

# ANIKET DIDOLKAR

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## EDUCATION

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

## PUBLICATIONS

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- **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

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- **Guaranteed Discovery of Controllable Latent States with Multi-Step Inverse Models** [\[pdf\]](#)  
Alex Lamb, Riashat Islam, Yonathan Efroni, Aniket Didolkar, Dipendra Misra, Dylan Foster, Lekan Molu, Rajan Chari, Akshay Krishnamurthy, John Langford

## WORK EXPERIENCE

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- **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, IIIT 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.
- **Sybl.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

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- **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

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- Awarded a 1500 CAD to visit the AI Week 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.