# APOORV AGNIHOTRI

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## EDUCATION

**Indian Institute of Technology Gandhinagar (IITGN)** *July 2016 - July (Expected) 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*

**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 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)*

**Exploring Bayesian Optimization**
Apoorv Agnihotri, Nipun Batra, *Accepted at Distill*

## MANUSCRIPTS

**Aagami: Active Learning for Air Quality Station Deployment**
S. Deepak Narayanan, Apoorv Agnihotri, Nipun Batra, *Under Review at KDD*

## ACHIEVEMENTS

Achieved a rank of **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 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 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.

**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.

**Temporal Epipolar Regions** | **Link**
Implemented a paper on estimating the region on an image where a moving object might lie. The object is assumed to move on a linear path and we have multiple shots of the objects separated in time and view. The motivation was to explore classical computer vision techniques that allow for motion prediction.

## ONLINE COURSES

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

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

Member of the organizing committee of PyData Gandhinagar.