Naman **Biyani**

Sophomore Undergraduate · Computer Science and Engineering

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Edu**cation**

Indian Institute of Technology, Kanpur   *Kanpur, India*

BTech in Computer Science and Engineering   *Jul. 2018 - Apr 2022 [Expected]*

- Cumulative Grade Point/CGPA: 8.6 out of Max 10.0 (Currently)

Sri Sri Academy   *Kolkata, West Bengal*

SECONDARY SCHOOL   *April 2010 - April 2018*

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

Assembly of God Church School   *Kolkata, West Bengal*

PRIMARY SCHOOL   *April 2003 - April 2010*

Ski**lls**

Programming Languages	Python, Java, JavaScript, C, C++, Haskell, Octave, R, Erlang, Julia
Web Development	HTML, CSS, Javascript, Django, React, MySQL
Utilities	Git, Matlab, Latex, Docker, Travis, Bash, Photoshop

Pro**jects and Experience**

Generative models for dental crown restorations   *Prof Arnab Bhattacharya*

IIT Kanpur [GITHUB REPO]   *August 2019 -*

- Collected a dataset of crown images and their CAD drawings from a hospital and performed its preprocessing
- Studied deep generative models(like pix-to-pix networks) which may help in this domain and are implementing a CGAN type model(having pix-to-pix network architecture) and a functional loss which would help in accuracy of the generative model for dental crown restorations.

Deep Learning Applications

Independent Research Project [GITHUB REPO]   *July 2019 -*

- Studied papers of VQVAEs, special GANs like SRGAN,StyleGAN and StarGAN, NLPGAN papers and papers of Object detection using RCNNs and MaskRCNNs .
- Implemented VQ-VAEs, SRGAN, StarGAN and StyleGAN and got good results. NLPGANs are to be implemented.

Voting App using blockchains   *Microsoft Codefundo competition*

Microsoft ,Hyderabad [GITHUB REPO]   *August - September 2019*

- Learnt blockchains and the cryptography behind the security of blockchains.
- Made a voting app using Microsoft Azure Blockchain services for a more secure election and stood 2nd in IIT Kanpur.

Probabilistic Machine Learning   *Programming Club, IIT Kanpur*

Mentor - Aniket Das and Yatin Dandi [GITHUB REPO]   *May 2019 - August 2019*

- Deep dived into Probabilty 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), Expectataion Maximization algorithm(on MNIST dataset), Probabilistic Principal Componenent analysis(on MNIST dataset) and Variational Inferenece (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 compatred their results with batch EM algoritm . 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 .

Haskell Scrabble Solver   *Programming Club, IIT Kanpur*

Mentor - Aditya Gulati [GITHUB REPO]   *January 2019 - August 2019*

- 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 Lexicograhical Search, Regex-type functions(wriiten from scratch) and Quick Sorts as the major algorithms .

A Study in GANs

MENTOR - AVIK PAL AND ANIKET DAS [GITHUB REPO] *January 2019 - July 2019*

- Studied Neural convolutional neural networks in depth and implemented special architecutures (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.

Reinforcement Learning and its apllications in Atari Games

Stamatics, IIT Kanpur

MENTOR - KUSHAGRA GUPTA [GITHUB REPO] *January 2019 - April 2019*

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

Rotary Club

Consulting Group, IIT Kanpur

DATA SCIENCE TEAM MEMBER *December 2018 - January*

- Studied the history of polio in the world and the possibilities of it being caused again in India.
- Developed a framework which would predict the future of Polio in India and help Rotary Club in efficient resource allocation in various parts of India to eradicate polio.

Relevant Courses

- Calculus and Analytical Geometry(MTH101)
- Linear algebra and ordinary differential equations(MTH102)
- Mathematics for Computer Science(CS201)(Currently running)
- Data Structures and Algorithms(ESO207)(Currently running)
- Introduction to machine learning(CS771) (Audit and Currently running)

Achivements

2019	**Academic Excellence Award,** For exceptional Academic performance in freshman year	*IIT Kanpur*
2018	**All India Rank 198,** Joint Entrance Examination Advance, 200,000 candidates	*India*
2018	**All India Rank 379,** Joint Entrance Examination Mains, 1.5 million candidates	*India*
2017	**KVPY Scholarship Awardee,** Indian Institue Of Science Bangalore, India	*India*

Positions of responsibilty

Programming Club

IIT Kanpur

SECRETARY *April 2019 - present*

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