

Research Interests

Inverse Reinforcement Learning, Reinforcement Learning, Reasoning in LLMs, RLHF, World Models

Education

2022–present **Mila, Université de Montréal.**

PhD student supervised by *Prof. Irina Rish*

2013–2018 **Indian Institute of Technology Kharagpur.**

Integrated B.Sc. and M.Sc. in Mathematics and Computing

Patents

2021 Extreme Classification Processing using Graphs and Neural Networks,
*Kushal Dave, Deepak Saini, **Arnav Kumar Jain**, Amit Singh, Jian Jiao, Ruofei Zhang and Manik Varma.*
Pending Approval

Publications

- 2024 Non-Adversarial Inverse Reinforcement Learning via Successor Feature Matching | [link](#),
Arnav Kumar Jain, Jesse Farebrother, Harley Wiltzer, Irina Rish, Glen Berseth, Sanjiban Choudhury.
Models of Human Feedback for AI Alignment Workshop, International Conference on Machine Learning (ICML) 2024
- 2023 $\eta\psi$ -Learning: Maximum State Entropy Exploration using Predecessor and Successor Representations | [link](#),
Arnav Kumar Jain, Lucas Lehnert, Irina Rish, Glen Berseth.
Neural Information Processing Systems (NeurIPS), 2023
Frontiers4LCD Workshop, International Conference on Machine Learning (ICML), 2023
- 2022 Learning Robust Dynamics through Variational Sparse Gating | [link](#),
Arnav Kumar Jain, Shivakanth Sujit, Shruti Joshi, Vincent Michalski, Danijar Hafner, and Samira Ebrahimi-Kahou.
Neural Information Processing Systems (NeurIPS), 2022
Deep RL Workshop, Neural Information Processing Systems (NeurIPS), 2021
- 2021 GalaXC: Graph neurAL networks with Labelwise Attention for eXtreme Classification | [link](#),
*Deepak Saini**, **Arnav Kumar Jain***, *Kushal Dave**, *Amit Singh*, *Jian Jiao*, *Ruofei Zhang*, and *Manik Varma*.
The Web Conference (TheWebConf), 2021
- 2020 Predicting Regional Locust Swarm Distribution with Recurrent Neural Networks | [link](#),
*Hadia MO Samil**, *Annabelle Martin**, **Arnav Kumar Jain***, *Susan Amin*, and *Samira Ebrahimi-Kahou*.
AI+HADR Workshop, Neural Information Processing Systems (NeurIPS), 2020
- 2020 Graph Regularization for Multi-lingual Topic Models | [link](#),
Arnav Kumar Jain*, *Gundeep Arora**, and *Rahul Agrawal*.
SIGIR Conference on Research and Development in Information Retrieval, 2020
- 2020 Prior guided GAN based Semantic Inpainting | [link](#),
*Avishek Lahiri**, **Arnav Kumar Jain***, *Sanskar Agrawal*, *Prabir Kumar Biswas*, and *Pabitra Mitra*.
Computer Vision and Pattern Recognition (CVPR), 2020
- 2019 Faster unsupervised semantic inpainting: A GAN based approach | [link](#),
*Avishek Lahiri**, **Arnav Kumar Jain***, *Divyashree Nadendla* and *Prabir Kumar Biswas*.
International Conference on Image Processing (ICIP), 2019
- 2018 Optimal Spline Trajectories by Modelling Kinematic Constraints in Robot Soccer | [link](#),
*Abhinav Agarwalla**, **Arnav Kumar Jain***, *KV Manohar*, *Arpit Saxena*, *Jayanta Mukhopadhyay*.
Conference on Data Science and Management of Data (CoDS-COMAD), 2018

- 2017 Recurrent Memory Addressing for describing videos | [link](#),
Arnav Kumar Jain*, Abhinav Agarwalla*, Kumar Krishna Agrawal* and Pabitra Mitra.
DeepVision Workshop, Computer Vision and Pattern Recognition (CVPRW), 2017
- 2016 KgpKubs Team Description Paper,
Abhinav Agarwalla, Kumar Abhinav, **Arnav Jain**, Kaustubh Mundhadha, Dhananjay Yadav,
RoboCup, 2016

Research & Work Experience

- Aug'24 **Visiting Researcher, PoRTaL lab, Cornell University.**
Visited Sanjiban Choudhury's lab for collaboration on IRL via Successor Features Matching (SFM), model-based IRL with diffusion policies for real world tasks and LLMs for Code Generation.
- Aug'20 – **Data & Applied Scientist 2, Microsoft IDC.**
Dec'20 Worked with Dr. Manik Varma at MSR India to develop scalable and accurate eXtreme Classification algorithms for web-scale recommendation system (published at TheWebConf'21)
- Jun'18 – **Data & Applied Scientist, Microsoft IDC.**
Jul'20 Worked on algorithms to improve cross-lingual retrieval of relevant keywords for a query.
- May'17 – **Research Intern, HyperVerge Inc..**
Jul'17 Worked on object detection algorithms for video surveillance systems.
- May'16 – **Research Intern, ParallelDots.**
Jul'16 Worked on lung nodule detection in 3D CT scans and mitosis detection in histology images.

Awards & Achievements

- 2024 **FRQNT Fellowship.**
Received the Fonds de recherche du Québec PhD fellowship.
- 2019 **Excellence in Innovation, Microsoft.**
Awarded for creating models resulting in business impact and reducing defect rate on Bing Ads platform
- 2018 **ACM India Student Travel Grant.**
Received travel grant to present accepted paper in ACM IKDD CoDS COMAD 2018
- 2017 **Data Science Bowl 2017.**
Received 5000\$ for the 3rd highest voted kernel on *Candidate generation and LUNA16 preprocessing*
- 2015 **FIRA RobotSoccer WorldCup, South Korea.**
Participated in FIRA, 2015 in SIMUROSOT league and won Bronze in MIROSOT league, and were the first Indian team to have a podium finish
- 2015 **SudoCode, Kshitij, IIT Kharagpur.**
Secured 1st Position (2015) and Best Freshers' (2014) in a national event to develop AI algorithms.
- 2013 **Innovation in Science Pursuit for Inspired Research (INSPIRE) Scholarship.**
Scholarship awarded by the Department of Science and Technology, Government of India

Other Activities

- 2014 **Texas Instruments certified Winter Workshop.**
Mentored 60 freshmen to develop a bot that can follow lanes and detect shapes.
- 2013 – 2015 **National Service Scheme.**
Organized two medical camps with free checkups and medicines, and volunteered to teach school children.