

## Education

### ETH Zurich

Master of Science, Computer Science

Sept 2018 - Present

### Indian Institute of Technology (IIT) Roorkee

Bachelor of Technology, Computer Science

CGPA: 9.45 / 10, Department Rank: 3 / 76

July 2014 - May 2018

## Publications

*Zero-shot Learning using Graph Regularized Latent Discriminative Cross-domain triplets.*

Omkar Ghune, **Meet Vora**, Biplob Banerjee, Subhasis Chaudhuri. (2018)

Indian Conference on Computer Vision, Graphics and Image Processing 2018

*Empowering Light Nodes in Blockchains with Block Summarization.*

[Xplore]

Asutosh Palai, **Meet Vora**, Aashaka Shah. (2017)

IFIP International Conference on New Technologies, Mobility and Security 2018

## Experience

### Vision & Image Processing Lab, Indian Institute of Technology Bombay | Mumbai

Summer 2018

The projects involved theoretical analysis of cross-domain approaches for Zero-shot learning (ZSL), following which we dealt with new architectures and approaches for the same. Novel techniques like image and label domain alignments using graphical regularization, metric learning, and generative models were used to outperform almost all ZSL models.

### BigData Experience Lab, Adobe Research | Bangalore

Summer 2017

The project involved a comprehensive analysis of commercial brand videos, using recent deep learning techniques to understand the content being produced. Several features of videos like action, affect and semantics were extracted. This was followed by developing machine learning methods to learn to generate new videos automatically, based on a training corpus of brand videos.

### Technology Lead, Information Management Group | IIT Roorkee

Jan 2014 - April 2018

Involved in maintaining and developing the technical stack for the Internet & Intranet systems for IIT Roorkee – including the Institute website, an in-house Content Management System, Academic Portal. Led teams to develop university recruitment portal and initiated fundamental changes in development cycle (to optimize the resource usage of servers, reduce number of communications between servers and databases, porting from Django 1.7 to 2.0). Additionally, also delivered institute-wide lectures on advanced python programming, network security, blockchain et cetera.

## Achievements

- Awarded Shri M.A. Rao award for all-round excellence during 2014-18 session at IIT Roorkee.
- Secured All India Rank 34 in ACM ICPC 2018 online round among 3250 teams & qualified for regionals in 2017 & 2018.
- Secured All India Rank 5 in the national-level finals of Microsoft Build The Shield CTF 2016 & AIR 7 in qualifiers.
- Secured Rank 4 in Fiducial Localization Challenge in Medical Images, at Inter-IIT Technical Meet 2018.

## Research Projects

### Learning & Generating Firewall Rules

Aug - April 2018

Under the guidance of Dr. S Gangopadhyay, Associate Professor, CSE, IIT Roorkee

Proposed a network intrusion problem as an anomaly detection problem using Logical Analysis of Data. Using the LAD model, learnt patterns & iptables grammar, the model generates suitable firewall rules to prevent observed attacks in actual systems.

### Learning Discriminative Features for Images

Sept - Nov 2018

Under the guidance of Dr. B Banerjee, Assistant Professor, CSE, IIT Roorkee

The project focused on extracting dense discriminative features by using sparsity & information theoretic constraints in the fully connected layers of Convolutional Neural Networks.

### Block Summarization: Empowering Light Nodes in Blockchains

Jan - May 2017

Under the guidance of Dr. S Gangopadhyay, Associate Professor, CSE, IIT Roorkee

[code]

Proposed a scheme & an algorithm to enable transaction validation on light nodes and reduce storage space on light nodes. Developed & implemented summarization protocols to obtain 45% compression on Bitcoin blocks.

### **Design study and cryptanalysis of S-Boxes & Q-groups**

May - June 2016

*Under the guidance of Dr. S Gangopadhyay, Associate Professor, CSE, IIT Roorkee*

[\[code\]](#)

Analyzed cryptographic properties—nonlinearity, ANF & resiliency, of substitution boxes of DES & PRESENT. Extended the work to Quasigroups & cryptanalysis of 4-round quasigroup s-box.

## **Projects**

**Placement Online:** The official recruitment portal for IIT Roorkee where students create their resumes & candidature profiles and apply to companies, which through their own portal, list details and filter and short list students and finalize recruitment. Recorded daily usage by over 5000 students during recruitment phase.

**Media Management Service:** A backend Django service to manage media files & requests. Features include file compression, user tracking, file recovery system and custom authentication system.

**Predicting Network Traffic for Energy Optimization:** Forecasting future values of network traffic on Institute intranet server using ARIMA, Generalized Autoregressive Score & LSTM to model the time-series problem. [\[report\]](#)

**Fiducial Localization in Medical Images:** Developed a model for unsupervised detection & localization of fiducial markers in volume of sequential CT/MRI DICOM images using Markov Random Field & template-matching.

**MLP Toolkit:** A numpy-based python toolkit to create multilayer perceptron classifiers with custom layers, activations, regularization & initialization policies. Currently, the project has 175 GitHub stars. [\[code\]](#)

**Matasano Crypto:** Solved Matasano (modern) Cryptography challenges on block & stream ciphers and RSA.

**Distributed Domain Namespace Server:** Service for iterative address resolution using RPC for intra-node communication.

**Interactive Storytelling:** An Unity engine-based game that parses any given drama corpus to construct visual avatars of it's characters which converse, using a Text-to-Speech API. Developed as a participant in an 24-hour hackathon.

**Relevant Open Source Contribution:** Developed homomorphic encryption and weight update scheme for PySyft classifiers. PySyft is an Homomorphically Encrypted Deep Learning Library by [OpenMined](#).

## **Teaching Experience**

**Teaching Assistant:** Machine Learning, IIT Roorkee

Spring 2018

## **Technical Skills**

**Programming Languages:** Python, C++, Shell Scripting, MATLAB, SQL, Java, Haskell

**Tools & Libraries:** Numpy, Django, PyTorch, Keras, TensorFlow, Scikit-learn, Pandas, SageMath

## **Positions of Responsibility**

**Executive Member, Data Science Group,** IIT Roorkee

March 2016 - April 2018

Conducted workshops on problem solving approaches and research paper discussions with an aim of increasing technical culture in campus.

**Mentor,** Student Mentorship Program, IIT Roorkee

2017 - 2018

Conducted bi-weekly sessions for freshers to help them cope with academics and extra-curriculars. Also mentored a group of specific students to help understand specific topics like competitive coding and software development.