Arnav Kumar Jain

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Research Interests

Inverse Reinforcement Learning, Reinforcement Learning, RLHF

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 Revisiting Successor Features for Inverse Reinforcement Learning | 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,
Avisek 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,
Avisek 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 **PoRTaL lab, Cornell University**.
Collaborating with Sanjiban Choudhury on imitation learning on robust methods for learning with few demonstrations.

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**.
PhD is funded through Fonds du Researche de Quebec

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.