NIKUNJ GUPTA

✉ nikunj@usc.edu | ♖ nargncAAAAAJ | 🌐 nikunj-gupta.github.io | 🔗 nikunj-gupta97 | 📍 Los Angeles CA USA

PhD student with an interest in AI, Reinforcement Learning, and Deep Learning

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EDUCATION		
PhD in computer science, University of Southern California		2023-Ongoing
MS in computer engineering, New York University (THESIS)		2021-2023
BTech & MTech in information technology, IIITB (THESIS)		2014-2019

RESEARCH EXPERIENCE		
MILA QUEBEC AI, Research Intern, Prof. Samira Ebrahimi Kahou		Jan-Jul 2023
NYU COURANT, MSc Thesis, Prof. Dennis Shasha		2022-2023
NYU CDS, Research Assistant, Prof. Jacopo Cirrone		Apr-Dec 2022
NYU TANDON, Research Assistant, Prof. Quanyan Zhu		Sep-Dec 2021
UNIVERSITY OF ALBERTA, Research Assistant, Prof. Matthew Taylor		2020-2021
AGANITHA (an AI startup) India, Data Scientist		2019-2020
IIITB, MTech Thesis, Prof. GS Raghavan		2018-2019
ERICSSON RESEARCH INDIA, Research Intern, Dr. Swarup Mohalik		2018-2019
ABB RESEARCH INDIA, Research Intern, Dr. Divyasheel Sharma		Summer 2017

SELECTED PUBLICATIONS ($\alpha - \beta$)

In submission / Workshops

S1. **Gupta, N.** and Kahou, S.E., 2023. CAMMARL: Conformal Action Modeling in Multi Agent Reinforcement Learning. arXiv preprint arXiv:2306.11128.
(*Accepted in Multi-Agent Behavior workshop at CVPR 2023.*)

Journals

J1. **Gupta, N.**, Srinivasaraghavan, G., Mohalik, S., Kumar, N. and Taylor, M.E., 2023. Hammer: Multi-level coordination of reinforcement learning agents via learned messaging. Neural Computing and Applications, pp.1-16.
(*Previously accepted in Adaptive and Learning Agents workshop at AAMAS 2021.*)

Conferences

C2. Mai, A., **Gupta, N.**, Abouzied, A. and Shasha, D., 2023, August. Planning Multiple Epidemic Interventions with Reinforcement Learning. In Proceedings of the Thirty-Second International Joint Conference on Artificial Intelligence.

C1. Chen, S., **Gupta, N.**, Galbraith, W.B., Shah, V. and Cirrone, J., 2022, November. Prediction of drug effectiveness in rheumatoid arthritis patients based on machine learning algorithms. In Proceedings of the 2022 9th International Conference on Biomedical and Bioinformatics Engineering (pp. 147-154).

Preprints

P2. **Gupta, N.**, Mai, A., Abouzied, A. and Shasha, D., 2023. On the calibration of compartmental epidemiological models. arXiv preprint arXiv:2312.05456.

P1. **Gupta, N.**, Li, T. and Zhu, Q., 2022. Informationally-Mosaic Reinforcement Learning.

TEACHING	
Introduction to Programming, USC	Fall 2023
Introduction to Reinforcement Learning, IIITB	Summer 2019
Applied Machine Learning, TCS Bangalore, Videoken, IIITB	Spring 2019
Mathematics for Machine Learning, IIITB	Fall 2018

SERVICE	
Reviewer, Neural Computing and Applications Journal	2023/2024
Publicity Chair, HiPC 2024 Conference	2024
Travel Awards Chair, HiPC 2023 Conference	2023

ACADEMIC PROJECTS (SELECTED)	
	• Subgoal conditioned RL for navigating in grid maps (USC) (REPORT)(CODE)
	• Active interactive learning (USC) (TASK)(REPORT)
	• Mathematical formulation of a research project (USC) (TASK)(REPORT)
	• Low-rank models for missing data imputation in EHRs (NYU) (ARXIV)(CODE)
	• Optimizing ResNet while being mindful of limited resources (NYU) (ARXIV)(CODE)
	• Spectral Clustering algorithms for Directed Graphs (NYU) (ARXIV)(CODE)
	• Text-conditional DCGANs for text-to-image synthesis (IIITB) (REPORT)(CODE)
	• Qualitative Inference with Multi-modal Interaction (IIITB) (REPORT)(CODE)

PRESENTATIONS (SELECTED)

ON THE CONFLUENCE OF MARL AND GRAPHS, USC	2024
DECISION-MAKING UNDER UNCERTAINTY VIA MARL, USC	2023
CAMMARL (accepted paper), MABe @ CVPR 2023, Mila	
SPECTRAL CLUSTERING ON DIRECTED GRAPHS, NYU	2022
LOW-RANK-MODELS FOR MISSING DATA IMPUTATIONS IN EHRS, NYU	
INFORMATIONALLY-MOSAIC REINFORCEMENT LEARNING, NYU	
HAMMER (accepted paper), ALA @ AAMAS 2021	2021
BRINGING RL TO THE REAL WORLD!, IMPRS-IS PhD Symposium 2021	
FULLY COOPERATIVE MULTI-AGENT RL: BUSINESS ANGLE, Aganitha	2019
MARL FOR WAREHOUSE LOGISTICS, Ericsson Research, RISE Conf'19	
TEXT-TO-IMAGE SYNTHESIS, AI Club, IIITB	2018
DEEP CONVOLUTIONAL GANS, IIITB	
A COMPREHENSIVE SURVEY OF MULTI-AGENT RL, IIITB	
INTRODUCTION TO REINFORCEMENT LEARNING, AI Club, IIITB	
REGION-BASED CNNS, Advanced machine perception seminar, IIITB	
REMOTE SENSING: CHENNAI FLOODS 2015, IIITB	
QUALITATIVE INFERENCE WITH MULTIMODAL INTERACTIONS, IIITB	
CGNET SWARA: AN INDIAN VOICE-BASED PORTAL, Microsoft Research India	2017
SMART POLLUTION UNDER CONTROL, Hackmania Hackathon (Winner)	2016

RELEVANT COURSES

USC	Autonomous decision-making, Advanced analysis of algorithms
NYU	Deep learning, Mathematical tools for data science, Mathematical statistics, Optimization, Probability and stochastic processes
IIITB	Foundations of big data algorithms, ML, AI, DNN, RL
Online	CS224W Machine learning with graphs (Stanford) (LINK)

MENTORING

• Nitin Bhuyyar, summer intern at USC	Now MS CS @ USC
• Nishant Kumar, research intern at UofA (from IIT-BHU)	Now @ Mastercard AI
• Dikshant Shehmar, summer intern at UofA (from IIT-B)	Now @ Honda R&D

AWARDS & INVOLVEMENT

Graduate scholarship (USD 12000), NYU Tandon	2021-23
Mentor for 2 interns, Intelligent Robot Learning Lab, University of Alberta	2021
Mentor for 5 students, Student Mentoring Program, IIITB	2017-18
Volunteer, CGNet Swara, Microsoft Research India (LINK)	2017
Organizer, Tug of War and Badminton in IIITB's sports fest	2016/2018
Winner (1500+ teams nation-wide), HackMania hackathon, SPUC (LINK)	Oct 2016
Winner (15 teams; 65 students), IIITB's DS hackathon, FitWit (LINK)	Feb 2016
Ranked in top 1% (1.5M+ candidates) in of All India Engineering exam	Apr 2014