Nirjhar Das

+91 8910691513
nirjhar.das@alumni.iitd.ac.in
Personal webpage

Education

2019–2023 **Indian Institute of Technology Delhi**
B.Tech Electrical Engineering
GPA: **9.381**/10 (Department Rank 5)
Specialization in Cognitive and Intelligent Systems (**AI Focus Area**)
Courses: Reinforcement Learning and Stochastic Control; Online Learning, Bandits and Optimization; Convex Optimization; Concentration Inequalities; Machine Learning; Probability and Stochastic Processes; Math for ML

Experience

Aug 2023–Present **Microsoft Research, Bangalore**
Research Intern
Developing new linear bandit models better suited to industrial application in advertising and developing algorithms with theoretical guarantees and empirical performance.

May 2023–Aug 2023 **Indian Institute of Science, Bangalore**
Research Assistant
Worked on Participatory Budgeting with Bandit Feedback developing new models at the intersection of Bandit Learning and Computational Social Choice.

2019–2023 **Indian Institute of Technology Delhi**
Undergraduate
BTech Thesis **Part 1** - Inverse Reinforcement Learning with Constraint Recovery and **Part 2** - Linear Rotting Bandits [won **Best BTech Thesis Award**]
Teaching assistant for the graduate course on Reinforcement Learning and Stochastic Control.

Summer 2022 **Mastercard AI Garage, Gugaon**
Artificial Intelligence Intern
Built a semi-supervised deep learning pipeline for fraud detection in credit card transaction.

Publications

1 Nirjhar Das and Arpan Chattopadhyay. "**Inverse Reinforcement Learning With Constraint Recovery**". To appear in 10th International Conference on Pattern Recognition and Machine Intelligence
Paper , PReMI 2023

2 Mustafa Chasmai, Nirjhar Das, Aman Bhardwaj, Rahul Garg. "**A View Independent Classification Framework for Yoga Postures**". Springer Nature Computer Science, Vol 3.
Paper , SNCS Sept 2022

3 Smriti Chawla, Anja Rockstroh, Melanie Lehman, Ellca Ratther, Atishay Jain, Anuneet Anand, Apoorva Gupta, Namrata Bhattacharya, Sarita Poonia, Priyadarshini Rai, Nirjhar Das, Angshul Majumdar, Jayadeva, Gaurav Ahuja, Brett G. Hollier, Colleen C. Nelson and Debarka Sengupta. "**Gene expression based inference of cancer drug sensitivity**". Nature Communications, 13.
Paper , Nat. Comm. Sept 2022

Working Papers

- "Contextual Linear Bandits with Hybrid Payoff" with Gaurav Sinha
- "Experimental Design for Reinforcement Learning with Human Feedback" with Souradip Chakraborty

Honors and Awards

2023 **Best BTech Project Award:** Won the award among *160+* students in the EE department for research carried out in BTech Project.

2023 **Amazon ML Challenge 2023:** Achieved *6th* rank out of *5000+* teams by building a deep-learning model for the prediction of package length from item description.

2022 **Research Week with Google 2023:** Selected to attend the conference.

2020 **IIT Kanpur Cybersecurity Hackathon 2020:** Achieved *3rd* rank out of *1200+* teams by building a machine learning pipeline for botnet detection.

2019–2023 **Top 7% Merit Award:** Achieved in *4* semesters out of *8* semesters.

2019 **ISC (Indian School Certificate):** Achieved *2nd* rank all over India out of 100000 students in Class XII Board Exam with 499/500 marks

2019 **Swami Vivekananda Scholarship:** Awarded by *Hon'ble Chief Minister* of West Bengal for excellent performance in Class XII Board Exam.

2019 **JEE Advanced:** Achieved rank of *721* out of *150000* students

2017–2018 **KVPY (Kishore Vaigyanik Protsahan Yojana):** Selected for Scholarship by *Dept of Science and Technology, Govt of India* and achieved ranks *94* and *175* in 2018 and 2017 respectively

Skills

Python, C, C++, Java	*Programming Languages*
Linux, Git, LaTeX	*Tools and Systems*
Portable Batch System (PBS)	*High Performance Computing*
Tensorflow, Keras, Pytorch	*Deep Learning*
NumPy, SciPy, Matplotlib, Scikit Learn, Pandas, Cvxpy	*Data Science Libraries*

Academic Projects

Oct 2023–Present **Experimental Design for RLHF** *with* Souradip Chakraborty, University of Maryland
Working to develop theoretical framework for choosing prompts for RLHF training of LLMs from a given set of prompts · Aim to develop efficient and optimal algorithms for the problem.

May 2023–Aug 2023 **Participatory Budgeting with Bandits** *with* Prof. Siddharth Barman, IISc Bangalore
Developed new model for participatory budgeting combining ideas from bandit literature and computational social choice · Performed experiments on real world datasets · Draft in progress.

Sept 2022–Mar 2023 **Linear Rotting Bandits** *with* Prof. Arpan Chattopadhyay, IIT Delhi
Extended rotting bandits to the linear reward · Developed an algorithm that outperforms existing non-stationary linear and stochastic rotting bandit alogrithms empirically.

Dec 2021–Jul 2022 **Inverse RL with Constraint Recovery** *with* Prof. Arpan Chattopadhyay, IIT Delhi
Formulated the problem of simultaneously recovering the constraint and the reward from expert demonstration in CMDP · Developed a convex objective using principle of Maximum Entropy · Developed an algorithm based on primal-dual framework.

Mar 2021–Jul 2021 **View Independent Yoga Classification** *with* Prof. Rahul Garg, IIT Delhi
Built a yoga classifier based on human body keypoints with over 98% accuracy · Developed a robust framework for model evaluation that focuses on model generalization capacity · Showed that our classifier is more robust compared to other existing methods.

Spring 2022 **Resource Monitoring and Scheduling** *Course Project* Prof. Smruti Sarangi, IIT Delhi
Created system calls for listing the running processes, memory available, and the number of context switches per process · Implemented scheduling algorithms FCFS, MLQ and DMLQ and obtained the process statistics

Academic Service and Extracurricular Activities

- **Teaching assistant** for the graduate course on Reinforcement Learning and Stochastic Control.
- **Student Mentor** for 5 freshmen. Helped them transition to college and ensured their professional and personal growth.
- **Academic Mentor** for the course Engineering Mechanics. Helped first year students in understanding the course materials and in problem solving.
- **Student Journalist** for the Board for Student Publication reporting on latest developments on the campus that affected the community.
- **Executive** for the Electrical Engineering Society. Organized various events for the benefit of the EE students.
- **Teaching volunteer** for National Service Scheme from 2019–2022. Taught mathematics and science to underprivileged children from slums of Delhi.