

# NIKUNJ GUPTA

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OBJECTIVE	To leverage insights from human intelligence to improve machine intelligence and use advances in machine intelligence to better understand human intelligence.	
RESEARCH AREAS	(Single-agent)(multi-agent)(deep) reinforcement learning, sequential decision-making under uncertainty, graph machine learning, optimization.	
EDUCATION	<b>PhD</b> in computer science, University of Southern California	2023-
	<b>MS</b> (thesis-based) in computer engineering, New York University	2021-2023
	<b>BTech &amp; MTech</b> (thesis-based) in information technology, IITB	2014-2019
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
	IITB, 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, PREPRINTS & THESES ( $\alpha - \beta$ )	<ol style="list-style-type: none"><li>7. CAMMARL: Conformal action modeling in multi-Agent RL (PAPER) Nikunj Gupta, Somjit Nath, Samira Ebrahimi Kahou ICML 2024 (under submission) Previously accepted in <i>Multi-Agent Behavior</i> workshop at CVPR 2023.</li><li>6. HAMMER: Multi-level coordination of RL agents via learned messaging (PAPER) Nikunj Gupta, GS Raghavan, Swarup Mohalik, N Kumar, Matthew Taylor Neural Computing and Applications 2023, Impact factor (2022): 6.0 Previously accepted in <i>Adaptive and Learning Agents</i> workshop at AAMAS 2021.</li><li>5. On the calibration of compartmental epidemiological models (PAPER) Nikunj Gupta, Anh Mai, Azza Abouzied, Dennis Shasha MSc Thesis, NYU Courant Institute of Mathematical Sciences, 2023.</li><li>4. Planning multiple epidemic interventions with reinforcement learning (PAPER) Anh Mai, Nikunj Gupta, Azza Abouzied, Dennis Shasha IJCAI 2023.</li><li>3. ML-based prediction of drug effectiveness in rheumatoid arthritis (PAPER) Shengjia Chen, Nikunj Gupta, W Galbraith, Valay Shah, Jacopo Cirrone ICBBE 2022.</li><li>2. Informationally-Mosaic Reinforcement Learning (PAPER) Nikunj Gupta, Tao Li, Quanyan Zhu Preprint 2022.</li><li>1. Fully Cooperative Multi-agent Deep Reinforcement Learning (PAPER) Nikunj Gupta, Swarup Mohalik, GS Raghavan MTech Thesis, IITB, 2019.</li></ol>	
TEACHING	Introduction to Programming, USC	Fall 2023
	Introduction to Reinforcement Learning, IITB	Summer 2019
	Applied Machine Learning, TCS Bangalore, Videoken, IITB	Spring 2019
	Mathematics for Machine Learning, IITB	Fall 2018

