BEEPUL BHARTI

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Education

Johns Hopkins University — Ph.D., Biomedical Engineering
GPA: 4.00/4.00, Advisor: Jeremias Sulam — *Aug 2020 - Current*
Relevant Coursework: Statistical Theory, Statistical Pattern Recognition, Matrix Analysis, Sparsity in Machine Learning & Computer Vision, Nonlinear Optimization, Causal Inference, Probabilistic Models in Vision

Duke University — B.S., Biomedical Engineering & B.A., Mathematics
GPA: 3.86/4.00, *Cum Laude & Distinction* — *Aug 2016 - May 2020*
Relevant Coursework: Real Analysis, Abstract Algebra, Applied PDEs & Complex Variables, Signals and Systems, Advanced Probability, Multivariable Calculus, Biostatistics

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", To appear in *Transactions of 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.

Conference Presentations

Oral Presentations

[1] Evaluating Fairness of AI Models in Radiology, *Radiological Society of North America Annual Meeting*, 2023

[2] Shapley Values and Hypothesis Testing, *Intelligent Sensing Winter School*, 2022.

[3] Shapley Values and Hypothesis Testing, *SIAM Conference on Mathematics of Data Science*, 2022.

Poster Presentations

[1] Fairness via Sensitive Attribute Predictors, *Columbia Workshop on Fairness in Operations and AI*, 2023

[2] Fairness with Missing Sensitve Attributes, *Johns Hopkins AI-X Foundry Fall Symposium*, 2023.

[3] Shapley Values and Hypothesis Testing, *Bern Interpretable AI Symposium*, 2023.

[4] Perturbing Force Dependent Vinculin-α-Actinin Binding Impacts Vinculin Tension, *BMES Annual Meeting*, 2019.

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

[6] Using Machine Learning to Predict Schizophrenia Admittance, *Duke School of Medicine Clinical Research Day*, 2018.

Research Experience

Pratt Research Fellow, *Duke University* — *June 2018 - May 2020*
Advisor: Brenton Hoffman
Project: Perturbing Force Dependent Vinculin-α-Actinin Binding Impacts Vinculin Tension

Bass Connections Fellow, *Duke University* — *June 2017 - May 2018*
Advisor: Rakesh Gopalkumar
Project: Using Machine Learning to Predict Schizophrenia Admittance

Funding/Support

JHU Mathematical Institute for Data Science Fellowship *Jan 2022 - Sept 2022*

NIGMS Pre-Doctoral Grant in Computational Medicine *July 2020 - July 2021*

Teaching Experience

Teaching Assistant, Biomedical Data Design (EN.580.697) *Fall 2022 & Spring 2023*
Instructors: Dr. Adam Charles, Dr. Jeremias Sulam

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

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

Tutor, Chemistry (CHEM 101DL) & Multivariable Calculus (MATH 222) *Fall 2017*
Instructors: Dr. Christopher Roy, Dr. William Pardon

Service

Reviewer: AISTATS 2024, NeurIPS 2023 XAIA Workshop

Work Experience

Engineering World Health Intern, *Makerere University* *June 2019 - July 2019*
Supervisors: Megan Lavery & Elizabeth Bucholz

- Attended 4 weeks of specialized instruction by Makerere University biomedical engineering professionals. Trained over 50 users on 27 types of medical equipment, repaired over 50 medical instruments, and renovated a children's ward at Iganga General Hospital

Leadership/Extracurriculars

BME Application Assistance Program, *Johns Hopkins University* *Sept 2021 - June 2022*
Position: Mentor Liaison

Duke Student Government, *Duke University* *March 2018 - March 2019*
Position: Senator for Academic Affairs

TEDxDuke: Uncharted Waters, *Duke University* *March 2017*
Position: Speaker
Talk Title: Why We Should All Be Interested In Space

Academic Achievements

Alpha Eta Mu Beta: National Biomedical Engineering Honor Society

JHU Mathematical Institute for Data Science Fellow

Tau Beta Pi: The Engineering Honor Society

Duke Pratt Fellow

Duke BioCore Scholar

Duke Bass Connections Fellow

Skills

Coding Languages	Python, MATLAB, R
Libraries:	Python: PyTorch, Tensorflow, Scikit-learn, R: Dpylr, Mlr