Deepak Nathani

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About Me

I am currently a 4th year Ph.D Student at *University of California, Santa Barbara*, advised by Dr. William Yang Wang. My research interests revolve around Reasoning in Language Models, Autonomous Agents, and Open-Ended Learning.

Education

2022–Present **PhD, Computer Science**
University of California Santa Barbara
Advisor: Dr. William Yang Wang.

2015–2019 **B.Tech, Mechanical Engineering**
Indian Institute of Technology Hyderabad.

2017–2019 **B.Tech, Computer Science and Engineering (Second Major)**
Indian Institute of Technology Hyderabad
Advisor: Dr. Manohar Kaul.

Publications

Selected Publications

[1] **Deepak Nathani**, Lovish Madaan, Nicholas Roberts, Nikolay Bashlykov, Ajay Menon, Vincent Moens, Mikhail Plekhanov, Amar Budhiraja, Despoina Magka, Vladislav Vorotilov, Gaurav Chaurasia, Dieuwke Hupkes, Ricardo Silveira Cabral, Tatiana Shavrina, Jakob Nicolaus Foerster, Yoram Bachrach, William Yang Wang, and Roberta Raileanu. MLGym: A new framework and benchmark for advancing AI research agents. In *Second Conference on Language Modeling*, 2025.

[2] **Deepak Nathani**, David Wang, Liangming Pan, and William Yang Wang. Maf: Multi-aspect feedback for improving reasoning in large language models. EMNLP, 2023.

[3] **Deepak Nathani**, Jatin Chauhan, Charu Sharma, and Manohar Kaul. Learning attention-based embeddings for relation prediction in knowledge graphs. In *Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics*. Association for Computational Linguistics, 2019.

Other Publications

[4] Eshaan Tanwar, **Deepak Nathani**, William Yang Wang, and Tanmoy Chakraborty. Understanding the effects of domain finetuning on llms, 2025.

[5] Madhurima Vardhan, **Deepak Nathani**, Swarnima Vardhan, Abhinav Aggarwal, and Filippo Simini. Large language models as synthetic electronic health record

data generators. In *2024 IEEE Conference on Artificial Intelligence (CAI)*, pages 804–810, 2024.

[6] Liangming Pan, Michael Saxon, Wenda Xu, **Deepak Nathani**, Xinyi Wang, and William Yang Wang. Automatically correcting large language models: Surveying the landscape of diverse automated correction strategies. *Transactions of the Association for Computational Linguistics*, 12:484–506, 05 2024.

[7] Madhurima Vardhan, Narayan Hegde, **Deepak Nathani**, Emily Rosenzweig, Alan Karthikesalingam, and Martin Seneviratne. Infusing behavior science into large language models for activity coaching. *medRxiv*, 2023.

[8] Madhurima Vardhan, Narayan Hegde, Srujana Merugu, Shantanu Prabhat, **Deepak Nathani**, Martin Seneviratne, Nur Muhammad, Pranay Reddy, Sriram Lakshminarasimhan, Rahul Singh, Karina Lorenzana, Eshan Motwani, Partha Talukdar, and Aravindan Raghuveer. Walking with pace - personalized and automated coaching engine. In *Proceedings of the 30th ACM Conference on User Modeling, Adaptation and Personalization*, UMAP '22. Association for Computing Machinery, 2022.

[9] Kalpesh Krishna, **Deepak Nathani**, Xavier Garcia, Bidisha Samanta, and Partha Talukdar. Few-shot controllable style transfer for low-resource multilingual settings. In *Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics*. Association for Computational Linguistics, May 2022.

[10] Jatin Chauhan, **Deepak Nathani**, and Manohar Kaul. Few-shot learning on graphs via super-classes based on graph spectral measures. In *International Conference on Learning Representations*, 2020.

[11] Sumit Bhatia, Bapi Chatterjee, **Deepak Nathani**, and Manohar Kaul. A persistent homology perspective to the link prediction problem. In *Complex Networks and Their Applications VIII*, 2020.

[12] Charu Sharma, **Deepak Nathani**, and Manohar Kaul. Solving partial assignment problems using random clique complexes. In *Proceedings of the 35th International Conference on Machine Learning, ICML 2018*, 2018.

Professional Experience

2024-2024 **Research Scientist Intern**, *Meta GenAI*, London

Advisors: Roberta Raileanu

- Built MLGym, a framework for building and benchmarking LM agents on Computational Research tasks.
- Released MLGym-Bench, a benchmark for testing LM Agents on computational research tasks from diverse domains such as Reinforcement Learning, Computer Vision, Language Modeling, Data Science, Game Theory, and SAT solver optimization.

2023-2023 **Applied Scientist Intern**, *AWS Translate*, New York

Advisors: Xing Niu, Shuoyang Ding, Prashant Mathur

Worked on improving the stability of Text2Text Simultaneous Translation systems.

2020–2022 **Pre-Doctoral Researcher**, *Google Research India*, Bengaluru
Advisor: Dr. Partha Talukdar
Worked towards creating a Conversational Health Assistant and improving Text Style Transfer models.

2019–2020 **Software Engineering AMTS**, *Salesforce.com*, Hyderabad

2018–2018 **Summer Research Intern**, *IBM Research Labs*, New Delhi
Advisor: Dr. Sumit Bhatia, Dr. Bapi Chatterjee
Used Persistent Homology to learn shape and structure of the neighborhood of a data item(node) and predict further links.

Mentees

2025-Present **Neal Jain**, *UCSB*

2025-Present **Ken Thampiratwong**, *UCSB*

2023-2024 **David Wang**, *UCSB*, Now: ChipAgents.ai

Presentations & Invited Talks

08/2025 **Google Multilinguality Reading Group**, *Mountain View*, Invited Talk

05/2025 **MLCommons ARES Summit**, *Oxford*, Invited Talk

03/2025 **Ploutos**, *Online*, Invited Talk

Awards & Scholarships

2022 **Academic Excellence Fellowship**, *University of California*, Santa Barbara

Academic Service

Reviewer ICLR 2025, COLM 2025, ARR 2024, SoCal NLP 2022, ICLR 2021-2023, NeurIPS 2021, EMNLP 2021

Sub-Reviewer NeurIPS 2020

Technical Skills

Programming C, C++, Python, MATLAB/Octave

Framework Tensorflow, PyTorch, Scikit-Learn

Miscellaneous

2017-2019 Coordinator, Infero - Programming Club, IIT Hyderabad

2018 Rank 30/250 teams, ACM-ICPC Amritapuri Regional