Sarvesh Gharat

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Upcoming Visiting Researcher at MBZUAI

Education

IIT Bombay — Mumbai, In

PhD in Artificial Intelligence and Data Science — *Jul. 2022 – May 2027*

Vishwakarma Institute of Information Technology — Pune, In

BTech in Electronics and Telecommunication — *Aug. 2018 – May 2022*

Research Interests

My research focuses on online learning, particularly multi-armed bandits and Markov decision processes (MDPs) for sequential decision-making. I'm also interested in multi-agent systems and currently work on inference-time algorithms along with the bandit theory.

Experience

• **Summer Research Intern** — May 2025 – July 2025

Adobe Research — *Host: Soumyabrata Pal, Ramasuri Narayanam*

- Improved LLM reasoning under fixed compute constraints by developing a novel method to inject auxiliary information during sequential test-time scaling.
- Designed and implemented an efficient, on-the-fly example selection strategy using embedding similarity, leading to more relevant in-context examples during inference.
- Focused on designing inference-time techniques that enhance model responses without changing any underlying parameters.

Patent Submitted(Approved by Adobe Review Committee)/ Paper in Progress: Gharat, S., Pal, S., Narayanam. R., Guided Sequential Test Time Scaling using additional hints from exemplars

• **Student Researcher** — Oct 2024 – March 2025

Google DeepMind — *Host: Aparna Taneja, Milind Tambe*

- Quantified the impact of AI-scheduled interventions on beneficiary engagement and health knowledge in a large-scale maternal health program, analyzing data from thousands of participants.
- Demonstrated statistically significant improvements in selected maternal health knowledge and postnatal care behaviors via a rigorous comparative analysis of AI-targeted interventions versus matched control groups.
- Improved reliability of survey-based insights by addressing noise and response variability, enabling statistically significant impact detection.

Paper Accepted: Dasgupta, A.*, **Gharat, S.***, Madhiwalla, N., Hegde, A., Tambe, M., Taneja, A. AI-Targeted Calls Drive Measurable Improvements in Maternal Health, PAIS ECAI 2025

• **Research Assistant** — Aug 2021 – June 2022

Tata Institute of Fundamental Research — *Host: Prof. Shriganesh Prabhu*

- Designed optimization methods to estimate the refractive index of optically thin materials using Terahertz Time Domain Spectroscopy.
- Implemented and benchmarked algorithms including Dual Annealing, SHGO, and Newton-Raphson to improve convergence stability.
- Built a user-friendly Python library to support experimental analysis and make the refractive index estimation pipeline accessible for both researchers and educators.

Selected Publications

- **Gharat, S.**, Karamchandani, N., Nair, J. Cost-Aware Best Arm Identification via Dueling Feedback with Applications to Large Language Models, (Full Paper to be Submitted, Extended Abstract accepted at AAMAS 2026)
- **Gharat, S.**, Yadav, A., Karamchandani, N., Nair, J. Representative Arm Identification: A fixed confidence approach to identify cluster representatives, ICASSP 2025

- **Gharat, S.**, Borthakur, A., Bhatta, G. Estimation of redshift and associated uncertainty of Fermi/LAT extragalactic sources with Deep Learning, MNRAS 2024

  Full publication list available at scholar.google.com/sarveshgharat

Invited Talks & Presentations

- *Cost-Aware Best Arm Identification in Dueling Bandits* — Cohere for AI Research Connections (2025)
- *Representative arm identification: A fixed confidence approach to identify cluster representatives* — Cohere for AI Reinforcement Learning Group (2025)
- *Estimating Redshifts of AGNs using Neural Networks* — IAU-IAA Astroinformatics Seminar (2024)
- Posters: IndoML 2024, ACM PIC 2024, Google Research Week 2024, ACM ARCS 2026

Academic Service & Highlights

- **Reviewer/PC**: IEEE Transactions on Information Theory, IJCAI AI for Social Good 2025, AAMAS 2025
- **Selected for**: ACM CODS-COMAD PhD Clinic, ACM PIC 2024, Google Research Week (2024, 2025), ACM India ARCS 2026
- **Kaggle Expert**: Silver Medal – LLM Prompt Recovery Challenge (Ranked 79/2175), Bronze Medal - Santa 2025 - Christmas Tree Packing Challenge (Ranked 228/3357)
- **Research Grants**: State Bank of India (SBI) sponsored grant (along with Prof. NK and Prof. JKN) on "Dynamic LLM Optimization and Fine-Tuning via Dueling Bandits", 2025 - 2027
- **Previous Collaborations**: VaTEST, LOFAR2.0 Ultra Deep Observations, AI4Astro, MAASI GDM

Technical Skills

- **Programming**: Python, LaTeX, Apps Script
- **Libraries**: PyTorch, TensorFlow, NumPy, pandas, vLLM, Transformers
- **Tools**: Jupyter Notebook, Git, Docker, Google Cloud Platform, VS Code