

Naman Biyani

SOPHOMORE UNDERGRADUATE · COMPUTER SCIENCE AND ENGINEERING

☎ (+91) 7003164776 | ✉ namanb@iitk.ac.in | 🏠 namanbiyani.github.io | 📱 namanbiyani

Education

Indian Institute of Technology, Kanpur

BTECH IN COMPUTER SCIENCE AND ENGINEERING

- Cumulative Grade Point/CGPA: 8.8 out of Max 10.0 (Currently)

Kanpur, India

Jul. 2018 - Apr 2022 [Expected]

Sri Sri Academy

SECONDARY SCHOOL

- Indian School Certificate Examination, ISC(Class XII): 97.5(percentage)
- Indian Certificate of Secondary Education, ICSE(Class X): 97.4(percentage)

Kolkata, West Bengal

April 2010 - April 2018

Skills

Experienced Python, C, C++, Haskell, Bash

Exposure Octave, R, Julia, Rust

Frameworks Pytorch, Tensorflow, Keras, NLTK, SkLearn

Web Django, Javascript, HTML, CSS, Selenium

Utilities Linux shell utilities, Git, Lex&Yacc, SQL, MongoDB, OpenCV, LaTeX, Vim, Verilog

Work Experience

Research Intern

MENTOR - DR YOGESH RAWAT

- Did a literature survey on the state of the art methods for Video Synthesis, Video Prediction and View independent Networks for Novel view synthesis of Images and Videos.
- Implemented various novel approaches for Conditional Video synthesis using action-descriptions on NTU-RGB+D, UCF-101 and Penn Action video datasets using Pytorch framework .
- Did evaluation of the results from various models and its comparison from the State of the Art methods on the basis of Frechet Video distance, Inception score, PSNR and SSIM.
- **Submitted work in CVPR2021.**

CRCV, University of Central Florida

May'2020 - November'2020

Projects

Building gemOS

PROF. DEBDATTA MISHRA, IIT KANPUR,

- Implemented file system syscalls including open(), write(), read(), pipe(), fork(), lseek(), sendfile etc and implemented message queue functionalities in gemOS.
- Implemented multi-level paging management for syscalls like mmap(), munmap(), make_hugepage(), break_hugepage().
- Implemented a basic debugger in gemOS with various functionalities of breakpoints and backtrace functionality.

Course Project

Sept 2020 - Dec 2020

Modern Cryptology

PROF. MANINDRA AGARWAL, IIT KANPUR,

- Implemented cryptanalysis of Substitution cipher, Block substitution cipher, Substitution-Permutation cipher.
- Also analysed special cases of cryptanalysis of DES(differential cryptanalysis), AES(SASAS attack), RSA with low exponent(coppersmith attack).
- Learnt and worked through different attacks on weaker version on KECCAK hashing.

Course Project

Jan 2020 - June 2020

Bitgrit Data Science Contest

[GITHUB REPO]

- Involved in creating and running efficient models to find labels for test dataset , analysing dataset and working for new innovative and impactful ideas for all three rounds.
- Judged **2nd** among all IITs participating in the competition.

Inter IIT Tech Meet 2019-20

December, 2019

A Study in GANs

[GITHUB REPO]

- Studied Neural convolutional neural networks in depth and implemented special architectures (ResNET, DenseNET, VGG,etc) using Pytorch framework .
- Did a basic literature survey on Generative networks and then studied GANs , implemented basic GANs and DCGANs on MNIST and CIFAR-10 dataset using Pytorch and TorchGAN(Framework for training of GANs).
- Implemented Class Conditioned GANs like CGAN, ACGAN and InfoGAN on CelebA , FashionMNIST and Anime dataset and compared the results using different losses and metrics .
- Implemented Style Transfer GANs like DiscoGAN, CycleGAN and StarGAN on CelebA dataset using Pytorch and TorchGAN .
- Implemented special GANs like SRGAN and SAGAN .
- Tried implementing a YAML parser and dataloader for TorchGAN Framework.

Programming Club, IIT Kanpur

January 2019 - July 2019

Voting App using blockchains

[GITHUB REPO]

- Learnt blockchains and the cryptography behind the security of blockchains.
- Made a voting app using Microsoft Azure Blockchain services for a more secure election.

