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.