

Arnav Kumar Jain

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Education

- 2021–present **ETS Montreal, Mila.**
PhD in *Reinforcement Learning*, supervised by *Prof. Samira E. Kahou*
- 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 GalaXC: Graph neurAL networks with Labelwise Attention for eXtreme Classification,
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,
*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,
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,
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,
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,
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,
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
- o 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.
 - o Worked on algorithms to improve cross-lingual retrieval of relevant keywords for a query.
 - o 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.

May'16 – **Research Intern, ParallelDots.**

Jul'16 Worked on lung nodule detection in 3D CT scans and mitosis detection in histology images.

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 a 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.

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 3rd highest voted kernel on *Candidate generation and LUNA16 preprocessing*

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

Secured 3rd 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 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 medical camps with free checkups and medicines, and volunteered to teach school children.