Dibyendu Das Stony Brook University New York, USA

Education

Stony Brook University Stony Brook, NY, USA	Ph.D. in Computer Science	2018 -
Indian Institute of Technology (IIT) Kharagpur, India	Master (M.Tech.) in Computer Sc. & Engg.	2014 - 2016
Jadavpur University Kolkata, India	Bachelor (B.E.) in Computer Science & Engg.	2008 - 2012

Area of Interest

Artificial Intelligence • Deep Reinforcement Learning • System Infrastructure • Distributed System

Technical Skills

Programming Languages: Python C/C++ JavaScript (Node, Typescript) Bash Go Docker CI/CD AWS Dev. Tools (Platforms): Git Firebase GNU Autotools (Make, Autoconf) **GDB** System Infrastructure Tools: Kafka Elasticsearch Redis GraphQL WebSockets ZooKeeper **Databases:** SQL (PostgreSQL, MySQL, SQLite) NoSQL (MongoDB, DynamoDB Cassandra) **Web** & Mobile Application Frameworks: React ReactNative Express Flask Vite Three.js Machine (Deep) Learning Frameworks: PyTorch TensorFlow MLKit GraphNet

Work Experience

Stony Brook University

Graduate Research Assistant

• Researched and developed Reinforcement Learning (RL) and Multi-Armed Bandit based methods to train robots for performing complex manipulation tasks — such as pouring, scooping, flipping, stacking dishes in a rack, opening doors etc. — with high confidence and reliability using demonstration-based learning. • Published several papers in top-tier conferences and journals.

Meta 🖪

Software Engineer Intern

• Collaborated with an internal team to optimize data infrastructure costs, significantly reducing database query execution time by more than 40% in test runs. • Developed and implemented a novel optimization algorithm to cluster similar database queries that significantly reduced the execution time for frequent and repeated queries in data warehouse.

Amazon aws

Applied Scientist Intern

• Collaborated with the project manager and a team of two members to work on an internal security analysis tool that detects misconfigurations in AWS micro-services such as EC2, S3, RDS etc. • Improved the performance of the analysis tool by adding Scoped Modeling and Differential Analysis techniques; and achieved significant time efficiency of more than 50% in test runs.

The Center for Excellence in Wireless and Information Technology (CEWIT)

Research Intern @ Stony Brook University

• Developed algorithms for noise elimination and trajectory reconstruction of colliding sub-atomic particles inside particle accelerators.

• Communicated with project lead on weekly basis and achieved significantly high accuracy of 94% using state-of-the-art Graph Neural Network.

Idea Device Technologies Pvt. Ltd.

Sr. Software Engineer

• Developed and maintained a cloud based infrastructure automation product named calm.io (acquired by Nutanix), achieving a revenue increase of 16% \bullet Collaborated with a team of four members and implemented several key features to the product – such as, full-text search, dynamic license generation and verification - by understanding client requirements and business problems.

June 2019 - Aug. 2019

Stony Brook, NY, USA

Sept. 2012 - July 2014

Bangalore, India

May 2022 - Aug. 2022 New York City, NY, USA

May 2021 - Aug. 2021

Sept. 2021 -Stony Brook, NY, USA



Cupertino, CA, USA

Projects

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Vera: Social	End-to-end backend infrastructure of short-video streaming and photo sharing
Platform	Tools: Katka Redis Postgres Elasticsearch Cloud Services: Google Cloud (Kubernetes, Blob Storage, Firebase, Task Queue, Serverless Functions Media CDN. Job Scheduler, API Gateway)
 [PlayStore] [AppStore] 	• Spearheaded the architectural design and early development of the backend infrastructure for the <i>short-video streaming</i> and <i>photo-sharing</i> components of a growing social networking platform. • Designed, developed, and scaled the infrastructure from the ground up, supporting about $80K$ peak concurrent connections at one point. • Later mentored a team of three to maintain and further optimize the system. • Designed and implemented an end-to-end video-transcoding pipeline for adaptive streaming of short 2-minute videos, ensuring fail-safe upload and seamless playback.
Robot Learning using Human Demonstration [Demo] [Code]	 Evaluation of robot's efficiency using PAC-learning based bandit-optimization AI Methods: Stochastic Decision Making Reinforcement Learning Researched, designed and implemented a novel algorithm to solve the problem of methodically providing kinesthetic demonstrations – one at a time – for the robot to learn and confidently perform complex manipulation tasks anywhere in its workspace. Leveraged techniques from Reinforcement Learning to provide theoretical bounds on the confidence measures generated by the algorithm.
AI Agent for Solving Zero-Sum Board Game [Demo] [Code]	 An AlphaZero based agent to play the board game of Ultimate Tic-Tac-Toe AI Methods: Deep Reinforcement Learning Monte-Carlo Tree Search Deep Q-Network Deep Learning Framework: TensorflowJs Developed and trained an AI agent using the AlphaZero algorithm for playing the non-trivial board game of Ultimate Tic-Tac-Toe, where 9 small Tic-Tac-Toe boards work in tandem, giving rise to a game-play more complex than Othello. The agent – trained using self-play against itself for 7 days on a low-end GPU – defeated an avg. human player with Elo rating of 1400+ in chess 8 out of 10 times.
TrackML: Trajectory Reconstruction using Machine Learning [Code]	Noise elimination and trajectory reconstruction using graph neural networks Deep Learning Framework: PyTorch Graph Convolution Networks (GraphNet) • Collaborated on a computational-physics project, with an objective of eliminating noise and recon- structing tracks of colliding sub-atomic particles inside particle accelerators. • Researched and im- plemented state-of-the-art graph convolution methods to achieve a high accuracy of ~ 94% in the 1^{st} phase of noise elimination from the collision data and ~ 86% in the 2^{nd} phase of track reconstruction.

Publications

Pre-print

- 1. **Dibyendu Das**, Aditya Patankar, Nilanjan Chakraborty, C.R. Ramakrishnan and I.V. Ramakrishnan. "Screw Geometry Meets Bandits: Incremental Acquisition of Demonstrations to Generate Manipulation Plans", in the Journal of IEEE Robotics and Automation Letters (RAL).
- 2. **Dibyendu Das**, Aditya Patankar, Nilanjan Chakraborty, C.R. Ramakrishnan and I.V. Ramakrishnan. "*Transferring Kinesthetic Demonstrations across Diverse Objects for Manipulation Planning*", in the *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2025.

Conferences

- Dibyendu Das, Aditya Patankar, Fumi Honda, Dasharadhan Mahalingam, Nilanjan Chakraborty, C.R. Ramakrishnan, and I.V. Ramakrishnan. "Knowledge-Enabled Motion Generation for Complex Manipulation Tasks". In IEEE ICRA Workshop on Geometric Representations: The Roles of Modern Screw Theory, Lie Algebra, and Geometric Algebra in Robotics, London, UK, 2023.
- 2. Zhi Li, Maozheng Zhao, **Dibyendu Das**, Hang Zhao, Yan Ma, Wanyu Liu, Michel Beaudouin-Lafon, Fusheng Wang, I.V. Ramakrishnan and Xiaojun Bi. *"Select or Suggest? Reinforcement Learning-based Method for High-Accuracy Target Selection on Touchscreens"*. In Proceedings of the Conference on Human Factors in Computing Systems (CHI), 2022.
- 3. "Verifying Stability Guarantees of Control Software Implementations in the Presence of Sensor Level Faults". ACM International Conference on Embedded Software (EMSOFT), 2017.
- 4. "Failure Estimation of Behavioral Specifications". Int. Symposium on Dependable Software Engineering (SETTA), 2016.