Ronak Mehta

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Bio

I am a doctoral student with 2 years of statistics and machine learning research experience. My previous projects have spanned nonparametric statistics, time series analysis, uncertainty estimation, and lifelong/continual learning. My current projects are in the area of generative models in the natural language domain. I have worked on interdisciplinary teams alongside software engineers, social scientists, and neuroscientists. As a result, I am excited to build data science methods that both adhere to theoretical principles and answer grounded, empirical questions.

Education

University of Washington Seattle, WA
Ph.D. in Statistics, GPA: 4.0/4.0 Fall 2020–Current

- **Relevant Coursework:** Generative Models, Reinforcement Learning, Natural Language Processing, Convex Optimization

Johns Hopkins University Baltimore, MD
M.S.E. in Applied Mathematics & Statistics, GPA: 4.0/4.0 Fall 2018–Spring 2019

- **Thesis**: "Independence Testing for Time Series", Advisor: Dr. Joshua Vogelstein
- **Relevant Coursework:** Nonlinear Optimization, Statistical Theory, Matrix Analysis & Linear Algebra, Applied Bayesian Statistics, Topics in Model Selection, Statistical Pattern Recognition

Johns Hopkins University Baltimore, MD
B.S. in Applied Mathematics & Statistics, GPA: 3.6/4.0 Fall 2015–Spring 2018

- **Relevant Coursework:** Real Analysis, Time Series Analysis, Intermediate Programming (C/C++), Data Structures (Java), Analysis of Algorithms

Experience

Microsoft Research Redmond, WA
Research Intern in Special Projects Summer 2020

- Evaluated decision forest and neural network-based continual learning methods on a suite of natural language, vision, and time series tasks.
- Extended continual learning methods for settings in which task IDs are unknown.
- Proposed a mathematical framework that generalizes statistical decision theory for transfer, multitask, and continual learning.

Johns Hopkins University Department of Biomedical Engineering Baltimore, MD
Assistant Research Engineer in Dr. Joshua Vogelstein Laboratory Fall 2017–Spring 2020

- Developed decision forest methods for structured data, uncertainty estimation, and continual/lifelong learning.
- Developed hypothesis test to detect dependence between time series, with applications to fMRI data.

Goldman Sachs New York, NY
Software Engineering Intern in Finance & Risk Technology Summer 2018

- Implemented feature to add new metrics into large-scale data streaming platform for financial time series.
- Worked directly with end-users and developed software iteratively in a propriety language.

Johns Hopkins University Applied Physics Laboratory   Laurel, MD
Research Intern in Large-Scale Analytics Systems   Summer 2017
  - Conducted sentiment and centrality analysis of Twitter communication network to identify problematic users.
  - Implemented distributed clustering algorithm for categorical data using Apache Spark.

Preprints

[1] H. Helm, **R. Mehta**, B. Duderstadt, W. Yang, C. M. White, A. Geisa, J. T. Vogelstein, and C. E. Priebe, "A partition-based similarity for classification distributions", [arXiv link], 2020.

[2] J. T. Vogelstein, H. S. Helm, **R. Mehta**, J. Dey, W. LeVine, W. Yang, B. Tower, J. Larson, C. White, and C. E. Priebe, "A general approach to progressive learning", [arXiv link], 2020.

[3] **R. Mehta**, J. Chung, C. Shen, T. Xu, and J. T. Vogelstein, "Independence testing for multivariate time series", [arXiv link], 2019.

[4] **R. Mehta**, R. Guo, J. Arroyo, M. Powell, H. Helm, C. Shen, and J. T. Vogelstein, "Estimating information-theoretic quantities with uncertainty forests", [arXiv link], 2019.

[5] S. Panda, S. Palaniappan, J. Xiong, E. W. Bridgeford, **R. Mehta**, C. Shen, and J. T. Vogelstein, "Hyppo: A comprehensive multivariate hypothesis testing python package", [arXiv link], 2019.

[6] R. Perry, T. M. Tomita, **R. Mehta**, J. Arroyo, J. Patsolic, B. Falk, and J. T. Vogelstein, "Manifold forests: Closing the gap on neural networks", [arXiv link], 2019.

Teaching

University of Washington

- **Teaching Assistant**   Winter 2021
  Applied Regression (STAT 504)

- **Teaching Assistant**   Fall 2020
  Statistical Methods in Engineering & Science (STAT 390)

John Hopkins University

- **Instructor of Record**   Winter 2020
  Mathematical Thinking and Proof-Writing for Engineers (EN.553.109)

- **Teaching Assistant**   Fall 2019
  Matrix Analysis & Linear Algebra (EN.553.792)

- **Teaching Assistant**   Spring 2019
  Probability & Statistics for the Biological Sciences & Engineering (EN.553.311)

- **Teaching Assistant**   Fall 2018
  Probability & Statistics for the Physical Sciences & Engineering (EN.553.310)

- **Teaching Assistant** at Johns Hopkins University   Spring 2018
  Computational Molecular Medicine (EN.553.450)

Skills

- **Proficient:** Python, R, MATLAB, Matplotlib, Seaborn, scikit-learn, joblib, PyTorch
- **Familiar:** Java, C/C++, Scala, Tensorflow, Keras, Apache Spark