

# APOORV AGNIHOTRI

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## EDUCATION

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**Indian Institute of Technology Gandhinagar**  
Bachelor of Technology, Computer Science and Engineering

*July 2016 - July 2020*  
Overall Grade: 8.25/10

## INTERESTS

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I enjoy wearing a product manager's hat while writing code to solve problems using machine learning.

## PUBLICATIONS

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### Exploring Bayesian Optimization

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

### 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*.

### 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 Recommendation

S. Deepak Narayanan, Apoorv Agnihotri, Nipun Batra, *Proceedings of the 7<sup>th</sup> ACM IKDD CoDS and 25<sup>th</sup> COMAD. 2020. 326-327*.

## EXPERIENCE

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### Wadhvani AI

Jun. 2020 - Present

Associate ML Scientist I | Advisor - *Dr. Rahul Panicker* & *Dr. Jerome White* & *Jigar Doshi*

Wadhvani AI is a nonprofit institute developing AI solutions for social good; funded by the likes of **Gates Foundation**, **Google Research**, and others.

- [TB Project] Worked with the Central TB Division of India to automate and scale diagnostic services using computer vision. Lead the efforts to **build** a technical proof of concept using object detection and computer vision. Co-designed the solution with inputs from the field.

- [Cotton Farming Project] Contributed in numerous directions including: surveying and implementing SOTA techniques for image rejection, object detection. Formulating and experimenting with multi-head, multi-task models to provide detailed rejection feedback. Building a reusable and modular code-base, working on a visualization dashboard for the ML models.

- [Misc.] 1) Published a **white paper** that detailed potential venues where AI solutions can help small-holder farmers in India have better incomes. 2) Participated and won HUL, Google and My Gov's *AI for Agriculture* Hackathon with cash reward of 1 million rupees.

### IIT Gandhinagar

May - Jul. 2019

Summer Research Intern | Advisor - *Prof. Nipun Batra*

- Published an expository article at **Distill** – an academic journal in Machine Learning (ML).

- Contributed to **Polire** and **Vayu**, open-sourced python libraries for spatial interpolation and air quality visualization, respectively.

### NVIDIA

May - Aug. 2018

Accelerated HPC & Machine Learning Intern

Contributed to **rapids.ai**—an open-sourced software suite consisting of GPU-optimized ML algorithms.

- Wrote CUDA kernels to implement three variants (Linear, Extended, Unscented) of Kalman Filters.

- Constructed a library to generate multivariate Gaussian random numbers from a uniform number generator using various matrix operations; the library was subsequently used by teammates from different projects.

## ACHIEVEMENTS

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Achieved a rank of **27<sup>th</sup>** 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.

Kishore Vaigyanik Protsahan Yojana (KVPY) Fellow, 2016

## TALKS

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### 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.

## PERSONAL PROJECTS

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### Reinforcement Learning in Games @ ML Course | [Link](#)

Implemented different learning algorithms such as Q Learning, Deep Q Learning and analyzed the respective efficiency on numerous environments in OpenAI's framework, Gym.

### Machine Learning Library @ ML Course | [Link](#)

Designed and implemented a ML library from scratch; implementations include common ML algorithms such as Random Forests, Decision Trees, and Support Vector Machines. The library is a distillation of programming assignments from the machine learning course at IITGN.

### Temporal Epipolar Regions @ Computer Vision (CV) Course | [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 CV techniques that allow for motion prediction.

### Exoplanet Detection @ Tech. Meet 2018 | [Link](#)

Tech. Meet is an annual inter-IIT event hosting numerous engineering competitions. The problem formulation represented binary classification of **time-series** data. Given luminance flux data of a distant solar system, predicted whether it contains a planet. We used basic frequency analysis, 1st order differences and classical ML techniques like Random Forests that placed our team 8th overall among all the IITs.

## ONLINE COURSES

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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

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- Teaching Assistant 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.