

# Apoorv Agnihotri

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## Education

### Eberhard Karls University of Tübingen

Master's in Machine Learning (Grade: 1.84)

Oct 2023 - Feb 2026 (expected)

Tübingen, Germany

- **Relevant Coursework:** Massively Parallel Computing, Math for ML, Conv. Opt., Statistical ML, Probabilistic ML, Efficient ML in Hardware

### Indian Institute Of Technology (IIT), Gandhinagar

Bachelor of Technology in Computer Science and Engineering (GPA: 8.25 / 10.00)

Jul 2016 - Jul 2020

Gandhinagar, India

- **Relevant Coursework:** Machine Learning, Data Science, NLP, 3D Computer Vision, Computer Org. & Arch.

## Experience

### Mercedes-Benz

AI Research - Working Student · part-time

Aug 2024 – Present

Böblingen, Germany

- Focusing on Neuromorphic computing.

### Artpark, Indian Institute of Science

Machine Learning Engineer Consultant · part-time

Jul 2023 – Oct 2023

Bangalore, India

- Built a prototype using RAGs (retrieval augmented generation) on LLMs to improve knowledge dissemination to Auxiliary Nursing Midwifery to help in quicker help with pregnancy care on the field.

### Rephrase AI (acquired by Adobe)

Deep Learning Researcher

Apr 2022 – Jun 2023

Bangalore, India

- Used Variational Auto-encoders (VAEs) and Generative Adversarial Networks (GANs) to work on generative speech, creating a proof of concept for voice cloning with few seconds of target speaker's voice samples.
- Used off-the-self speech content encoders (hubert-soft) to flag problematic speech on production systems. Further, my explorations in speech encoders helped us improve our lip-sync model.
- Improved team's experimental throughput by integrating ML experimenting frameworks like pytorch-lightning.

### Wadhvani AI (non-profit funded by the Gates Foundation)

Associate ML Scientist I

Jun 2020 – Mar 2022

Mumbai, India

- Led the development of a research prototype for scanning and interpreting medical docs using template matching and classical computer vision.
- For our mobile solution, implemented and deployed SOTA Deep Learning techniques for object detection.
- Experimented with sample rejection of adversarial inputs in the wild. (**NeurIPS 2022 workshop, ICLR 2023**)
- Coauthored a white paper detailing potential venues for AI disruption in Indian agriculture.
- Represented Wadhvani AI at Google's *AI for Agriculture Hackathon* and won a cash reward of 1 million rupees.

### IIT Gandhinagar

Summer Research Intern

May 2019 – Jul 2019

Gandhinagar, India

- Authored an expository article on Bayesian Optimization. (**Distill 2020**)
- Created Polire and Vayu for aiding research in computational sustainability. (**Poster at SenSys 2020**).
- Used active learning for optimal sensor placement recommendation to reduce costs. (**CoDS COMAD 2020, ICML Workshop 2020**).

### NVIDIA

Accelerated HPC & Machine Learning Intern

May 2018 – Aug 2018

Bangalore, India

- Implemented GPU-optimized Kalman filters in rapids.ai, a data science framework utilizing NVIDIA GPUs.
- Created a library to generate multivariate Gaussian random numbers on GPU using a standard normal sampler.

## Selected Projects

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### Temporal Epipolar Regions @ 3D Computer Vision (CV) Course – [link](#) | *Epipolar Geometry, Computer Vision, Python*

- Implemented the algorithm described in the paper Temporal Epipolar Regions.
- The algorithm used the concept of epipolar geometry to locate an object moving in a straight line. The object is captured from various angles at different timesteps.

### Reinforcement Learning (RL) in Games @ ML Course – [link](#) | *Spring Boot, Express.js, TensorFlow, PyTorch, jQuery, Bootstrap*

- Developed a data visualization dashboard using D3.js, providing stakeholders with real-time insights and improving decision-making processes.
- Built a CI/CD pipeline using Jenkins and Docker, reducing deployment time by 40% and ensuring consistent and reliable releases.

## Publications

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- Agnihotri, A., & Batra, N. *Exploring Bayesian Optimization*. **Distill**, 5(5), e26. (2020)
- Narayanan, S. D., Patel, Z. B., Agnihotri, A., & Batra, N. *A toolkit for spatial interpolation and sensor placement*. In Proceedings of the 18th Conference on Embedded Networked Sensor Systems. **Poster at SenSys** (pp. 653-654). (2020)
- Narayanan, S. D., Agnihotri, A., & Batra, N. *Active learning for air quality station location recommendation*. In Proceedings of the 7th **ACM IKDD CoDS and 25th COMAD** (pp. 326-327). (2020)
- Narayanan, S. D., Agnihotri, A., & Batra, N. *Active learning for air quality station deployment*. Real World Experiment Design and Active Learning **Workshop at ICML** (2020)
- White, J., Madaan, P., Shenoy, N., Agnihotri, A., Sharma, M., & Doshi, J. *A Case for Rejection in Low Resource ML Deployment*. Challenges in deploying and monitoring machine learning systems. **Workshop at NuerIPS** (2022)
- White, J., Agarwal, C., Ohja, A., Agnihotri, A., Sharma, M. & Doshi, J. *BOLLWM: A real-world dataset for bollworm pest monitoring from cotton fields in India*. **ICLR**. (2023)

## Teaching

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- Guest lecture on Diffusion Models in Probabilistic ML course (2022) @ IITGN.
- Conducted research seminars at Wadhwani AI and Rephrase AI.
- TA for TEQIP, Machine Learning (2019) @ IITGN. Course for up skilling local college professors to use Machine learning in their fields.
- Gave a PyData [Talk](#) (2018) on rapids.ai at PyData, Gandhinagar.

## Technical Skills

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**Languages:** Python, C++, Javascript, Julia, JAX, HTML, Matlab, SQL

**Technologies:** TensorFlow, PyTorch, Hydra, CUDA, Node.js, Electron, Express.js

**Concepts:** Artificial Intelligence, Machine Learning, Neural Networks, Deployment, Efficient Machine Learning on Edge, GPU programming, Operating Systems, Networks