Microsoft Codefundo competition

August - September 2019

Probabilistic Machine Learning

[GITHUB REPO]

- Deep dived into Probability distributions(specially Gaussians), Bayes Theorem, Information theory and the major differences between Frequentist and Probabilistic approach of machine learning
- Studied and implemented Bayesian Linear Regression(on Boston House-price Dataset), Expectation Maximization algorithm(on MNIST dataset), Probabilistic Principal Component analysis(on MNIST dataset) and Variational Inference (On Boston house-price dataset)
- Deep dived into Bayesian Matrix Factorization and implemented Recommender system Probabilistic Bayesian Matrix Factorization using Gaussian and Poisson priors on MovieLens-100K dataset and then compared the results .
- Implemented Online EM algorithms (Incremental and stepwise) and compared their results with batch EM algorithm . Also studied about Stochastic Variational Inference in brief .
- Studied about Advances in Variational Inference like Black Box Variational Inference and the tricks used to reduce its variance . Implemented Variational Autoencoders on MNIST dataset and compared the results using the reparameterization trick .

Programming Club, IIT Kanpur

May 2019 - August 2019

Haskell Scrabble Solver

[GITHUB REPO]

- Learnt the concepts of functional programming through Haskell, one of the most widely used functional programming languages .
- Deep dived into the concepts of Type theory, Currying , Recursion, Immutability, File Systems, Pattern Matching and Laziness of Haskell
- Made a Scrabble Solver in Haskell (A Two Player version and a PlayWithComputer version) which used Lexicographical Search, Regex-type functions(written from scratch) and Quick Sorts as the major algorithms .

Programming Club, IIT Kanpur

January 2019 - August 2019

Reinforcement Learning and its applications in Atari Games

[GITHUB REPO]

- Studied basics of Reinforcement Learning through David Silver Lectures and few portions of Sutton and Bartol's book on RL.
- Solved Dennybritz's exercises of Reinforcement Learning on topics Dynamic Programming, Monte-Carlo Learning , Temporal Difference Learning , Value Function Approximation , SARSA , Q-Learning and Policy Gradient methods .
- Implemented DQN and A3C reinforcement learning algorithms on Breakout and Pong Atari Games and trained it the models to a decent level and then compared the results.

Self Project

January 2019 - April 2019

Relevant Courses

Fundamentals of Computing
Data Structures and Algorithms
Logic in Computer Science
Probability and Statistics
Theory of Computation
Compiler Design(*)

Discrete Mathematics
Software Development and operations
Linear Algebra and ODE
Operating Systems
Probabilistic Machine Learning(r)
Statistical Natural Language processing(*)

Computer Organization
Modern Cryptology
Real Analysis
Introduction to machine learning
Algorithms-II

*: Ongoing r: Part of Reading Group

Relevant Courses CPI: 9.6

Achievements

- 2019 **Academic Excellence Award**, For exceptional Academic performance in freshman year in IIT Kanpur
- 2018 **All India Rank 198**, Joint Entrance Examination Advance, 200,000 candidates
- 2018 **All India Rank 379**, Joint Entrance Examination Mains, 1.5 million candidates
- 2018 **All India Rank 6**, West Bengal Joint Entrance Examination
- 2017 **All India Rank 285**, KVPY Scholarship Awardee

Positions of responsibility

Coordinator

SPECIAL INTEREST GROUP IN MACHINE LEARNING(SIGML)

- One of the four Coordinators of the SIGML, the Institute forum for student researchers in ML.
- Responsible for delivering and conducting talks on current research and special topics in ML

IIT Kanpur

July 2020 -

Project Mentor

PROGRAMMING CLUB

- Mentored 15 freshmen for a Model-Zoo project to make a repository of implementations of 31 state of the art Deep Learning models in Pytorch & Tensorflow.
- Mentored 20 freshmen for a project to learn about Artificial Neural Networks and its applications.

IIT Kanpur

April 2020 - July 2020

Secretary

PROGRAMMING CLUB

- Responsible for conducting activities and competitions for campus community and conducting lectures and workshops on different topics for interested students .

IIT Kanpur

April 2019 - April 2020

Miscellaneous

- Presented my project on Probabilistic Machine learning at Student Academic Conference, InterIIT Tech Meet 2019.
- Contributed to Open Source projects like Torchgan, Openwhyd.