



EDUCATION

Year	Degree/Exam	Institute	CGPA/Marks
2017	M.TECH Dual Degree 5Y	IIT Kharagpur	8.16 / 10
2011	All India Senior School Certificate Examination	Central Board of Secondary Education	94.4%
2009	All India Secondary School Examination	Central Board of Secondary Education	90.4%

INTERNSHIPS

IBM India | Extreme Blue Intern **May-July 2016**

- ARGOS : EDA Hierarchical Design modelling & Distributed Graph Processing Framework using Spark
- Created a Client Server Model on Apache Spark which enables handling large designs on distributed computing and storage platform
- Graph Processing framework using Google Pregel which computes paths between nodes, worst path and neighbours to a node

Trinity College Dublin, Ireland | Visiting Research Student **Dec 2015**

- Project : INFOCARVE (Interactive Focus and Context Visualization for Augmented Reality) Guide : Dr. John Dingliana
- This project addresses the problem of effective interactive visualization of highly complex dynamic 3D geometric data on AR displays
- Constructed a virtual 3D model of the college with Depth Based Rendering and occlusion detection using Google Tango Project

Gray Routes Innovative Distributions, Mumbai | Software Developer **May-July 2015**

- Implemented functionalities using google maps API and the direction service for planning optimized journey via outlets to the destination
- Google BigQuery was used for big data parallel query processing. The features created were added to the live code-base of the company.

PROJECTS

Deep Neural Network based Speech Synthesis (Bachelors Dissertation)

o Guide: Prof. Goutam Saha, IIT Kharagpur (July 2015-present)

- Extracted linguistic contextual features from text for every frame by force aligning the phones to and adding frame specific features
- For output, acoustic features for every frame of waveform are calculated which includes MFCC, F0 and band aperiodicities
- Designed a deep neural network architecture and trained on cmu arctic database, gave much better performance than HMM TTS system

Plagiarism detection in programming language source codes using NLP Tree kernel

o Guide: Prof. Pawan Goyal, IIT Kharagpur (July-Nov 2015)

- Generated a language model using the corpus created by in-lined sample codes which was used to find KL-divergence between two codes.
- Built an abstract Syntax tree of the language and compared with various subtree matching techniques
- Trained SVM using above features gave 78% accuracy taking the MOSS plagiarized detector as ground truth reality.

Face Recognition using 2D-Principal Component Analysis

o Guide: Prof. Sudipta Mukhopadhyay, IIT Kharagpur (July-Nov 2015)

- Analyzed 2D-PCA based feature extraction used in facial recognition and image reconstruction
- Compared the computational efficiency of 2DPCA over PCA and Obtained a face recognition accuracy of 95.6% on ORL and Yale databases

Imposter Detection and Mood Analysis using Key Stroke Dynamics

o Guide: Prof. Sudipta Mukhopadhyay (July-Nov 2015)

- Determined the multivariate Gaussian distribution for each user by using the hold times and the latency periods of the keystrokes
- Extracted Harr like facial features to train KNN on JAFFE and achieved accuracy of 76% in user detection and 85% in mood detection

Interactive Construction of 3D Models from Panoramic Mosaics

o Guide : Prof. P. K. Biswas, IIT Kharagpur (May-July 2014)

- Designed a system that uses a set of images taken from the same view point and their transformation matrices for the 3D reconstruction
- The problem is formulated as a least square problem by partitioning the constraints as hard, soft and solved using QR factorization

AWARDS AND ACHIEVEMENTS

- Achieved an all India rank of 108 in the first round of **ACM-ICPC Asia Chennai**. (2015)
- Solely designed and Exhibited a mathematics project at prestigious **Jawaharlal Nehru National Science Exhibition for Children, Jaipur** and **98th Indian Science Congress, Chennai** where it was personally appreciated by Dr. Thomas Steitz (Nobel laureate). (2011)
- **Regional Topper** in Class XII Board (CBSE) from Pune Region. (2011)
- Among top 400 students who qualified for **Indian National Mathematics Olympiad**. (2010)
- Among top 10% scorers in **XL National Mathematics Talent Competition** by 'The Association of Mathematics Teachers of India'. (2008)

COURSEWORK INFORMATION

•Parallel and Distributed Algorithms	•Algorithms I &II	•Data Structure and Object Representation
•Speech and Natural Language Processing	•Advanced Graph Theory	•Machine Intelligence and Expert Systems
•Pattern Recognition and Image Understanding	•Digital Image Processing	•Probability and Stochastic Processes

SKILLS AND EXPERTISE

Programming languages	C, C++, PHP, Python, Java, Scala, Javascript
Software frameworks/Others	Visual Studio, MatLab, Unity,OpenCV, SQL, Google BigQuery

EXTRA CURRICULAR ACTIVITIES

- Won Silver at Interhall Sketching and Gold at Inter-Hall Rangoli Competition, Technology Students Gymkhana, IIT Kharagpur. (2015)
- Subhead, National Students Space Challenge'13 (nssc.in) Involved coordinating a team of 24 peoples in the design team. (2013)
- Awarded 'C' and 'B' Certificate in National Cadet Corps (1 Bengal EME Coy NCC). (2012)