

Education

- 2026-Present **University of Maryland, College Park**
PhD in Computer Science
Advisor: Prof. Abhinav Bhatele | *Area: Systems for ML, High Performance Computing*
- 2019-2023 **Indian Institute of Technology (IIT), Patna**
B.Tech Computer Science and Engineering (Department Rank 9/79) GPA: **9.10/10.00**

Publications

- NeurIPS '24 **Accuracy Is Not All You Need**
Abhinav Dutta, Sanjeev Krishnan, Nipun Kwatra, Ramachandran Ramjee
38th Conference on Neural Information Processing Systems, 2024
- PLOS CB '22 **Parameterized syncmer schemes improve long-read mapping**
Abhinav Dutta*, David Pellow*, Ron Shamir (* equal contribution)
PLOS Computational Biology, 2022

Research Experience

- 2026-Present **University of Maryland**
Graduate Student, PSSG Group
Advisor: Prof. Abhinav Bhatele
- Currently working on performance characteristics of Agentic RL training workloads on HPC clusters.
- 2023-2026 **Microsoft Research India**
Pre-doctoral Research Fellow, AI Infrastructure Group
Advisors: Dr. Sanjeev Krishnan, Dr. Ramachandran Ramjee, Dr. Nipun Kwatra
- Identified limitations in evaluating compressed LLMs using metrics like accuracy and perplexity, that can hide large underlying changes. Proposed distance metrics – **flips** and **KL-divergence** as more effective and precise alternatives. **Accepted at NeurIPS'24**
 - Developed a low-precision training recipe for the 4-bit regime (especially NVFP4) based on the above findings. Demonstrated a 1 percentage point improvement in accuracy and a 15% improvement in flip rate on the Qwen3-8B model.
- 2021-2022 **ACGT Lab, Tel Aviv University**
Summer Project Student
Advisor: Prof. Ron Shamir
- Enhanced long-read mappers like **Minimap2** by integrating syncmers for genome indexing (**63%** fewer unmapped reads over SoTA on top of being **1.2×** faster and having **2×** reduction in peak memory usage evaluated at medium compression, 25% mutation, on human chromosomes).
 - Developed a robust metric for evaluating the efficiency of indexing schemes, generalized the syncmers scheme, and theoretically validated its properties. **Accepted at PLOS CB'22.**
- 2022-2023 **Department of Computer Science and Engineering, IIT Patna**
Bachelor's Thesis
Advisor: Prof. Raju Halder
- Devised a method for clustering Ethereum smart contracts based on bytecode-level edit distance to accurately group contracts based on their vulnerabilities for better downstream analysis.
- Summer 2022 **School of Computer Science, McGill University**
Research Intern (MITACS GRI program)
Advisor: Prof. Xujie Si
- Implemented a winnowing-based tool for plagiarism detection.
 - Leveraged a code differencing tool to analyze edits in MOOC programming assignments, identifying the most challenging code areas to better understand difficulties faced by students.

Awards and Achievements

- 2026 Awarded the Dean's Fellowship, UMD (\$5000)
- 2023 Won the Antigranular ML Privacy Competition (€3000)
- 2022 Globalink Research Internship (GRI) awarded by MITACS, Canada (\$7500)
- 2019 Ranked 9th out of 150k in the West Bengal Joint Entrance Examination
- 2019 Ranked top 0.15% out of 1 million in JEE Mains and 1.5% out of 150k in JEE Advanced
- 2018 Awarded the KVPY fellowship by Indian Govt. (Ranked 39th out of 150k candidates)
- 2017 Awarded the NTS Scholarship by Indian Govt. (top 0.1% of 800k candidates)

Teaching and Service

- TA for Introduction to Computer Systems, UMD (Fall 2026)
- Reviewer at NeurIPS 2025
- Coordinator of Computer Science Club of IIT Patna, 2023
Conducted sessions on Machine Learning amongst freshmen and sophomore students.
- Member of Student Mentorship Program, IIT Patna, 2022-2023
Mentored six CS freshmen, providing guidance on their academic challenges.

Key Coursework

- **Math:** Real and Complex Analysis, Linear Algebra and Differential Equations, Probability Theory and Random Processes, Mathematical Modeling
- **Computer Science:** Systems for Machine Learning, Parallel Computing, Algorithms, Switching Theory, Formal Languages and Automata Theory, Computer Architecture, Database, Operating Systems, Computer Networks, Computer Graphics, Blockchain and Cryptocurrency, Artificial Intelligence, Foundations of Machine Learning, Deep Learning, Computer Security, Formal Methods for Analysis and Verification

Skills

- **Programming Languages:** C, C++, Python
- **Tools/Frameworks:** PyTorch, CUDA, Triton, MPI, OpenMP, Slurm, Nsight, vLLM, Git, Docker, OpenGL