Beepul Bharti

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EDUCATION

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

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

- Project: Perturbing Force Dependent Vinculin-α-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)

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

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

Tutor, *(CHEM 101DL) Chemistry & (MATH 221) Multivariable Calculus*   Fall 2017
Instructors: Dr. Christopher Roy, Dr. William Pardon.

FUNDING/SUPPORT

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

AWARDS AND FELLOWSHIPS

- 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

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

LEADERSHIP/EXTRACURRICULARS

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

- 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   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-α-Actinin Binding Impacts Vinculin Tension

- 6th Annual North Carolina Biosciences Collaborative Research Symposium [poster]   2018
  Studying Interactions Between Vinculin Tension and α-Actinin Localization to Focal Adhesions

- Duke School of Medicine Clinical Research Day [poster]   2018
  Using Machine Learning to Predict Schizophrenia Admittance

SKILLS

Coding Languages: Python, MATLAB, R

Libraries: PyTorch, Tensorflow, Scikit-learn