GUNSHI GUPTA

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Education

OATML Lab, University of Oxford — **Oxford, UK**
D.Phil, Machine Learning (sup. by Prof. Yarin Gal, Dr. Rowan McAllister, Dr. Adrien Gaidon) — *Sept. 2021-Present*

Montreal Institute of Learning Algorithms (MILA) — **Montreal, Quebec**
Research Master's, Machine Learning | GPA: 4.0/4.0 — *Sept. 2018-Aug. 2020*

Delhi Technological University (DTU) — **New Delhi, India**
Bachelor of Technology, Mathematics and Computing, Applied Math | GPA: 8.05/10 — *Sept. 2012-May 2016*

Recent Work Experience

Microsoft Research (MSR) — **Cambridge, UK**
Deep Learning Intern, Gaming Intelligence Team — *April 2023-July 2023*

- Contributed to developing MUSE: a foundation gaming world-and-action model (WHAM) trained on sequences from multiple years of gameplay data from a high-fidelity collaborative multi-agent XBox game.
- Developed the mechanistic interpretability evaluation suite for transformer representations from MUSE, probing for emergent concepts like game-state and multi-agent awareness.

Wayve Technologies (End-to-End Autonomous Driving Startup) — **London, UK**
Deep Learning Researcher, Policy Learning Team — *July. 2020-August 2021*

- Researched Offline RL methods for learning safe driving policies from imbalanced data. Efforts include extending the framework to incorporate sparse feedback signals like corrective actions into the learning loop.

Research

- *Memo: Training Memory-Efficient Transformer-Based Agents with Reinforcement Learning*
  Gunshi Gupta, Karmesh Yadav, Zsolt Kira, Yarin Gal, Rahaf Aljundi [Under Review]
- *FindingDory: A Benchmark to Evaluate Memory in Embodied Agents*
  Karmesh Yadav*, Yusuf Ali*, **Gunshi Gupta**, Yarin Gal, Zsolt Kira [Under Review]
- *Architecting Generative AI Capabilities To Support Human Creative Ideation*
  Gaming Intelligence, MSR [Nature, March Issue, 2025]
- *WHAM! World and Human Action Modelling in a Modern Xbox Game*
  Gaming Intelligence, MSR [Under Review]
- *Pre-trained Text-to-Image Diffusion Models Are Versatile Representation Learners for Control*
  Gunshi Gupta, Karmesh Yadav, Yarin Gal, Dhruv Batra, Zsolt Kira, Cong Lu and Tim G.J. Rudner
  [NeurIPS 2024 spotlight, Oral talk at Generative AI for Decision Making Workshop at ICLR 2024]
- *Can Active Sampling Reduce Causal Confusion in Offline Reinforcement Learning?*
  Gunshi Gupta, Tim G.J. Rudner, Rowan McAllister, Adrien Gaidon and Yarin Gal
  [CleaR 2023, Neurips OfflineRL Workshop 2022]
- *ReLU to the Rescue: Improve Your On-Policy Actor-Critic with Positive Advantages*
  Andrew Jesson, Chris Lu, **Gunshi Gupta**, Jakob Foerster and Yarin Gal [ICML 2024]
- *La-MAML: Look-Ahead Meta Learning for Continual Learning*
  Gunshi Gupta*, Karmesh Yadav* and Liam Paull [NeurIPS 2020 Oral] [ArXiV][NeurIPS] [Code]
- *Probabilistic object detection: Strengths, Weaknesses, and Opportunities* [ICML AIAD 2020 Workshop]
  Dhaivat Bhatt*, Dishank Bansal*, **Gunshi Gupta***, Hanju Lee, Krishna Murthy J., Liam Paull
- *Unifying Variational Inference and PAC-Bayes for Generalisation Bounds in Imitation Learning*
  Sanjay Thakur, Herke Van Hoof, **Gunshi Gupta** and David Meger [Preprint].
- *Stein Variational Methods for Robot Navigation* [ICML 2019 Workshop: Stein Methods in Machine Learning]

- *Viewpoint Invariant Junction Recognition using Deep Network Ensembles* (IROS 2018) [Link]
Abhijeet Kumar*, **Gunshi Gupta***, Avinash Sharma and K. Madhava Krishna.
- *Geometric Consistency for Self-Supervised End-to-End Visual Odometry* [Link][CVPR 2018 Workshop: Deep Learning for Visual SLAM]: Ganesh Iyer*, J. Krishna Murthy*, **Gunshi Gupta**, and Liam Paull.

Outreach

- Invited Spotlight Talk: GenAI4DM workshop @ICLR 2024.
- Invited Talk: "Deep learning for Autonomous Driving" at OxBridge Women in Computer Science 2021 conference.
- Panelist at ICML Women in Machine Learning Social organised by OxWoCS 2022.
- Appointed as an ED&I Fellow with MPLS (Maths, Physics, Life-Sciences) department at Oxford (2022-2023)
- LatinX-in-AI Mentor - 2021 cohort