Mayer, G. McMillan, RS Tang. “Patient Benefits from Innovative Designs in Rare Diseases.” *Rare Disease Drug Development*. Springer. 2021.
2. RA Huml, J. Dawson, M. Bailey, N. Nakas, J. Williams, M. Kolochavina, **JR Huml**. “Accelerating Rare Disease Drug Development: Lessons Learned from Muscular Dystrophy Patient Advocacy Groups.” *Therapeutic Innovation & Regulatory Science*. 2021.
3. RA Huml, J. Dawson, K. Lipworth, L. Rojas, EJ Warren, C. Manaktala, **JR Huml**. “Use of Big Data to Aid Patient Recruitment for Clinical Trials Involving Biosimilars and Rare Diseases.” *Therapeutic Innovation & Regulatory Science*. 2020.

## INVITED TALKS

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1. “The Ripple Effect.” *Kempner Institute for the Study of Artificial and Natural Intelligence Launch Event*. Harvard University. September 2022.
2. “Topography of the Primary Visual Cortex.” *Kanwisher Lab*. Massachusetts Institute of Technology. November 2022.

## ACADEMIC SERVICE

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- **Reviewer:** Shared Visual Representations in Human & Machine Intelligence (NeurIPS Workshop)
- **Reviewer:** Symmetry and Geometry in Neural Representations (NeurIPS Workshop)

## HONORS AND AWARDS

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- **Harvard IACS Student Scholarship (2022):** Awarded for top master’s thesis proposals
- **NC Summer Scholarship (2020):** Awarded for mathematics studies and research at UNC-CH
- **Eagle Scout:** Earned the highest Boy Scouts of America rank at age 13, making me the youngest out of the 40 Eagles awarded in Troop 424’s history

## SKILLS SUMMARY

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- **Languages:** Python (Pytorch, any scientific computing package, Django framework), Matlab, HTML/CSS
- **Sample of courses:** Real Analysis I & II, Differential Geometry, Mathematical Statistics, Numerical Analysis, Neural Computation, Stochastic Modeling, Sequential Decision Making, Data Science, Scientific Programming, Differential Privacy