

# Beepul Bharti

🌐 beepulbharti | 🌐 bbharti | 🌐 beepulbharti.github.io | ✉️ bbharti1@jh.edu

## EDUCATION

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**Johns Hopkins University** Baltimore, MD  
PhD in Biomedical Engineering 2020 - Present

- GPA: 4.00/4.00
- Advisor: Dr. Jeremias Sulam
- Relevant Coursework: Statistical Theory, Matrix Analysis, Statistical Pattern Recognition, Sparse Representations in CV and ML, Nonlinear Optimization, Causal Inference, Probabilistic Models in Vision

**Duke University** Durham, NC  
BS in Biomedical Engineering & BA in Mathematics 2016 - 2020

- GPA: 3.86/4.00, *Cum Laude & Distinction*
- Relevant Coursework: Real Analysis, Abstract Algebra, Mathematical Fluid Dynamics, Applied PDEs & Complex Variables, ODEs, Signals and Systems, Probability, Multivariable Calculus, Biostatistics

## INDUSTRY AND RESEARCH EXPERIENCE

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**Genentech, Machine Learning Intern** San Francisco, CA  
*Advisor: Alex Tseng* May 2024 - August 2024

- Deep Learning Theory and Algorithms (DELTA) team within the Biology Research AI Development (BRAID) department

**Duke University Pratt Research Fellow** Durham, NC  
*Advisor: Dr. Brenton Hoffman* June 2018 - May 2020

- Project: Perturbing Force Dependent Vinculin- $\alpha$ -Actinin Binding Impacts Vinculin Tension

**Bass Connections Fellow** Durham, NC  
*Advisor: Dr. Rakesh Gopalkumar* June 2017 - May 2018

- Project: Using Machine Learning to Predict Schizophrenia Admittance

## PUBLICATIONS (\*INDICATES EQUAL CONTRIBUTION)

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1. **B. Bharti**, P. Yi, and J. Sulam, “Estimating and Controlling for Equalized Odds via Sensitive Attribute Predictors”, *Advances in Neural Information Processing Systems (NeurIPS)*, 2023.
2. J. Teneggi\*, **B. Bharti\***, Y. Romano, and J. Sulam, “SHAP-XRT: The Shapley Value Meets Conditional Independence Testing”, *Transactions on Machine Learning Research (TMLR)*, 2023.
3. D. Li, **B. Bharti**, J. Wei, J. Sulam, and P. Yi, “Sex Imbalance Produces Biased Deep Learning Models for Knee Osteoarthritis Detection”, *Canadian Association of Radiologists Journal*, 2022.

## TEACHING EXPERIENCE

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Teaching Assistant, (*EN.580.69*) *Biomedical Data Design* Fall 2022 & Spring 2023  
Instructors: Dr. Adam Charles, Dr. Jeremias Sulam.

Head Teaching Assistant, (*EN.580.697*) *Computational Cardiology* Fall 2021  
Instructors: Dr. Natalia Trayanova

Teaching Assistant, (*ECE 110L*) *Introduction to Electrical Engineering* Fall & Spring 2018  
Instructors: Dr. Lisa Huettel, Dr. Stacy Tantum

## FUNDING/SUPPORT

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- JHU Mathematical Institute for Data Science Fellowship 2021 - 2022
- NIGMS Pre-Doctoral Grant in Computational Medicine 2020 - 2021

## AWARDS AND FELLOWSHIPS

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- Alpha Eta Mu Beta: National Biomedical Engineering Honor Society 2023
- JHU Mathematical Institute for Data Science Fellow 2022
- Tau Beta Pi: The Engineering Honor Society 2019
- Duke Pratt Fellow 2020
- Duke BioCore Scholar 2019
- Duke Bass Connections Fellow 2018

## SERVICE

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- Reviewer for TMLR, FAccT, ISIT, AISTATS, NeurIPS XAIA

## LEADERSHIP/EXTRACURRICULARS

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- Whiting Internships in Science and Engineering (WISE) 2021 - 2022  
Position: High School Student Mentor
- JHU BME Application Assistance Program (BMEAAP) 2021 - 2022  
Position: Mentor Liaison
- Duke Student Government 2018 - 2019  
Position: Senator for Academic Affairs
- TEDxDuke: Uncharted Waters 2017  
Talk Title: Why We Should All Be Interested In Space

## TALKS AND POSTERS

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- EN.540.464: Advanced Biomedical Data Science for Biomedical Engineering [talk] 2024  
*Algorithmic Fairness in Machine Learning and Data Science*
- Columbia University Workshop on Fairness in Operations and AI [poster] 2024  
*Fairness via Sensitive Attribute Predictors*
- Radiological Society of North America (RSNA) Annual Meeting [talk] 2023  
*Evaluating Fairness of AI Models in Radiology*
- Johns Hopkins AI-X Foundry Fall Symposium [poster] 2023  
*Fairness with Missing Sensitive Attributes*
- EN.540.464: Advanced Biomedical Data Science for Biomedical Engineering [talk] 2023  
*Fairness in Machine Learning*
- Bern Interpretable AI Symposium [poster] 2023  
*Shapley Values and Hypothesis Testing*
- QMUL Intelligent Sensing Winter School [talk] 2022  
*Shapley Values and Hypothesis Testing*

- SIAM Conference on Mathematics of Data Science [talk] 2022  
*Interpreting ML Models with Shapley Values*
- BMES Annual Meeting [poster] 2019  
*Perturbing Force Dependent Vinculin- $\alpha$ -Actinin Binding Impacts Vinculin Tension*
- 6th Annual North Carolina Biosciences Collaborative Research Symposium [poster] 2018  
*Studying Interactions Between Vinculin Tension and  $\alpha$ -Actinin Localization to Focal Adhesions*
- Duke School of Medicine Clinical Research Day [poster] 2018  
*Using Machine Learning to Predict Schizophrenia Admittance*

## SKILLS

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Coding Languages: Python, MATLAB, R

Libraries: PyTorch, Tensorflow, Scikit-learn