

## Education

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

- 2021 Learning Robust Dynamics through Variational Sparse Gating,  
**Arnav Kumar Jain**, Shivakanth Sujit, Shruti Joshi, Vincent Michalski, Danijar Hafner, and Samira Ebrahimi-Kahou.  
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

## Work Experience

- Jun'18 – **Data & Applied Scientist, 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, resulting in a publication at WWW'21.
  - Worked on algorithms to improve cross-lingual retrieval of relevant keywords for a query.
  - Implemented sparse matrix multiplication layers in Tensorflow to speed up training by 10x.

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.

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## Research Experience

Jul'17 – **Improved Techniques for Image and Video Inpainting, Masters' Thesis Project,**

May'18 *Advisors: Prof. Pabitra Mitra and Prof. Prabir Kumar Biswas, IIT Kharagpur.*

Implemented a noise prior prediction network and incorporated structural priors like facial keypoints for better image reconstructions. Implemented an RNN-based grouped prior model to inpaint a sequence of frames. The project resulted in publications in ICIP'19 and CVPR'20.

Jul'16 – **Video Description Generation,**

Apr'17 *Advisor: Prof. Pabitra Mitra, IIT Kharagpur.*

Introduced Key-Value Memory Networks to a multimodal setting. Implemented key-addressing mechanism in an LSTM decoder with attention to further exploit temporal dependencies.

Mar'14 – **Kharagpur Robosoccer Students' Group (KRSSG),**

Apr'18 *Advisor: Prof. Jayanta Mukhopadhyay, IIT Kharagpur.*

Designed strategies for autonomous differential drive and omni-directional robots playing soccer using a multi-threaded 3-tier software architecture to take decisions during the game. Developed a new path planner using Spline trajectories and Bayesian Optimization. The team has represented India in FIRA 2013(Malaysia), 2014(Beijing), 2015(South Korea) and RoboCup 2016 (Germany), 2017 (Japan) and won **Bronze** in MIROSOT League in FIRA, 2015.

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## Awards & Achievements

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 3<sup>rd</sup> highest voted kernel on *Candidate generation and LUNA16 preprocessing*

2016 **LSMDC Movie Multiple-Choice Challenge, ECCV 2016.**

Secured 3<sup>rd</sup> position in the challenge to select the best description of small video clips

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 1<sup>st</sup> 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

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## 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 medical camps with free checkups and medicines, and volunteered to teach school children.