Namrata Nadagouda

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OVERVIEW

- Research on developing methods for learning data efficient models based on active learning, human-in-the-loop learning and learning from human feedback/preferences
- Worked on applications such as preference learning, localization, metric learning, and classification, and worked with images and sequential/time series data
- Have a well rounded knowledge of ML theory and practice including both traditional ML and deep learning models
- Experience with Python, MATLAB, PyTorch, Jupyter notebooks, Microsoft Azure

EDUCATION

Ph.D. Electrical & Computer Engineering *December 2024 (Expected)*
Digital Signal Processing and Machine Learning
Georgia Institute of Technology, Atlanta, GA
Advisor: Prof. Mark Davenport

M.S. Electrical & Computer Engineering December 2020
Digital Signal Processing and Machine Learning
Georgia Institute of Technology, Atlanta, GA

B.Tech. Electrical & Electronics Engineering May 2017
Digital Signal Processing and Digital System Design
National Institute of Technology Karnataka, Surathkal, India

PUBLICATIONS

N. Nadagouda and M. Davenport, "Active query generation for preference learning", *In preparation.* Preliminary results presented at Women in Machine Learning (WiML) Workshop, co-located with *Neural Information Processing Systems (NeurIPS), December 2023.*

N. Nadagouda, A. Xu and M. Davenport, "Active metric learning and classification using similarity queries", in *Uncertainty in Artificial Intelligence (UAI)*, August 2023. Also presented at Human in the Loop Learning Workshop, *Neural Information Processing Systems (NeurIPS), December 2022.*

A. McRae, A. Xu, J. Jin, **N. Nadagouda**, N. Ahad, P. Guan, S. Karnik and M. Davenport, "Delta Distancing: A Lifting Approach to Localizing Items From User Comparisons", in *Proc. IEEE Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP), May 2022.*

N. Nadagouda and M. Davenport, "Switched Hawkes Processes", in *Proc. IEEE Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP), June 2021.*

G. Canal, M. Connor, J. Jin, **N. Nadagouda**, M. O'Shaughnessy, C. Rozell and M. Davenport, "The Picasso Algorithm for Bayesian Localization Via Paired Comparisons in a Union of Subspaces Model", in *Proc. IEEE Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP), May 2020.*

ABSTRACTS

N. Ahad, **N. Nadagouda**, E. Dyer and M. Davenport, "Active learning for time instant classification", at Data-centric Machine Learning Research Workshop, *International Conference on Machine Learning (ICML), July 2023.*

Y. Teng, A. Mamuye, E. Mo, K. Zhu, R. Walker, **N. Nadagouda** and M. Davenport, "Range-Only Simultaneous Localization and Mapping using Paired Comparisons", at *IEEE Annual Conf. on RFID, April 2021.*

N. Nadagouda and M. Davenport, "Switched Hawkes Processes", at *Workshop on Recent Developments on Mathematical/Statistical approaches in Data Science (MSDAS), June 2019.*

ARTICLES

N. Nadagouda, "Journey of a researcher: Finding pleasure in the pathless woods", *American Ceramic Society Bulletin*, Student Perspectives, June/July 2020.

RESEARCH EXPERIENCE

Active query generation Fall 2022 - present

Working on developing a method for generating queries actively for preference learning. Queries are pairwise comparisons of the form – *Which among a pair of items, A and B does a user prefer?* The user's preferences are estimated using a Bayesian framework iteratively by acquiring responses to the queries.

Active learning for time series data Summer 2023

Working on developing a method for classifying individual instants of time series data. The data consists of features which repeat at regular intervals and the existence of these correlations poses a unique challenge for active label selection.

Unified framework for active learning Fall 2019 - Summer 2022

Developed a unified query framework for active learning based on nearest neighbor queries. This method can be applied to any problem which involved learning a representation of the dataset that respects the underlying similarity. Demonstrated the performance of the method for active deep metric learning and active image classification using deep neural networks.

Active similarity learning and manifold graphs Fall 2019 - Summer 2022

Implemented active image classification strategies for semi-supervised classification on CIFAR-100 and DomainNet datasets. This project was funded by the *DARPA LwLL – Learning with Less labels* program.

Preference learning Fall 2019 - Summer 2022

The problem consists of estimating a user's preferences over a set of items. We use the *ideal point* model to localize a user in an embedding of items. Worked on a variety of problems involving localizing new items and users.

