ANIKET DIDOLKAR

Website ◇ GitHub ◇ Google Scholar ◇ adidolkar123@gmail.com

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 Anirudh Goyal.

- **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

- **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

- **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

- **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.

- **Symbl.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 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.