Apoorv Agnihotri
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Examination	University/ Board	Institute	Year	CPI/%
Graduation	IIT Gandhinagar	IIT Gandhinagar	2020	8.23
Intermediate/+2	Madhya Pradesh Board	Central Academy S.S. School	2016	86.00
Matriculation	CBSE	Little World S.S. School, Jabalpur	2014	91.2

PUBLICATIONS

1. **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)*
2. **Exploring Bayesian Optimization**, Apoorv Agnihotri, Nipun Batra, *Under Review at Distill*

EXPERIENCE

Indian Institute of Technology Gandhinagar May 2019 - Jul. 2019
Summer Research Internship | *Guide - Prof. Nipun Batra*

- Wrote an article on introducing Bayesian Optimization (BO) focused on people who are new to the field of BO. The work is currently submitted and under review at Distil. Distill is an academic journal in the area of ML, focused on communicating scientific ideas well.
- Built an open-sourced python library for spatial interpolation. The motivation for such a library was to have a uniform API to test different methods of interpolation, and additionally allow for the possibility of reproducible research. Polire

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

- Worked on RAPIDS.AI, an open sourced software suite for scaling out data science and analytics workflow to multi-GPUs by NVIDIA under the Open GPU initiative.
- I worked on implementing Linear, Ensemble and Unscented variants of Kalman Filters on GPUs. I used BLAS APIs from NVIDIA, and wrote GPU kernels for the cases when the APIs were missing.
- Implemented a multivariate Gaussian random number generator using cuRand. CuRand is an Nvidia library that only provides uni-variate Gaussian distributed random numbers. I had some unit tests testing my work. Finally the work was used by various members from my team.

ACHIEVEMENTS

- Achieved a rank of **27$^{\texttt{th}}$** out of the **240**+ teams that participated in KDD Cup (2019), worldwide. The competition was based on training artificial agents using reinforcement learning.
- Accepted for **Kishore Vigyanik Protsahan Yojna** (0.8% acceptance) in 2016, a scholarship funded by the Indian government.
- Received a scholarship of **$ 360 USD** from the Madhya Pradesh government in 2016 for an exceptional performance during high school.

TALKS

- Gave a talk to an audience of 40+ during PyData Meetup in Gandhinagar. The talk was focused on on introducing rapids, which is an open-sourced software suite developed by Nvidia to speed-up ML workflow.

PROJECTS

Big-Little Networks | *Link* March 2019

· Implemented *Big Little Net*, a CNN architecture, using Pytorch as a part of ICLR Reproducibility Challenge 2019. It makes use of multi-scale features to have better accuracy and reduced computations than *Resnet*.

Reinforcement Learning in Games | *Link* Oct. 2019 - Dec. 2019

· Implemented different learning policies like Q Learning, Deep Q Learning, tried looking at the efficiency of all these methods on numerous games like LunarLander, CartPole, available on OpenAI's gym environment.

Temporal Epipolar Regions | *Link* Aug. 2018 - Dec. 2018

· 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.

Floating Point Processor | *Link* Oct. 2017 - Nov. 2017

· Implemented and designed a very basic processor that could perform addition, subtraction, multiplication, and division on floating point (32 bit) numbers with a support for halt.
· Coded up Harvard CPU architecture modules like control unit, memory unit, instruction store, ALU and made them work together to form a basic synchronous processor.

CS COURSES TAKEN

Institute Courses : Data Structures and Algorithms, Comp. Org. & and Arch., Discrete Maths, 3D Computer Vision, Natural Language Processing, Probability and Random Processes, Theory of Computing, Operating Systems, Machine Learning, Compilers, Intro to Data Science, Databases.

Online Courses / Books : Intro to AI (CS188, UC Berkeley), Convolutional Neural Networks (CS231n, Stanford), Practical Deep Learning for Coders (fast.ai MOOC) (Ongoing), Neural Networks and Deep Learning (Coursera), Machine Learning (Coursera).

ADDITIONAL PROJECTS @ GITHUB

· Implemented Eigenfaces. An algorithm to detect and recognize faces using PCA on centered facial images.
· Implemented a library built in python to support Decision Trees, Naive Bayes, Random Forests, Linear Regression and K-Nearest Neighbours.
· Implemented a program to stitch multiple images to form a panorama using OpenCV.
· Implemented Wiener filter for image denoising using MATLAB.

EXTRA-CURRICULAR ACTIVITIES

· 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 $8^{\texttt{th}}$ at Inter-IIT Tech. Meet 2018 at IIT Madras. In the competition we were supposed to develop a Machine Learning model which would be able to classify whether a solar system contained an exoplanet or not, given solar flux from that system.