

EDUCATION**ETH Zurich**

Master of Science, Computer Science

Sept 2018 - Feb 2021

GPA: 5.4/6

Indian Institute of Technology Roorkee

Bachelor of Technology, Computer Science & Engineering

July 2014 - May 2018

GPA: 9.45/10 Rank: 3/76

INTERNSHIPS**Google • Software Engineering Intern** • Mountain View, United States of America

Spring 2020

Developed algorithms for indoor localization in Google Maps using unsupervised-learning – feature engineering & density estimation to yield significant performance gains. Also developed a new clustering algorithm to improve inference.

SiaSearch • Machine Learning Intern • Berlin, Germany

Summer 2019

Developed a library & theoretical framework for evaluating robustness of neural networks against adversarial attacks; Like Foolbox, but with more analysis, more attacks and more defenses - and specialized for semantic segmentation.

Vision & Image Processing Lab, IIT Bombay • Research Intern • Mumbai, India

Summer 2018

Involved in theoretical analysis of cross-domain approaches for Zero-shot learning (ZSL). Developed novel techniques – domain alignment using graph regularization, metric learning, & generative models, to outperform almost all ZSL models.

Adobe Research • Research Intern • Bangalore, India

Summer 2017

Performed semantic analysis of commercial brand videos using deep learning to extract relevant features like action, affect & semantics. Also developed generative methods to sample new video ads, using a self-curated dataset of brand videos.

ACHIEVEMENTS

- Awarded Sri 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 Capture-The-Flag 2016**.

PUBLICATIONS**Zero-Shot Learning using Graph Regularized Latent Discriminative Cross-Domain Triplets**[\[Link\]](#)Omkar Gune, **Meet Vora**, Biplab Banerjee, Subhasis Chaudhuri (2018)

Indian Conference on Computer Vision, Graphics and Image Processing 2018 (Acceptance rate ~ 25%)

Empowering Light Nodes in Blockchains with Block Summarization[\[Link\]](#)Asutosh Palai*, **Meet Vora***, Aashaka Shah* (2017)

IFIP International Conference on New Technologies, Mobility and Security 2018

RESEARCH PROJECTS**Fast LambdaMART**

Mar - June 2019

Course project in 'How to Write Fast Numerical Code' under Prof. Markus Püschel, ETH Zürich[\[report\]](#) [\[code\]](#)

Enhanced the performance of Gradient Boosting Decision Tree for learning to rank, on a single core using memory usage improvements, SIMD instructions, cache analysis etc. Reported a 25% runtime (training) improvement over XGBoost's approach without any binning. Possibly the first work to analyze GBDT & LambdaMART from a performance angle.

3D Human Pose from a single Image using Pose Autoencoder

Mar - June 2019

Course project in 'Machine Perception' under Prof. Otmar Hilliges, ETH Zürich[\[report\]](#) [\[code\]](#)

Proposed a novel loss term for extracting 3D human poses from a single RGB image. Made use of High-Resolution Net to maintain better spatial mapping, along with an autoencoder for 2D-to-3D estimation. Achieved **2nd** place on the leaderboard

Middleware for Memcached

Sept - Dec 2018

Course project in 'Advanced Systems Lab' under Prof. Gustavo Alonso, ETH Zürich[\[report\]](#) [\[code\]](#)

Developed a multi-threaded middleware for load balancing on memcached servers and deployed on Azure cloud platform. Performed rigorous performance testing & bottleneck analysis in various setups – sharded vs non-sharded, throughput & latency variation with scale etc. Used concepts from Queueing theory to model experiments.

Empowering Light Nodes in Blockchains

Jan - May 2017

Research project under Prof. Sugata Gangopadhyay, IIT Roorkee[\[code\]](#)

Proposed an algorithm to enable transaction validation & storage space reduction on light nodes, to address scalability issues in blockchains – obtained 45% compression on Bitcoin blocks. Work published in NTMS 2018.

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

May - June 2016

Research project under Prof. Sugata Gangopadhyay, IIT Roorkee

Analyzed cryptographic properties—nonlinearity, ANF & resiliency, of substitution boxes of DES & PRESENT. Developed a toolkit for theoretical analysis of s-boxes and quasigroups. Also performed cryptanalysis of 4-round quasigroup s-box.

OTHER PROJECTS

Placement Online: Developed 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 6000 students during recruitment phase. [\[blog\]](#)

DeepZ Verifier: Implemented a sound-but-incomplete verifier for provable robustness of neural networks against adversarial attacks. Used zonotope relaxation for abstract interpretation over inputs. [\[report\]](#)[\[code\]](#)

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.

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.

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

MLP Toolkit: A numpy-only toolkit to create simple neural nets. Currently has 192 stars on GitHub. [\[code\]](#)

TECHNICAL SKILLS

Programming Languages: Python, C++, Rust, SQL, Java, Haskell

Tools & Libraries: PyTorch, Django, Docker, TensorFlow, spaCy, K8s, OpenStack (Novice)

MISCELLANEOUS POSITIONS

Technical Lead • Information Management Group • IIT Roorkee April 2017 - March 2018
Lead & mentored teams of ~40 developers to develop scalable applications that support more than 8,000 campus students & faculties. Involved in developing the technical stack for the intranet systems at IIT Roorkee — Institute website, in-house Content Management System, Academic Portal etc. Delivered lectures on topics from computer networks to blockchains.

Research Assistant • Law, Economics, and Data Science Group • ETH Zürich March 2019 - Ongoing
Developed ML and NLP models for predicting court reversal decisions, rearrest modelling etc. Currently working on language modelling in court documents, factor analysis etc.