SERVICE	<b>Reviewer</b> , Neural Computing and Applications Journal	2023
	<b>Travel Awards Chair</b> , HiPC 2023 Conference	2023
PRESENTATIONS (SELECTED)	<a href="#">ON THE CONFLUENCE OF MARL AND GRAPHS</a> , USC	2024
	<a href="#">DECISION-MAKING UNDER UNCERTAINTY VIA MARL</a> , USC	2023
	<a href="#">CAMMARL</a> (accepted paper presentation), MABe @ CVPR 2023, Mila	
	<a href="#">SPECTRAL CLUSTERING ON DIRECTED GRAPHS</a> , NYU	2022
	<a href="#">LOW-RANK-MODELS FOR MISSING DATA IMPUTATIONS IN EHRs</a> , NYU	
	<a href="#">INFORMATIONALLY-MOSAIC REINFORCEMENT LEARNING</a> , NYU	
	<a href="#">HAMMER</a> (accepted paper presentation), ALA @ AAMAS 2021	2021
	<a href="#">BRINGING RL TO THE REAL WORLD!</a> , IMPRS-IS PhD Symposium 2021	
	<a href="#">FULLY COOPERATIVE MULTI-AGENT RL: BUSINESS ANGLE</a> , Aganitha	2019
	<a href="#">MARL FOR WAREHOUSE LOGISTICS</a> , Ericsson Research, <a href="#">RISE Conf'19</a>	
	<a href="#">U THINK V SPEAK</a> , Rakuten IOT Hackathon, Bangalore	
	<a href="#">TEXT-TO-IMAGE SYNTHESIS</a> , AI Club, IIITB	2018
	<a href="#">GETTING STARTED WITH IMPLEMENTING RL</a> , AI Club, IIITB	
	<a href="#">DEEP CONVOLUTIONAL GANS</a> , IIITB	
	<a href="#">A COMPREHENSIVE SURVEY OF MULTI-AGENT RL</a> , IIITB	
	<a href="#">INTRODUCTION TO REINFORCEMENT LEARNING</a> , AI Club, IIITB	
	<a href="#">REGION-BASED CNNs</a> , Advanced machine perception seminar, IIITB	
	<a href="#">REMOTE SENSING: CHENNAI FLOODS 2015</a> , IIITB	
	<a href="#">QUALITATIVE INFERENCE WITH MULTIMODAL INTERACTIONS</a> , IIITB	
	<a href="#">CLASSIFICATION OF MEDICAL IMAGES</a> , Sigtuple	
	<a href="#">CGNet SWARA: AN INDIAN VOICE-BASED PORTAL</a> , Microsoft Research	2017
	<a href="#">BRAIN TUMOUR SEGMENTATION AND CLASSIFICATION</a> , IIITB	
	<a href="#">SMART POLLUTION UNDER CONTROL</a> , Hackmania Hackathon (Winner)	2016
ACADEMIC PROJECTS (SELECTED)	<ul style="list-style-type: none"> <li>• Active interactive learning (USC) (<a href="#">TASK</a>)(<a href="#">REPORT</a>)</li> <li>• Mathematical formulation of a research project (USC) (<a href="#">TASK</a>)(<a href="#">REPORT</a>)</li> <li>• Low-rank models for missing data imputation in EHRs (NYU) (<a href="#">ARXIV</a>)(<a href="#">CODE</a>)</li> <li>• Optimizing ResNet while being mindful of limited resources (NYU) (<a href="#">ARXIV</a>)(<a href="#">CODE</a>)</li> <li>• Spectral Clustering algorithms for Directed Graphs (NYU) (<a href="#">ARXIV</a>)(<a href="#">CODE</a>)</li> <li>• Text-conditional DCGANs for text-to-image synthesis (IIITB) (<a href="#">REPORT</a>)(<a href="#">CODE</a>)</li> <li>• Qualitative Inference with Multi-modal Interaction (IIITB) (<a href="#">REPORT</a>)(<a href="#">CODE</a>)</li> </ul>	
RELEVANT COURSES	<b>USC</b>   Autonomous decision-making, Advanced analysis of algorithms <b>NYU</b>   Deep learning, Mathematical tools for data science, Mathematical statistics, Optimization, Probability and stochastic processes <b>IIITB</b>   Foundations of big data algorithms, ML, AI, DNN, RL <b>Online</b>   CS224W Machine learning with graphs (Stanford) ( <a href="#">LINK</a> )	
AWARDS & INVOLVEMENT	<b>Graduate scholarship</b> (USD 12000), NYU Tandon 2021-23 <b>Mentor</b> for 2 interns, Intelligent Robot Learning Lab, University of Alberta 2021 <b>Mentor</b> for 5 students, Student Mentoring Program, IIITB 2017-18 <b>Volunteer</b> , CGNet Swara, Microsoft Research India ( <a href="#">LINK</a> ) 2017 <b>Organizer</b> , Tug of War and Badminton in IIITB's sports fest 2016/2018 <b>Winner</b> (1500+ teams nation-wide), HackMania hackathon, SPUC ( <a href="#">LINK</a> ) Oct 2016 <b>Winner</b> (15 teams; 65 students), IIITB's DS hackathon, FitWit ( <a href="#">LINK</a> ) Feb 2016 <b>All India Percentile: 99.33</b> , JEE Mains 2014 (1.5+ million candidates) Apr 2014	