Namrata Deka

PhD Student · Machine Learning

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Summary

I am a Machine Learning Ph.D. student at Carnegie Mellon University. My research spans the intersection of machine learning, causality, reinforcement learning and computer vision for learning robust representations and generative time-series models. I am proficient in Python and work extensively with deep learning frameworks like PyTorch and Tensorflow.

Education

Carnegie Mellon University *Pittsburhg, PA, USA*

Ph.D., Machine Learning *2023 - present*

- Advisors: Dr. Kun Zhang, Dr. Jeff Schneider
- Dissertation: TBD

University of British Columbia *Vancouver, BC, Canada*

M.Sc., Computer Science *2020 - 2023*

- Advisor: Dr. Danica J. Sutherland
- Thesis: Kernel Methods for Invariant Representation Learning: Enforcing Fairness and Conditional Independence

Indraprastha Institute of Information Technology *New Delhi, India*

B.Tech., Computer Science and Engineering *2013 - 2017*

- Honors thesis/undergrad research advisor: Dr. Saket Anand, Dr. Sanjit K. Kaul

Publications

Peer-Reviewed Conferences

R. Pogodin*, **N. Deka***, Y. Li*, D.J. Sutherland, V. Veitch, A. Gretton. 2023. Efficient Conditionally Invariant Representation Learning. 11th International Conference on Learning Representations (**ICLR**). (Oral/Top 5%). *Equal Contribution.

N. Deka, D.J. Sutherland. MMD-B-Fair: Learning Fair Representations with Statistical Testing. 2023. In Proceedings of the 26th International Conference on Artificial Intelligence and Statistics (**AISTATS**). (Poster).

Workshops & Technical Reports

Y. Khandelwal, M. Arvind, S. Kumar, A. Gupta, S.K. Danisetty, P. Bagad, A. Madan, M. Lunayach, A. Annavajjala, A. Maiti, S. Jain, A. Dalmia, **N. Deka**, J. White, J. Doshi, A. Kanazawa, R. Panicker, A. Raval, S. Rana, M. Tapaswi. 2024. NurtureNet: A Multi-task Video-based Approach for Newborn Anthropometry. 7th **CVPR** Workshop on Computer Vision for Physiological Measurements (CVPM)

N. Deka, D. Sutherland. Learning Privacy-Preserving Deep Kernels with Known Demographics. 2022. In Proceedings of the 36th **AAAI** Conference on Artificial Intelligence. Workshop on Privacy-Preserving Artificial Intelligence (PPAI).

D. Sutherland, **N. Deka**. Unbiased estimators for the variance of MMD estimators. 2022. Technical report.

Professional Experience

2023 **Machine Learning Researcher**, University of British Columbia

2022 **Machine Learning Research Intern**, Borealis AI

2021 **Summer@EPFL Research Fellow**, École Polytechnique Fédérale de Lausanne (EPFL)

2018-2020 **Machine Learning Research Fellow**, Wadhwani Institute for Artificial Intelligence

2018 **Applied Research Intern**, Microsoft Research

Academic Research Experience

Carnegie Mellon University - Dept. of Machine Learning *Pittsburgh, PA*

Advisor: Dr. Kun Zhang, Dr. Jeff Schneider *Sep. 2023 - Present*

- Exploring causal representation learning from high-dimensional and unstructured data specifically for robust and accurate generative modelling.
- Investigating methods in causality and reinforcement learning to learn distributionally-robust state-action dynamics from time-series data.
- Working on new methods for estimating unnormalized densities with score-matching for low-dimensional manifolds.

University of British Columbia - Dept. of Computer Science *Vancouver, BC*

Advisors: Dr. Danica J. Sutherland *Sep. 2020 - April 2023*

- Conducted research in the intersection of representation learning and kernel methods with applications in invariance and fairness.
- Developed a novel fair representation learning method using statistical two-sample tests.
- Developed kernel measures of conditional independence to learn counter-factually invariant representations.

Talks and Presentations

Spring 2023. *MMD-B-Fair: Learning Fair Representations with Statistical Testing*. Conference Poster Presentation. 26th International Conference on Artificial Intelligence and Statistics, Valencia, Spain.

Winter 2019. *Neonatal Anthropometry and Growth Tracking via model based 3D Reconstruction from Video*. Seminar Talk. Perceiving Systems Department, Max Planck Institute for Intelligent Systems, Tübingen, Germany.

Teaching Experience

Fall 2022	**Intelligent Systems**, Teaching Assistant, University of British Columbia	*Vancouver*
Spring 2021	**Intelligent Systems**, Teaching Assistant, University of British Columbia	*Vancouver*
Spring 2017	**Computer Vision**, Teaching Assistant, Indraprastha Institute of Information Technology	*New Delhi*
Fall 2016	**Advanced Programming**, Teaching Assistant, Indraprastha Institute of Information Technology	*New Delhi*

Service and Outreach

Committee Membership

2024	**AI Institute for Societal Decision Making, CMU**, Student Leadership Council	*Pittsburgh, PA*

Peer Review

- AISTATS 2023