

Tanmay Goyal

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EDUCATION

- **Indian Institute of Technology, Hyderabad** CGPA: 9.55/10
2020-2024
Bachelor of Technology in Artificial Intelligence

WORK EXPERIENCE

- **Microsoft Research India** Aug. 2024 - Present
Pre-Doctoral Research Fellow
 - Mentored by Dr. Gaurav Sinha in the fields of Multi-Armed Bandits and Online Learning.
 - Worked on introducing efficient algorithms for contextual bandits with non-linear reward models that resulted in publications at premier conferences.
- **American Express** May 2023 - Jul. 2023
Analyst Intern
 - Developed a model to assign lines for credit cards for high-earning prospects and consumers, alongside performing trend analysis for the same. Impacts a significant 1 million customers per month.
- **StoryXpress** May 2022 - Jul. 2022
Machine Learning Intern
 - Worked on Video Super-Resolution to upscale videos on smartphone devices in real time to save network bandwidth.

PUBLICATIONS

- **Efficient Algorithms for Logistic Contextual Slate Bandits with Bandit Feedback** UAI '25
Tanmay Goyal, Gaurav Sinha
- **Achieving Limited Adaptivity for Multinomial Logistic Bandits** RLC '25
Sukruta Midigeshi, Tanmay Goyal, Gaurav Sinha

PROJECTS

Microsoft Research India Mentored by Dr. Gaurav Sinha

- **Efficient Algorithms for Logistic Contextual Slate Bandits with Bandit Feedback**
Accepted at UAI '25 (Main Track)
 - Developed efficient algorithms for *Slate Bandits*, where the arm set is a product of several different item sets, and the reward is governed by a logistic model.
 - Showed that our algorithms achieve optimal regret guarantees while simultaneously being computationally efficient.
- **Achieving Limited Adaptivity for Multinomial Logistic Bandits**
Accepted at RLC '25
 - Introduced a *batched* and *rarely-switching* algorithm for Multinomial Logistic Bandits with theoretical guarantees.
 - Reduced the number of policy updates from $O(T)$ to $O(\log \log T)$ and $\tilde{O}(\log T)$ respectively.

IIT Hyderabad

- **Quantum Query Complexity** Nov. 2023 - May. 2024
Dr. Karteek Sreenivasiah
 - Attempted to upper bound the quantum query complexity for testing the unateness of a boolean function.
 - Worked extensively with Learning Graphs and Span Programs.
- **Quantum Random Walks (QRW) for Model Checking** Jan. 2024 - May. 2024
Dr. M.V. Panduranga Rao
 - Attempted to perform a QRW on a directed weighted graph by combining the notions of a coined QRW for directed unweighted graphs and Szegedy's QRW for weighted undirected graphs.
- **Long Landing Analysis** Dec. 2024 - Jun. 2024
Dr. Maunendra Desarkar, in collaboration with Honeywell USA and Honeywell India
 - Analyzed 250GB of publicly available data on the landing of 150K flights to predict long landings.
 - Built Causality graphs to understand the causal factors for long-landings.

TEACHING AND VOLUNTEERING

• Teaching Assistant, IIT Hyderabad

Duties involved conducting tutorials and lectures, and assisting the professor in grading assignments and exams

- Programming for AI Mar. 2024 - May 2024
- Operating Systems - I Oct. 2023 - Dec. 2023
- Reinforcement Learning Jul. 2023 - Dec. 2023
- Deep Learning Jan. 2023 - May 2023
- Data Structures and Applications Jul. 2022 - Dec. 2022
- Introduction to Programming (C/C++) Nov. 2021 - Mar. 2022

• Volunteering

2020-2024

- **National Service Scheme:** Completed 120 hours as a volunteer, including teaching the underprivileged.
- **UG Buddy:** Sunshine, the Counselling Cell, IIT Hyderabad.
- **Career counselor:** Outreach Head, Office of Career Services, IIT Hyderabad.
- **JOSAA counselor:** Bakliwal Tutorials.

• Teaching Intern, Lila Poonawalla Foundation

Curated lesson plans, teaching aids, and held lectures for grade 7 and 8 underprivileged girls

- Numeracy Module: English and Mathematics. Jan. 2017
- IT Literacy Module: MS-Word and MS-Excel. Nov. 2017

KEY COURSES TAKEN

- **Artificial Intelligence:** Machine Learning, Deep Learning, Reinforcement Learning, Online Learning and Bandits, Natural Language Processing, Bayesian Data Analysis, Robotics, Image and Video Processing, AI in Healthcare
- **Computer Science:** Quantum Computing, Cryptology, Computational Number Theory, Probability in Computing, Data Structures and Algorithms, DBMS, Operating Systems, Computer Networks, Application of Markov Chains
- **Mathematics:** Calculus, Matrix Theory, Tensors: Techniques and Algorithms, Convex Optimization, Applied Statistics, Time Series and Regression Analysis, Metric Spaces, Numerical Analysis, Differential Equations
- **Electrical Engineering:** Information Theory, Linear Systems and Signal Processing, Control Systems

SCHOLASTIC ACHIEVEMENTS

- **Academic Excellence Award:** Highest CGPA in the Department of AI, IIT Hyderabad. 2023-2024
- **Google Research Week:** Selected from amongst 5,000+ UG and PG students nationwide. 2024
- **JEE Advanced:** All India Rank 645 amongst 250,000 candidates. 2020
- **JEE Mains:** All India Rank 1078 amongst 1,000,000 candidates (top 0.09% percentile). 2020
- **BITSAT:** Scored 400/450. Ranked in the top 235 amongst 325,000 candidates. 2020

TECHNICAL SKILLS

- **Programming:** Python, C++, C, SQL, L^AT_EX
- **Tools/Frameworks:** NumPy, Pandas, Matplotlib, Seaborn, PyTorch, TensorFlow, OpenCV

POSITIONS OF RESPONSIBILITY

- **Outreach Head:** Office of Career Services, IIT Hyderabad Mar. 2023 - Apr. 2024
- **Content Head:** ACM Student Chapter, IIT Hyderabad Mar. 2022 - Mar. 2023
- **Internship Coordinator:** Office of Career Services, IIT Hyderabad Apr. 2022 - Mar. 2023
- **Curation and Content Coordinator:** TEDxIITHyderabad May 2021 - May 2022
- **Ideation Manager:** E-Cell, IIT Hyderabad May 2021 - May 2022
- **Core Member:** Vibes, the Music Club | Lambda, the Software Dev Club May 2021 - May 2022
- **Licensee and Organizer:** TEDxTheOrchidSchool 2019

EXTRACURRICULARS

- **Sports** 2020-2024
 - **National Sports Organization:** Completed 240 hours of training in Table Tennis.
 - **Cricket:** Played in several tournaments throughout college and played at the school and club (district) level.
- **Inter-IIT Tech Meet 12.0:** Represented IITH for two High-Prep Problem Statements. Dec. 2023
- **Inter IIT Cultural Meet 6.0:** Represented IITH at the Just-A-Minute(JAM) Competition. Dec. 2023
- **Guitar:** Played the guitar in several competitions and events. Won 3rd prize at Battle of the Bands. Mar. 2023