ANIKET DIDOLKAR

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

EDUCATION

- **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.
  - Mentored many freshers and sophomores to take their first steps into machine learning.

WORK EXPERIENCE

- **MILA - Quebec AI Institute, Montreal** Aug 2020-Present
  Research Intern *Advisors - Anirudh Goyal and Nan Rosemary Ke*
  - Created a novel environment for causal learning in model-based RL from scratch. Demonstrated that modular models outperformed simpler monolithic models for capturing causal relations. (Submitted to **ICLR 2021**)
  - Currently working on a project to merge deep learning with the concept of production systems.
- **Indian Institute of Science, Bangalore** Jan 2020 - July 2020
  Research Intern *Advisors - Aditya Gopalan and Himanshu Tyagi*
  - Built a data analytics 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.
  - Implemented automated pipelines for pulling data from various sensors and preprocessing it before feeding it into the prediction algorithms.
  - Integrated an intuitive data visualization framework, built using *matplotlib* and *seaborn*, into the data analytics platform for creating intuitive visualizations for the pollution data obtained from various sensors and discover daily patterns in air pollution that could aid our prediction algorithms.
- **Google Summer of Code** [**Final Report**] [**Evaluation Comments**] May 2019 - August 2019
  Student Developer
  - Implemented the forward and backward passes of various recurrent neural networks *(LSTM, GRU, Vanilla RNN)* in C++ for **ChainerX**.
  - Built the CPU and GPU versions of these models. Independently learned how to use the CUDA and CUDNN framework provided by NVIDIA to implement the GPU versions of these models.
  - Built a C++/python interface to allow my models built in C++ to be seamlessly accessed by python users.
  - Designed and implemented unit tests to confirm the correctness of all my models.
  - Thoroughly documented my code so that users could easily use my models.
- **MIDAS Lab, IIIT Delhi** April 2019 - Present
  Research Intern *Advisor - Rajiv Ratn Shah*
  - Created a novel method for classification of hate-speech in Arabic tweets by augmenting text classification models with community-level features of each user obtained using the Node2Vec algorithm applied on the community graph representing all users. Presented our work at **ACL-SRW 2019** and **ACM-HyperText 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. Papers presented at **COLING 2020** and **INTERSPEECH 2020**. Work done in collaboration with **MIT-CSAIL**.
- **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 completely eliminated the need for manual detection of bugs.
  - Implemented a data extraction pipeline for extracting game frames from the video game that served as data for training the algorithm.
- **Project Manas(AI/Robotics team at Manipal Insititue of Technology)** Feb 2018 - Feb 2019
  AI Researcher
  - Created simulated environments using python for representing various real-world scenarios.
  - Implemented deep reinforcement learning algorithms such as *DQN, PPO, and A3C* on small scale robotic agents and in simulated environments that we had created.
- **Symbl.ai** June 2018 - July 2018
  Data Science Intern
  - Annotated training data for classifying whether an utterance in a meeting contains action-items.

- Implemented various language models such as LSTMs, GRUs, and Transformers from scratch for detecting action-items in meeting transcripts.

PUBLICATIONS

- **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

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 novel Group-GRU and Group-LSTM operations that resulted in a faster version of RIMs than the original implementation.
- **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.
- **BERT Baselines for COQA** [code]
  - Implemented various language models like BERT, SpanBERT, and DistilBERT for the reading comprehension task from the COQA dataset.
- **Parallel implementation of T-SNE** [code]
  - Leveraged GPU acceleration using CUDA to implement a parallelized version of T-SNE.
- **Pruning Neural Networks** [code]
  - Implemented weight pruning and unit pruning on a simple fully-connected neural network. Showed that up to **90%** of the weights can be pruned without a considerable drop in accuracy. Also utilized the sparsity to speed up inference by upto **30%**.
- **DeepJava** [code]
  - Designed a deep learning library from scratch in Java. It contained a few commonly used operations such as CNNs, MLPs, softmax, sigmoid, relu etc.
  - My library automatically builds a dynamic computation graph of the operations defined by the user and supports automatic differentiation of this computation graph to enable training through backpropagation.

ACHIEVEMENTS

- My ICLR 2019 reproducibility challenge paper was one of the four accepted papers out of a total of 24 submissions. My paper was also the only single-author paper among the accepted papers.
- Awarded the ACM SIGWEB SIGSTAP Travel Grant to present my paper at ACM Hypertext 2019 at Germany.
- My Google Summer of Code proposal was one of the only 16% of accepted proposals.