ANIKET DIDOLKAR

Website ◇ **GitHub** ◇ **Google Scholar**
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EDUCATION

Manipal Institute of Technology, Manipal *August 2016 - June 2020*
Bachelor in Technology
Department of Computer Science and Engineering. CGPA: 9.22/10.0

WORK EXPERIENCE

MILA, Montreal Aug 2020-Present
Research Intern

- Working with Anirudh Goyal on topics including sparsity and modularity in deep learning.
- Working on a project to induce structural rules from data and learning to apply them based on relevance.

Indian Institute of Science, Bangalore Jan 2020 - July 2020
Research Intern

- Working under the guidance of Professor Aditya Gopalan and Professor Himanshu Tyagi on using Machine Learning for air quality prediction from sensor data.
- Implemented pipelines for cleaning the raw data obtained from sensors.
- Implemented various algorithms such as MLP regression, linear regression, etc. for predicting the concentration of pollutants.
- Created a library that contained implementations for the various algorithms and data processing pipelines. The library was implemented in a modular fashion such that new algorithms could easily be implemented and different variations of hyperparameters could easily be tested.

Google Summer of Code [Report] [Evaluation Comments] May 2019 - August 2019
Student Developer

- Worked on building Recurrent Neural Network support for ChainerX.
- Implemented the forward and backward passes of the following models - **UNI/BI-LSTM, UNI/BI-GRU, UNI/BI-Vanilla RNN, S-LSTM, Tree-LSTM** in C++.
- Implemented both the CPU and GPU versions of the models. Learnt to use the **CUDNN** framework provided by NVIDIA to implement the GPU versions of the above models.

MIDAS Lab, IIIT Delhi April 2019 - Present
Research Intern

- Working with Professor Rajiv Ratn Shah of IIIT Delhi on research problems in the domain of deep learning and natural language processing.
- Worked on detecting hate speech in Arabic using the liguistic cues combined with the social interaction between the users. This project has led to accepted papers at **ACL-SRW 2019** and **ACM-HyperText 2019**.
- Worked on a project to show improvements caused by **mixup**(a data augmentation technique) on NLP and Speech tasks. Papers published at **Coling 2020** and **Interspeech 2020**.

Ubisoft May 2019 - July 2019
Automation Intern

- Worked on detecting **collision bugs**(When the car stops even when there is no visible obstacle in the path.) and **pass-through bugs**(When the car passes through a visible obstacle such as wall, tree, fence etc.) in the crew 2 game.

- Used a combination of depth estimation and semantic segmentation using deep learning techniques to solve the problem.
- My solution had an accuracy of about 85% and it eliminated the need for manual detection of bugs.

Project Manas(Robotics team at Manipal University) Feb 2018 - Feb 2019
AI Researcher

- Implemented reinforcement learning algorithms - **DQN, policy gradients, and A3C** on the environments provided by OpenAI gym such as the gym-minigrid environment.
- Mentored 3 juniors for the task of designing a learning algorithm for the udacity self-driving car simulator.

Rammer.ai June 2018 - July 2018
Data Science Intern

- Worked on the task of detecting **action-items** in meeting transcripts and natural language inference on the SNLI Dataset.
- Learnt how to work with text data using libraries such as spacy, NLTK. Implemented a number of deep learning models for extracting features from text data which include LSTM, GRU, transformers etc.

PUBLICATIONS

SpeechMix - Augmenting Deep Sound Recognition using Hidden Space Interpolations

- *Conference of the International Speech Communication Association* ***INTERSPEECH 2020***
- Authors -Amit Jindal*, Narayanan Elavathur Ranganatha*, **Aniket Didolkar***, Arijit Ghosh Chowdhury*, Ramit Sawhney, Rajiv Ratn Shah, Di Jin.

Augmenting NLP models using Latent Feature Interpolations

- *International Conference on Computational Linguistics* ***COLING 2020***
- Authors - Amit Jindal*, **Aniket Didolkar***, Arijit Ghosh Chowdhury*, 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***
- Authors - **Aniket Didolkar**, Arijit Ghosh Chowdhury, Ramit Sawhney, Rajiv Ratn Shah.
- Won a scholarship to travel to Hof, Germany to present my paper.

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****.*
- Authors - **Aniket Didolkar**, Arijit Ghosh Chowdhury, Ramit Sawhney, Rajiv Ratn Shah.

[Re] h-detach: Modifying the LSTM Gradient Towards Better Optimization [pdf] [code]

- *ReScience C 5, 2, 1.*
- Author - **Aniket Didolkar**.
- This paper was one of the 4(out of 24) papers accepted as part of the **ICLR reproducibility challenge 2019**.
- Reproduced the paper - H-detach: Modifying the LSTM Gradient Towards Better Optimization.
- Also implemented the CUDA version of the algorithm and integrated it into the PyTorch ecosystem in my local computer. This resulted in a 2x speed-up.

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 and extended the framework to report results on the gym-minigrid environment using **proximal policy optimization**.
Was able to demonstrate that RIMs generalize better to different environments by showing their improvements over LSTMs.

BERT Baselines for COQA [code]
Implemented BERT and its variants for the reading comprehension task of the COQA dataset.

Parallel implementation of T-SNE [code]
Implemented a parallel version of the T-SNE algorithm using CUDA.

Pruning Neural Networks [code]
Performed 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]
Deep learning operations developed from scratch in Java. It builds a computation graph and correctly handles backpropagation for the defined operations (conv layer, fc layer, sigmoid layer etc.).

TECHNICAL STRENGTHS

Libraries and Frameworks	PyTorch, Tensorflow, Chainer, Numpy, CUDA, CUDNN
Software	Linux , Windows, Latex