



**Ritik Dutta**  
B.Tech. (Honors)  
Computer Science & Engineering  
Indian Institute of Technology Gandhinagar

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Examination	University/ Board	Institute	Year	CPI/%
Graduation	IIT Gandhinagar	IIT Gandhinagar	2020	9.15
Intermediate/+2	Maharashtra Board(HSC)	Pace Junior Science College	2016	87.80
Matriculation	CBSE	DAV Public School, Thane	2014	94.8

## ACADEMICS

- Pursuing honors in Computer Science and Engineering and minors in Basic Science (Maths)
- Awarded **A+ grade** in **2 courses** for exceptional performance in English Studies & Economics
- **Teaching Assistant** for the course ES112: Computing (August 2017 - December 2017)

## AREAS OF EXPERTISE

Deep Learning, Machine Learning, Computer Vision and Natural Language Processing

## INTERNSHIPS

**Evaluation of methods for generating artificial medical data** Apr. 2018 - Jul. 2018  
Dr. Isabelle Guyon | Inria Saclay Research Center

- Generated artificial data using medGAN, WGANs, SAM, Random Forests, and Copulas
- Reviewed and implemented methods for evaluating resemblance of artificial data to original data
- Helped in creating a challenge for a course taught at **RPI, New York**
- Made notebooks to be used directly for evaluating the quality of artificially generated data

**Generating differentially private medical data** Sept. 2018 - Present  
Dr. Isabelle Guyon | ChaLearn

- Continuation of project collaboration with Inria
- Implementing metrics that emulate the notion of **differential privacy**
- Will be heading a team of Master's students to build new challenges
- Working on a paper to publish results and findings

**Software for reactor-type attribution of plutonium** May 2018 - Aug. 2018  
Dr. Sunil Chirayath | Texas A&M University

- Developed a Python software to be used in a Nuclear Forensics method
- Can be used for source attribution of separated weapons-grade plutonium in case of an interdiction
- Automated process and reduced the running time from 30 minutes to 5 minutes
- Working on a paper to showcase the method

**Software engineering intern** May 2017 - Jun. 2017  
HumBee.in (CivicTech Startup)

- Learnt front-end programming in **ReactJS**
- Converted the prevalent plain text editor for comments to a rich text editor
- Wrote python programs to stream data from news and social media sources

## SUPERVISED RESEARCH PROJECTS

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**Motif extraction in DNA-Protein interactions** | *Prof. Anirban Dasgupta* Aug. 2018 - Present

- Literature review of peak-calling methods and motif extraction for DNA-Protein binding sites
- Implementing unsupervised neural network clustering methods to improve motif extraction

**Adversarial learning** | *Prof. Dinesh Garg* Aug. 2017 - Nov. 2017

- Explored Generative Adversarial Networks (**GAN**) and possible adversarial attacks on ML
- Read papers on different models of GANs, such as **WGAN**, **f-GAN**
- Implemented GAN and WGAN using **TensorFlow**

## COURSE PROJECTS

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**Estimating defocus blur in images** | *3D-CV Course Project* Aug. 2018 - Present

- Implementing a paper on estimating defocus blur which uses rank of local patches
- Will further explore techniques to determine depth map of an image using it

**Detecting Insults in Social Commentary** | *NLP Course Project* Aug. 2018 - Present

- Using ensemble machine learning methods to detect insults in social media commentary
- Testing the technique on curated datasets and on tweets

**Face Recognition** | *Coding Club* Nov. 2016 - Dec. 2016

- Implemented a face recognition program using **OpenCV** and **Torch** to identify faces in a video
- Planned to implement in the campus mess hall to streamline the identification process

**Encryption and transmission of signals** | *DS Course Project* Oct. 2017 - Nov. 2017

- Implemented the **AES** algorithm on **FPGA**
- The encrypted signals were transmitted using both wired and wireless modes
- Implemented error correction codes

## CS COURSES TAKEN

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**Institute Courses** : Computing, Data Structures and Algorithms, Computer Organisation and Architecture, Nature Inspired Computing, Discrete Maths, 3D Computer Vision\*, Natural Language Processing\*, Probability and Random Processes\*, Theory of Computing\*, Operating Systems\*, Machine Learning\*\*, Compilers\*\*, Topology\*\*, Measure Theory\*\*

\* - To be completed by Dec. 2018      \*\* - To be completed by Apr. 2019

**Online Courses** : Machine Learning by Andrew Ng (Coursera), Neural Networks for Machine Learning by Geoffrey Hinton (Coursera), Tensorflow for Deep Learning Research (CS 20SI, Stanford), Natural Language Processing with Deep Learning (CS224n, Stanford) (Ongoing)

## EXTRA-CURRICULAR ACTIVITIES

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- Winner of TechLeaps 2.0 (intra-college technical innovation challenge), with an opportunity of upto **Rs. 1 Lakh** funding
- Represented the institute as a part of the debate team at the Inter-IIT Cultural Meet
- Part of the executive team of the Coding Club
- Interested in competitive programming