Gagan Jain

PRE-DOCTORAL RESEARCHER, GOOGLE DEEPMIND

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Education

Indian Institute of Technology, Bombay *CGPA: 9.33/10*

BACHELOR OF TECHNOLOGY WITH HONORS IN MECHANICAL ENGINEERING: **DEPARTMENT RANK 4** OUT OF 170
DUAL MINORS: COMPUTER SCIENCE & ENGINEERING, AND ARTIFICIAL INTELLIGENCE & DATA SCIENCE

July 2018 - July 2022

Publications

[C4] Mixture of Nested Experts: Adaptive Processing of Visual Tokens 📄 **NeurIPS'24**

Gagan Jain*, Nidhi Hegde, Aditya Kusupati, Arsha Nagrani, Shyamal Buch, Prateek Jain, Anurag Arnab, Sujoy Paul*

[C3] LookupViT: Compressing Visual Information to a smaller number of tokens 📄 **ECCV'24**

Rajat Koner*, **Gagan Jain***, Sujoy Paul, Prateek Jain, Volker Tresp

[S2] Masked Generative Nested Transformers with Decode Time Scaling **CVPR'25**

Debapriya Tula, Sahil Goyal, **Gagan Jain**, Prateek Jain, Pradeep Shenoy, Sujoy Paul

[S1] Thompson Sampling for Collaborative Bandits in Time Slot Selection for Maternal Health Programmes **AAMAS'25**

Arpan Dasgupta, **Gagan Jain**, Arun Suggala, Karthikeyan Shanmugam, Aparna Taneja, Milind Tambe

* denotes equal contribution, S = In Submission, C = Conference

Research Experience

Google DeepMind | PRE-DOCTORAL RESEARCHER, MACHINE LEARNING AND OPTIMIZATION Sept 2023 - Present

- Designed nested architecture routing frameworks, reducing visual inference and generation costs by over 2x with optimized decoding.
- Developed a novel transformer block that reduces inference costs by sparsity based token sampling while maintaining accuracy.
- Establishing optimal Bayesian regret bounds for low-rank bandits through an Eluder Dimension analysis for clustered user settings.

IIT Bombay | UNDERGRADUATE RESEARCHER, AUTONOMOUS DRIVING April 2019 - May 2022

- Developed a multi-task network for lane and object detection, achieving a 25% improvement in speed and a 15% increase in accuracy.
- Engineered a high-performance SLAM pipeline, integrating Google Cartographer and leveraging sensor fusion to outperform GPS accuracy.
- Created vision-based Online RL framework in CARLA for collision-free navigation, using Q-learning & function approximation via tile coding.

Work Experience

Microsoft India R&D Pvt. Ltd. | DATA & APPLIED SCIENTIST July 2022 - Sept 2023

- Worked on extreme classification, machine learning for sets, collaborative filtering and anomaly detection for recommendation systems.

Coupa Software | DATA SCIENCE INTERN May 2021 - July 2021

- Developed a data-driven transport rate prediction engine, using 1-D Convolutional Neural Networks, for road network cost optimization.

Scholastic and Technical Accolades

2023	**Among 13,** from **18,000+** applicants selected for the prestigious Google DeepMind Pre-Doctoral Researcher Program
2022	**Recipient,** of **Technical Citation**, **Organizational Color** and **Institute Technical Special Mention** awards at IIT Bombay
2022	**Among 10,** out of 400 student mentors to receive the **Mentorship Special Recognition** for exemplary efforts
2021, 19	**World Rank 4,** in '21, and **Asia-Pacific Champions** in '19, in the **ASME Student Design Challenge**, representing IIT Bombay
2020	**Among 15,** out of **10,000+**, to receive the **Institute Technical Special Mention** for contributions to the technical sphere
2018	**All India Rank 572,** among 0.15 million in **JEE Advanced** and **All India Rank 740** among 1.5 million candidates in **JEE Main**

Volunteering and Leadership Roles

2024	**Reviewer @ ICLR, AISTATS, ICVGIP,** for submissions pertaining to efficiency, vision, reinforcement learning and optimization
2021-22	**Team Lead, SeDriCa @ UMIC, IITB,** handling technical and financial aspects of the 25+ membered autonomous driving team
2019-21	**Teaching Assistant @ IITB,** Intelligent & Learning Agents (CS747), Machine Learning (EE769), Electricity & Magnetism (PH108)
2020-22	**Mentor @ SMP, IITB,** counseling 12 freshmen and 6 sophomores from different academic, cultural and vocational backgrounds
2020-21	**Research Coordinator @ UGAC, IITB,** promoting first-hand research through projects, reading groups and guidance sessions
2018-19	**Educational Outreach Volunteer @ NSS, IITB,** teaching basic mathematics to secondary school students at NGO Asha

References

Dr. Prateek Jain	**Dr. Anurag Arnab**	**Dr. Karthikeyan Shanmugam**	**Prof. Amit Sethi**
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