Ronak R. Mehta

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Education

University of Wisconsin-Madison *Madison, WI*
Computer Sciences, PhD *2016-Present*
Minor in Statistics
Computer Sciences, MS *2014-2016*

- Advisors: Vikas Singh and Michael Newton
- Research in Machine Learning and Computer Vision
- Relevant Coursework: Artificial Intelligence, Advanced Machine Learning, Computer Vision, Statistical Inference, Linear and Nonlinear Optimization, Graphical Models, Stochastic Processes, Computational Statistics

University of Michigan-Ann Arbor *Ann Arbor, MI*
Computer Engineering, B.S.E. *2010-2014*

- Selected Coursework: Autonomous Robotics, Design of Microprocessor-based Systems, Embedded Control Systems, Design and Manufacturing, Control Systems Analysis and Design

Experience

Computer Sciences Department, UW-Madison *2015-Present*
Graduate Research Assistant

- Collaborating with Vikas Singh and others on machine learning and computer vision research projects, continuing with applications in modeling preclinical development of Alzheimer's disease with the Wisconsin Alzheimer's Disease Research Center.
- Research focuses on problems of Selection in Machine Learning: Which features, samples, or models are minimally sufficient or important based on a specified measure of interest (accuracy, fairness, model size, etc.)?

American Family Insurance *Madison, WI 2021-2022*
Enterprise: Machine Learning Intern

- Created a fairness toolbox for understanding and accounting for unfairness and bias in large datasets and machine learning models.
- Worked with ML team members to understand and deploy fair deep learning methods and models.
- Developed new methods for fairness regularization via high-dimensional Earth Mover's Distance formulations, concluding in NeurIPS conference submission.

Biostatistics and Medical Informatics Department, UW-Madison *2016-2019*
Research Fellow

- Collaborated with Michael Newton and Sterling Johnson, specifically on developing and applying methods for the analysis of medical imaging data in collaboration with the Wisconsin Alzheimer's Disease Research Center.

Computer Sciences Department, UW-Madison *Spring 2015*
CS 760: Machine Learning Teaching Assistant

- Developed and assigned written and programming homework assignments.
- Held office hours and provided general teaching support.

Publications

Efficient Discrete Multi Marginal Optimal Transport Regularization.
Under Review. *Ronak Mehta, Jeffery Kline, Vishnu Suresh Lokhande, Glenn Fung, Vikas Singh.*

Deep Unlearning via Randomized Conditionally Independent Hessians.
CVPR 2022. *Ronak Mehta, Sourav Pal, Vikas Singh, Sathya Ravi.*

Investigating Functional Brain Network Abnormalities via Differential Covariance Trajectory Analysis and Scan Statistics.
ISBI 2022. *Anita Sinha, Ronak Mehta, Veena Nair, Rasmus Birn, Vikas Singh, Vivek Prabhakaran.*

Graph Reparameterizations for Enabling 1000+ Monte Carlo Iterations in Bayesian Deep Neural Networks.
UAI 2021. *Yuri Nazarov, Ronak Mehta, Vishnu Lokhande, Vikas Singh.*

Scaling Recurrent Models via Orthogonal Approximations in Tensor Trains
ICCV 2019. *Ronak Mehta, Rudrasis Chakraborty, Yunyang Xiong, Vikas Singh.*

Resource Constrained Neural Network Architecture Search: Will a Submodularity Assumption Help?
ICCV 2019. *Yunyang Xiong, Ronak Mehta, Vikas Singh.*

DUAL-GLOW: Conditional Flow-Based Generative Model for Modality Transfer.
ICCV 2019. *Haoliang Sun, Ronak Mehta, Hao H. Zhou, Zhichun Huang, Sterling C. Johnson, Vivek Prabhakaran, Vikas Singh*

Sampling-free Uncertainty Estimation in Gated Recurrent Units with Applications to Normative Modeling in Neuroimaging
UAI 2019. *Seong Jae Hwang, Ronak R. Mehta, Hyunwoo J. Kim, Sterling C. Johnson, Vikas Singh.*

On Training Deep 3D CNN Models with Dependent Samples in Neuroimaging
IPMI 2019. *Yunyang Xiong, Hyunwoo J. Kim, Bhargav Tangirala, Ronak Mehta, Sterling C. Johnson, Vikas Singh.*

Finding Differentially Covarying Needles in a Temporally Evolving Haystack: A Scan Statistics Perspective
Quart. Appl. Math. 2019. *Ronak Mehta, Hyunwoo J. Kim, Shulei Wang, Sterling C. Johnson, Vikas Singh.*

Provably Robust Image Deconvolution via Mirror Descent
arXiv Preprint. *Sathya Ravi, Ronak Mehta, Vikas Singh.*

Talks and Presentations

CIBM Annual Retreat, 2018. Presented a short talk on Differentially Evolving Temporal Covariances at *Computation and Informatics in Biology and Medicine 2018 Annual Retreat*.
Diff-CVML, CVPR 2018. Presented a short talk and poster on Differentially Evolving Temporal Covariances at *Computer Vision and Pattern Recognition 2018*, at the *4th International Workshop on Differential Geometry in Computer Vision and Machine Learning*.
MCVW 2018. Presented a poster on Provably Robust Image Deconvolution via Mirror Descent at the *Midwest Computer Vision Workshop 2018*.
BMI Training Presentations Fall 2017. Presented work on measuring uncertainty in recurrent neural networks, with applications to neuroimaging for the Biostatistics and Medical Informatics Training Seminar.
AIRG Fall 2017. Presented and lead a discussion on variational inference for the AI Reading Group.
AIRG/EA Madison Fall 2017. Presented and lead a discussion on existential risk and AI Safety for AIRG and Effective Altruism Madison.
BMI Training Presentations Spring 2016. Presented final work on identifying second-order trends in high-dimensional temporal data for the BMI Training seminar.
AIRG Fall 2016. Presented and lead a discussion on stability and generalization.
BMI Training Presentations Fall 2016. Presented preliminary work on identifying second-order trends in high-

dimensional temporal data for the BMI Training seminar.
AIRG Fall 2015. Presented and lead a discussion on the graphical lasso, and inverse covariance estimation.
AIRG Spring 2015. Presented and lead a discussion on Recurrent Neural Networks.

Reviewing Service

Association for the Advancement of Artificial Intelligence (AAAI)	2022
Computer Vision and Pattern Recognition (CVPR)	2021
Neural Information Processing Systems (NeurIPS)	2020
Computer Vision and Pattern Recognition (CVPR)	2020
Medical Image Computing and Computer Assisted Intervention (MICCAI)	2019
Medical Image Computing and Computer Assisted Intervention (MICCAI)	2018
(ad-hoc reviewer) International Conference in Machine Learning (ICML)	2018
(ad-hoc reviewer) Neural Information Processing Systems (NIPS)	2017