

ANIKET DIDOLKAR

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EDUCATION

- **University of Montreal**
Master of Science in Computer Science *August 2021 - April 2023*
DIRO CGPA: - 4.11 / 4.0
 - Supervised by Professor Yoshua Bengio and Professor Michael Mozer.
- PhD in Computer Science *May 2023 - May 2026*
 - Supervised by Professor Yoshua Bengio and Dr. Anirudh Goyal.
- **Manipal Institute of Technology, Manipal** *August 2016 - June 2020*
Bachelor of Technology CGPA: 9.19/10.0
Department of Computer Science and Engineering
 - Awarded a gold medal from the director for excellent academic performance in the 3rd semester.

PUBLICATIONS

- **Principled Offline RL in the Presence of Rich Exogenous Information** [[pdf](#)]
ICML 2023
Riashat Islam, Manan Tomar, Alex Lamb, Yonathan Efroni, Hongyu Zang, **Aniket Didolkar**, Dipendra Misra, Xin Li, Harm van Seijen, Remi Tachet des Combes, John Langford
- **Representation Learning in Deep RL via Discrete Information Bottleneck** [[pdf](#)]
AISTATS 2023
Riashat Islam, Hongyu Zang, Manan Tomar, **Aniket Didolkar**, Md Mofijul Islam, Samin Yeasar Arnob, Tariq Iqbal, Xin Li, Anirudh Goyal, Nicolas Heess, Alex Lamb
- **Guaranteed Discovery of Controllable Latent States with Multi-Step Inverse Models** [[pdf](#)]
Transactions on Machine Learning Research TMLR
Alex Lamb, Riashat Islam, Yonathan Efroni, **Aniket Didolkar**, Dipendra Misra, Dylan Foster, Lekan Molu, Rajan Chari, Akshay Krishnamurthy, John Langford
- **Temporal Latent Bottleneck: Synthesis of Fast and Slow Processing Mechanisms in Sequence Learning** [[pdf](#)]
Neurips 2022
Aniket Didolkar, Kshitij Gupta, Anirudh Goyal, Alex Lamb, Nan Rosemary Ke, Yoshua Bengio
- **Coordination Among Neural Modules Through a Shared Global Workspace** [[pdf](#)]
ICLR 2022 (Oral)
Anirudh Goyal, **Aniket Didolkar**, Alex Lamb, Kartikeya Badola, Nan Rosemary Ke, Nasim Rahaman, Jonathan Binas, Charles Blundell, Michael Mozer, Yoshua Bengio
- **Neural Production Systems** [[pdf](#)]
Neurips 2021
Aniket Didolkar*, Anirudh Goyal*, Nan Rosemary Ke, Charles Blundell, Philippe Beaudoin, Nicolas Heess, Michael Mozer, Yoshua Bengio
- **Systematic Evaluation of Causal Discovery in Visual Model Based RL** [[pdf](#)]
Neurips 2021 : Datasets and Benchmarks Track
Nan Rosemary Ke*, **Aniket Didolkar***, Sarthak Mittal, Anirudh Goyal, Guillaume Lajoie, Stefan Bauer, Danilo Rezende, Yoshua Bengio, Michael Mozer, Christopher Pal
- **SpeechMix - Augmenting Deep Sound Recognition using Hidden Space Interpolations** [[pdf](#)][[code](#)]
Conference of the International Speech Communication Association INTERSPEECH 2020
Amit Jindal*, Narayanan Elavathur Ranganatha*, **Aniket Didolkar***, Arijit Ghosh Chowdhury*, Ramit Sawhney, Rajiv Ratn Shah, Di Jin.
- **Augmenting NLP models using Latent Feature Interpolations** [[pdf](#)]
International Conference on Computational Linguistics COLING 2020
Amit Jindal*, **Aniket Didolkar***, Arijit Ghosh Chowdhury*, Di Jin, Ramit Sawhney, Rajiv Ratn Shah.
- **Beyond Hostile Linguistic Cues: The Gravity of Online Milieu for Hate Speech Detection in Arabic** [[pdf](#)]
Proceedings of the 30th ACM Conference on Hypertext and Social Media ACM-HyperText 2019
Aniket Didolkar, Arijit Ghosh Chowdhury, Ramit Sawhney, Rajiv Ratn Shah.

