NIKUNJ GUPTA

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

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

PUBLICATIONS $(\alpha - \beta)$

PREPRINTS

P4. Deep meta coordination graphs for multi-agent reinforcement learning
Nikunj Gupta, James Zachary Hare, Rajgopal Kannan, Viktor Prasanna
Under Submission.

P3. Cammarl: Conformal action modeling in multi-agent reinforcement learning[(pdf)]
Nikunj Gupta, Samira Ebrahimi Kahou
Accepted in *Multi-Agent Behavior* workshop at CVPR 2023.

P2. On the calibration of compartmental epidemiological models[(pdf)]
Nikunj Gupta, Anh Mai, Azza Abouzied, Dennis Shasha
Preprint 2023.

P1. Informationally-mosaic reinforcement learning[(pdf)]
Nikunj Gupta, Tao Li, Quanyan Zhu
Preprint 2022.

JOURNALS

J1. Hammer: Multi-level coordination of RL agents via learned messaging[(pdf)(video)]
Nikunj Gupta, GS Raghavan, Swarup Mohalik, Nishant Kumar, Matthew Taylor
Neural Computing and Applications 2023 (Impact factor: 6.0)
(Previously accepted in *Adaptive and Learning Agents* workshop at AAMAS 2021)

CONFERENCES

C2. Planning multiple epidemic interventions with reinforcement learning[(pdf)(video)]
Anh Mai, **Nikunj Gupta**, Azza Abouzied, Dennis Shasha
IJCAI 2023.

C1. Prediction of drug effectiveness in rheumatoid arthritis patients using ML[(pdf)]
Shengjia Chen, **Nikunj Gupta**, Buz Galbraith, Valay Shah, Jacopo Cirrone
ICBBE 2022.

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, Machine Learning, Artificial Intelligence, Deep Learning, Reinforcement Learning
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 All India engineering exam	Apr 2014