Switched Hawkes Processes Fall 2018 - Summer 2019

Developed the Switched Hawkes Process which can be used to model systems in which the parameters of the process dynamically change depending on some (known) external state. We propose a simple maximum likelihood estimation approach and apply our model to a real-world traffic sensor dataset to study traffic patterns during different configurations of the traffic lights at an intersection.

TEACHING EXPERIENCE

Mentor for undergraduate students

Yue Teng — 2020 - 2022

Amran Mamuye, Eunsan Mo, Kerui Zhu, Robert Walker — 2020 - 2021

Guided the above students to work on a research project focused on simultaneous localization and mapping using paired comparisons of distances.

Graduate Teaching Assistant — Spring 2021

Georgia Tech ECE 6270 - Convex Optimization

Teaching Assistant — June 2019

Hands-on-Tech Georgia Tech Day Camp - Machine Learning

Graduate Teaching Assistant — Spring 2019

Georgia Tech CS 4641 - Machine Learning

Graduate Teaching Assistant — Fall 2018

Georgia Tech ECE 8843/ISYE 8843/CS 8803/BMED 8813 -
Mathematical Foundations of Machine Learning

WORK EXPERIENCE

Intern — Summer 2018

Hedge Fund Start-up, Atlanta, GA

Worked on data management and data pre-processing of stock trade data stored in SQL databases. Also, involved performance evaluation of trading algorithms on Microsoft Azure platform

Research Intern, Microarchitecture Research Lab — Fall 2016

Intel India - Intel Labs, Bangalore, India

Worked on the design of hardware for matrix multiplication and Cholesky factorization targeted for FPGA implementation. Involved development of RTL codes and C functional reference codes and design verification.

Research Intern — Summer 2016

Department of Electrical Communication Engineering

Indian Institute of Science, Bangalore, India

Analyzed the performance of a column matching based algorithm for target self-localization in wireless sensor networks. Worked on the problem of finding a distribution function for the placement of beacon nodes to achieve target self-localization.Analyzed the performance of a column matching based algorithm for target self-localization in wireless sensor networks. Worked on the problem of finding a distribution function for the placement of beacon nodes to achieve target self-localization.

AWARDS

Registration and Travel Awards

NeurIPS financial assistance — December 2023

WiML Travel Grant

Women in Data Science and Mathematics Workshop - IPAM — August 2023

UAI registration funding

ICML registration funding

Deep Learning Theory Workshop and Summer School — August 2022

Simons Institute, University of California, Berkeley

Women and Math workshop, IAS, Princeton — May 2022

	ICML Diversity and Inclusion Fellowship	July 2020
	MSDAS Workshop, UTD	June 2019
Hackathons	Winner, Technical Track, Hacklytics Data Science at Georgia Tech	February 2019
Academic Awards and Scholarships	NITK Institute Gold Medal	2017
	1986 Batch Gold Medal	2017
	Prof. M. R. Shenoy Memorial Prize	2017
	Prof. K. M. Hebbar Gold Medal	2017
	NITK Surathkal Merit Scholarship	2013 - 2017
WORKSHOPS ATTENDED	Women in Data Science and Mathematics Institute for Pure and Applied Mathematics *University of California, Los Angeles*	August 2023
	Deep Learning Theory Workshop and Summer School *Simons Institute, University of California, Berkeley*	August 2022
	The Mathematics of Machine Learning Women and Math Program *Institute for Advanced Study, Princeton, NJ*	May 2022
	Algorithmic Learning Theory Mentoring Workshop *Online*	March 2022
	Foundation of Data Science Summer School *Georgia Institute of Technology, Atlanta, GA*	August 2019
	Recent Developments on Mathematical/Statistical approaches in Data Science *University of Texas at Dallas, Richardson, TX*	June 2019
SERVICE	**Reviewer/Volunteer**, WiML workshop at NeurIPS	2023
	Volunteer, NeurIPS Conference	2023
	Volunteer, UAI Conference	2023
	Volunteer, WiML workshop at ICML	2023
	Member, GT Mural Team	2022
	Reviewer, AIStats Conference	2021
	Reviewer, GT President's Undergraduate Research Award	2021 - 2022
	Panelist, GT ECE ORS Graduate Panel	2020
	Volunteer, GT ECE Prospective PhD student visit	2019 - 2022
	Teaching Volunteer, Shiksha, ACM NITK Student Chapter	2016
	Student Representative, NITK Student Council	2013 - 2014