APOORV AGNIHOTRI

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EDUCATION

Indian Institute of Technology Gandhinagar (IITGN) *July 2016 - Jan 2020*
Bachelor of Technology, Computer Science and Engineering Overall Grade: 8.25/10

RESEARCH INTERESTS

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

EXPERIENCE

Wadhwani AI Jun. 2019 - Present
Reserach Fellow | Advisor - *Dr. Rahul Panicker & Dr. Jerome White & Dr. Jigar Doshi*

Building AI solutions in the domain of Healthcare and Agriculture to help the under-served.
- Working on augmenting tuberculosis labs in India to scale diagnostic services using computer vision.
- Exploring multi-modal signals (eg. satellite data, weather data) to infer pest infestation in small-scale farms in India.

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

- Co-authored an expository article on Bayesian Optimization with Prof. Nipun Batra published at Distill – an academic journal in Machine Learning (ML).
- Core contributor to Polire and Vayu, two open-sourced python libraries for spatial interpolation and air quality visualization respectively. The motivation behind the two libraries is to open up research by providing an alternative to proprietary software and promote better understanding of air quality data using visualizations.

NVIDIA May - Aug. 2018
Accelerated HPC & Machine Learning Intern

Contributed to rapids.ai—an open sourced software suite having ML algorithms implemented, and optimized for multi-GPUs workflow. Rapids was developed to scale out data science and analytics workflows to benefit from GPUs.
- Understood and implemented three variants (Linear, Extended and Unscented) of Kalman Filters.
- Implemented a multivariate Gaussian random number generator; subsequently used by teammates.

PUBLICATIONS

Exploring Bayesian Optimization
Apoorv Agnihotri, Nipun Batra, *Distill 5.5 (2020): e26.*

Active Learning for Air Quality Station Recommendation
S. Deepak Narayanan, Apoorv Agnihotri, Nipun Batra, *Proceedings of the* 7^{th} *ACM IKDD CoDS and* 25^{th} *COMAD. 2020. 326-327.*

Poster Abstract: A Toolkit for Spatial Interpolation and Sensor Placement
S Deepak Narayanan, Zeel B Patel, Apoorv Agnihotri, and Nipun Batra. *Proceedings of the 18th Conference on Embedded Networked Sensor Systems (SenSys '20)*

Active learning for air quality station deployment
S. Deepak Narayanan, Apoorv Agnihotri, Nipun Batra, *Workshop on Real-World Experiment Design and Active Learning at ICML 2020.*

ACHIEVEMENTS

Achieved a rank of $\mathbf{27^{th}}$ 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), as an encouragement for a future career in research (2.5% acceptance) by the Dept. of Sci. and Tech. of the Indian Government in 2016.

Received a scholarship (∼270 US $) from the state government for exceptional academic performance in 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 data science 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.
It makes use of multi-scale features to have better accuracy and reduced computations than *Resnet*.

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.

ONLINE COURSES

Intro to AI (CS188, UC Berkeley), Convolutional Neural Networks (CS231n, Stanford), Reinforcement Learning (David Silver, UCL), Neural Networks and Deep Learning (Coursera), Writing in Sciences (Stanford, Coursera), Probability (MITx)

SERVICE / EXTRA-CURRICULAR

TA for the Technical Education Quality Improvement Programme – a program assisted by the World Bank to improve the quality of technical education system in India.

Represented IIT Gandhinagar at ICPC (International Programming Contest) 2019 Regionals in IIT Kharagpur and IIIT Pune.