Amit Sinha

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Affiliations: Mila, CIM, Gerad

Research Interests

Machine learning ; reinforcement learning ; representation learning; multi-agent systems; robotics

Education

PhD **McGill University**, Electrical and computer engineering — Montréal, QC — Jan 2021 – Dec 2025
- GPA: $3.85/4.0$
- **Thesis**: Reinforcement learning in partially observable systems and multi-agent team-based systems

MSc **McGill University**, Electrical and computer engineering — Montréal, QC — Aug 2018 – Dec 2020
- GPA: $4.0/4.0$
- **Thesis**: Reinforcement learning in partially observable environments using approximate information state (thesis)

BE **Birla Institute of Technology, Mesra**, Electrical and electronics engineering — Ranchi, India — Aug 2013 – Jun 2017
- GPA: $8.11/10.0$

Experience

McGill University, Research Assistant — Montréal, QC — May 2019 - Dec 2025
- Reinforcement learning algorithms for partially observable systems and multi-agent systems

Indian Institute of Science, Project Assistant — Bangalore, India — Aug 2017 - Aug 2018
- Automation in Volvo trucks for proximity detection through vehicle detection
- Creating reusable vision-based maps through simultaneous localization and mapping

IBM Research Labs, Research Intern — Bangalore, India — May 2016 - Jul 2016
- Design of an IoT-based system for video-based activity detection using motion detection and face detection

Featured Publications

- **Periodic agent-state based Q-learning for POMDPs** (paper) — Dec 2024
  38th Conference on Neural Information Processing Systems (Neurips 2024)
  Amit Sinha, Matthieu Geist, Aditya Mahajan
- **Agent-state based policies in POMDPs: Beyond belief-state MDPs** (paper) — Dec 2024
  Tutorial paper in *63rd IEEE Conference on Decision and Control (CDC 2024)*
  Amit Sinha, Aditya Mahajan
- **Dealing With Non-stationarity in Decentralized Cooperative Multi-Agent Deep Reinforcement Learning via Multi-Timescale Learning** (paper) — Aug 2023
  2nd Conference on Lifelong Learning Agents (CoLLA 2023)
  Hadi Nekoei, Akilesh Badrinaaraayanan, **Amit Sinha**, Mohammad Amini, Janarthanan Rajendran, Aditya Mahajan, Sarath Chandar

- **Approximate information state for approximate planning and reinforcement learning in partially observed systems** (paper) (code) Feb 2022
  Journal of Machine Learning Research (JMLR)
  Jayakumar Subramanian, **Amit Sinha**, Raihan Seraj, Aditya Mahajan

For an exhaustive list of all publications, see here.

Academic Achievements and Awards

- Arthur Allan McAlear Fellowship (McGill) Jan 2021
- McGill Engineering Doctoral Award (McGill) Jan 2021
- Masters Top-Up award (McGill) Oct 2020
- FRQNT scholarship (Québec) May 2020
- Graduate Excellence Fellowship award (McGill) Aug 2018
- Qualified in Zonal Informatics Olympiad 2013. Jan 2013
- Qualified in the Karnataka Regional Mathematical Olympiad 2012. Jan 2012

Volunteering

- Volunteered to help in training sessions for athletes with disabilities for Olympiques spéciaux Québec. Jan 2020
- Volunteer to help new international students in the International Buddy Program at McGill University. Aug 2019
- Volunteered to help new students get acclimated to daily life around McGill University as a student facilitator. Aug 2019
- Volunteer at the International Conference of Robotics and Automation. May 2019

Professional References

Available upon request.