APOORV AGNIHOTRI

apoorv.agnihotri@iitgn.ac.in ⋄ apoorvagni@gmail.com

EDUCATION

Indian Institute of Technology Gandhinagar (IITGN) *July 2016 - June (Expected) 2020*
Bachelor of Technology, Computer Science and Engineering. Overall Grade: 8.29/10
Honors in Computer Science and Engineering

RESEARCH INTERESTS

My research interests include the application of Artificial Intelligence, Machine Learning, and Computer Vision for solving societal problems.

EXPERIENCE

IIT Gandhinagar May - Jul. 2019
Summer Research Intern | Advisor - Prof. Nipun Batra

- Co-authored an introductory article on Bayesian Optimization (BO) with Prof. Nipun Batra. The manuscript is currently under review at Distill – an academic journal in the area of Machine Learning (ML), focused on communication of scientific ideas.
- Developed an open-sourced python library, Polire, for spatial interpolation. The motivation for the library is to open up research by providing an alternative to proprietary software and promote reproducible research.

NVIDIA Apr. - Jul. 2018
Accelerated HPC & Machine Learning Intern

- Contributed to rapids.ai, an open sourced software suite for scaling out data science and analytics workflow to multi-GPUs developed by NVIDIA.
- Designed the APIs for and implemented three variants of Kalman Filters of GPUs to be included into rapids.
- Developed a multivariate Gaussian random number generator using cuRand. CuRand is an Nvidia library that only provides uni-variate Gaussian distributed random numbers. The module was subsequently used as a dependency for various other projects within my team.

PUBLICATIONS

Active Learning for Air Quality Station Recommendation
S. Deepak Narayanan, Apoorv Agnihotri, Nipun Batra, *Accepted at* 7^{th} *ACM IKDD CoDS and* 25^{th} *COMAD (CoDS-COMAD 20)*

MANUSCRIPTS

Active Learning for Air Quality Station Location Recommendation
S. Deepak Narayanan, Apoorv Agnihotri, Nipun Batra, *Under Review*

Exploring Bayesian Optimization
Apoorv Agnihotri, Nipun Batra, *Under Review at Distill*

ACHIEVEMENTS

Achieved a rank of **27th** out of the **240**+ teams that participated in KDD RL Cup (2019) – An international competition held by the premier academic conference in the field of data science, SIGKDD.

Awarded the national scholarship for young scientists (KVPY), for encouragement for future research careers (0.8% acceptance) by the Dept. of Science and Technology of the Indian Government in 2016.

Received a scholarship from the state government in 2016 for an exceptional academic performance during high school.

TALKS

End to End Data Science on GPU's
Gave a talk to an audience of 40+ during PyData Meetup in Gandhinagar, introducing rapids.ai, which is an open-sourced software suite developed by Nvidia to speed-up ML workflows.

PROJECTS

Big-Little Networks | **Link**
Implemented *Big Little Net*, a CNN architecture, using Pytorch as a part of ICLR Reproducibility Challenge 2019. The idea behind the challenge is to encourage reproducible research in the domain of ML by replication of papers accepted at the host conference.

Reinforcement Learning in Games | **Link**
Implemented different learning algorithms such as Q Learning, Deep Q Learning and looked at the efficiency of all these methods on numerous games available on OpenAI's gym environment. The motivation was to explore the domain of computer science which allows for data-driven learning.

Machine Learning Library | **Link**
Designed and implemented a ML library written in python from scratch. The library includes implementations for some of the common ML algorithms such as Random Forests, Decision Trees, and Support Vector Machine. The library is a collection of multiple programming assignments that were covered as a part of the course in ML at IITGN.

Floating Point Processor | **Link**
Designed and implemented a very basic processor that could perform addition, subtraction, multiplication, and division on floating point (32 bit) numbers. The design was based on Harvard CPU architecture with modules including control unit, memory unit, and arithmetic logic unit. Subsequently, we integrated the modules to form a basic synchronous processor.

ONLINE COURSES

Intro to AI (CS188, UC Berkeley), Convolutional Neural Networks (CS231n, Stanford), Reinforcement Learning (David Silver, UCL)

EXTRA-CIRRUCULAR

Represented the institute at ICPC 2019 Regionals in IIT Kharagpur and IIIT Pune.

Member of the organizing committee of PyData Gandhinagar.

Secured a rank of 8th at Inter-IIT Tech. Meet 2018 at IIT Madras.