- **ARHNet-Leveraging Community Interaction for Detection of Religious Hate Speech in Arabic** [pdf]
Proceedings of the 57th Conference of the Association for Computational Linguistics: Student Research Workshop ACL-SRW 2019
Aniket Didolkar, Arijit Ghosh Chowdhury, Ramit Sawhney, Rajiv Ratn Shah.
- **[Re] h-detach: Modifying the LSTM Gradient Towards Better Optimization** [pdf] [code]
Volume 4 Issue 2 of the ReScience Journal (Paper accepted as part of the **ICLR reproducibility challenge 2019**)
Aniket Didolkar

PREPRINTS

- **Cycle Consistency Driven Object Discovery** [pdf]
Aniket Didolkar, Anirudh Goyal, Yoshua Bengio

WORK EXPERIENCE

- **Recursion Pharmaceuticals / Valence Labs** June 2023 - Nov 2023
Research Intern Advisor - Jason Hartford
– Working on experimental design strategies for estimating the effects of gene knockouts in cells.
- **Microsoft Research** Aug 2022-Present
Research Intern Advisor - Alex Lamb
– Working on representation learning and factorization of knowledge in reinforcement learning.
- **MILA - Quebec AI Institute, Montreal** Aug 2021-Present
Graduate Student Researcher Advisors - Yoshua Bengio and Michael Mozer
– Working on various areas of deep learning research.
- **MILA - Quebec AI Institute, Montreal** Aug 2020-Aug 2021
Research Intern Advisors - Anirudh Goyal and Yoshua Bengio
– Worked on designing better communication/interaction frameworks for modular deep learning models. Work published at Neurips 2021 and ICLR 2022.
- **Indian Institute of Science, Bangalore** Jan 2020 - July 2020
Research Intern Advisors - Aditya Gopalan and Himanshu Tyagi
– Built a data analytics and visualization platform from scratch for monitoring and analyzing the pollution levels in the city of Bangalore, India.
– Implemented various regressive prediction algorithms using machine learning as a part of the platform to predict the concentration of hazardous pollutants in the atmosphere.
- **Google Summer of Code** [Final Report] May 2019 - August 2019
Student Developer
– Built support for various recurrent neural networks (*LSTM, GRU, Vanilla RNN*) in C++ for **ChainerX**. Utilized CUDA and CUDNN for the corresponding GPU-compatible implementations of these models.
- **MIDAS Lab, IIT Delhi** April 2019 - Aug 2020
Research Intern Advisor - Rajiv Ratn Shah
– Designed a method for profiling hate-speech on Twitter by utilizing information about the community to which a user belonged on Twitter along with the text of the tweet. Work published at ACL (Student Research Workshop) 2019.
– Introduced a novel data augmentation technique for NLP and Speech in which new training examples can be created on the fly by interpolating pre-existing examples in the feature space. Work published at Coling 2020.
- **Ubisoft** May 2019 - July 2019
Automation Intern
– Created a novel algorithm for detecting *UI bugs* in video games using deep learning techniques like semantic segmentation and depth estimation which achieved an accuracy of 85% and eliminated the need for manual detection of bugs.
- **Project Manas(AI/Robotics team at Manipal Insititue of Technology)** Feb 2018 - Feb 2019
AI Researcher
– Implemented deep reinforcement learning algorithms such as *DQN, PPO, and A3C* on small scale robotic agents and various games.
- **Syml.ai** June 2018 - July 2018
Data Science Intern
– Studied the behavior and performance of various language models such as LSTMs and Transformers for detecting action-items in meeting transcripts.

PROJECTS

- **Implementation of the paper - Recurrent Independent Mechanisms [code] [50+ stars]**
 - Implemented the model presented in the paper - *Recurrent Independent Mechanisms(RIMs)*. Reproduced the results for the MNIST task in the paper. Also implemented proximal policy optimization(PPO) using the proposed model and tested it on the gym-minigrid environment.
 - Successfully demonstrated that RIMs generalize better to distribution shifts than LSTMs.
- **Implemented domain randomization for AI Habitat [code]**
 - Dived into the large AI Habitat codebase to implement domain randomization from scratch so that it could be used to train RL models like PPO.

ACHIEVEMENTS

- Awarded a 1500 CAD to visit the AI Upperbound 2023 organized by The University of Alberta.
- Awarded a 1500 CAD to visit the AI Week 2022 organized by The University of Alberta.
- Awarded a 4000 CAD by The University of Montreal and The Quebec Ministry of Higher Education.
- Awarded a full scholarship to pursue my masters at The University of Montreal.
- Awarded the ACM SIGWEB SIGSTAP Travel Grant to present my paper at ACM Hypertext 2019 at Germany.