



ACADEMIC QUALIFICATIONS

Indian Institute of Technology, Kharagpur Five year Dual Degree Course (B.Tech + M.Tech) B.Tech: Electronics and Electrical Communication Engineering M.Tech: Visual Information and Embedded Systems	2012-2017(Expected) CGPA: 8.07
Jawahar Navodaya Vidyalaya, Wardha Higher Secondary – CBSE AISSCE	2011 Score: 94.4 %
Jawahar Navodaya Vidyalaya, Wardha Secondary – CBSE AISSE	2009 Score: 90.4 %

PROJECTS

Winter Intern, Trinity College, University of Dublin, Ireland (Dec 2015)

- Virtual Reality Project at Graphics Vision and Visualization Group, School of Computer Science and Statistics, under the supervision of Prof. John Dingliana.
- Constructed a virtual 3D model of the college which consisted of virtual buildings and crowd simulation using a college logo as an image target.
- Depth Based Rendering and occlusion detection of an object using Depth from Google Tango Project.

Deep Neural Network based Speech Synthesis (July 2015 – present)

- Bachelor's Dissertation under the guidance of Prof. Goutam Saha, IIT Kharagpur
- Extracted linguistic contextual features from text to phones by using various binaries from Festival & HTS.
- Obtained full context features for frames by force aligning the phones to frames and adding frame dependent features such as position of frame in the current phone.
- Constructed output feature vector consisting of deltas and double deltas of 40 MFCC, f0 and 5 band aperiodicity values for each frame using STRAIGHT.
- Designed a deep neural network architecture with 4 hidden layers and trained on CMU_ARTIC dataset.
- Synthesized a waveform for a given text with the constraints on the computing power while training.

Plagiarism detection in programming language source codes using NLP Tree kernel (July 2015 –Nov 2015)

- NLP Project under Prof. Pawan Goyal, Computer Science Department, IIT Kharagpur
- Generated a language model using the corpus created by the available 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 (Feb 2016 – April 2016)

- Machine Learning Project under Professor Sudipta Mukhopadhyay, IIT Kharagpur
- Analyzed 2D-PCA based feature extraction used in facial recognition and image reconstruction.
- Successfully classified the faces of all the subjects using as low as 7 eigenvectors from 2DPCA.
- Obtained a face recognition accuracy of 95.6% on ORL and Yale databases.

Imposter Detection and Mood Analysis using Key Stroke Dynamics (July 2015 –Nov 2015)

- Machine Learning Project under Professor Sudipta Mukhopadhyay, IIT Kharagpur
- Determined the multivariate Gaussian distribution for each user by using the hold times and the latency periods of the keyboard keystrokes using the data collected by each user.
- Extracted Harr like facial features to make the K-Nearest Neighbor classifier predicting the mood of the user by training it over the JAFFE database. Both of these features were used for imposter detection.
- Achieved accuracy of 76% in detecting the user and 85% in mood detection.

Interactive Construction of 3D Models from Panoramic Mosaics

(May 2014 – July 2014)

- Summer Project under Prof. P. K. Biswas, IIT Kharagpur
- Designed a system that uses a set of images taken from the same view point and their transformation matrices as input for the 3D reconstruction.
- Recovered the camera pose for each mosaic from known line directions and points.
- Constructed a 3D model using all available geometrical constraints. The problem is formulated as a least square problem by partitioning the constraints as hard and soft, which can be solved using QR factorization.

WORK EXPERIENCE

Gray Routes Innovative Distributions, Mumbai

(May 2015 – July 2015)

- Summer Intern – Software Developer
- Worked on Google BigQuery, Query Optimization and added backend functionalities to the existing application. Technologies used: PHP, Javascript, Google BigQuery, Google Maps.
- Implemented functionalities using google maps API and the direction service for planning optimized journey via some outlets to the destination with option for manually prioritizing some outlets.
- The features created were added to the live code-base of the company.

TECHNICAL SKILLS

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|-------------------------|---|
| • Programming languages | C, C++, PHP, Javascript, Python |
| • Libraries | OpenCV, Ruby on Rails |
| • Software frameworks | Visual Studio, MatLab, SolidWorks, Unity, latex |
| • DBMS | SQL, Google BigQuery |

RELEVANT COURSES UNDERTAKEN/ONGOING

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|---|--|
| • Digital Image Processing* | • Programming and Data Structure* |
| • Speech and Natural Language Processing | • Microcontrollers and Embedded Systems* |
| • Pattern Recognition and Image Understanding | • Matrix Algebra |
| • Algorithms I & II [#] | • Probability and Stochastic Processes |
| • Machine Intelligence and Expert Systems | • Computer Communication and Networking |

[#]courses on coursera

*courses with lab component

SCHOLASTIC ACHIEVEMENTS

- Achieved an all India rank of 108 in the first round of ACM-ICPC Asia Chennai. (2015)
- Cleared **Joint Entrance Examination** conducted by IIT with 99.16 percentile. (2012)
- Solely designed and Exhibited a mathematics project at several stages followed by prestigious **Jawaharlal Nehru National Science Exhibition for Children, Jaipur** and finally at **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**. (2010)
- Awarded Meritorious Scholarship in Maharashtra Talent Search Examination, 2009. (2009)
- Among top 10% scorers in **XL National Mathematics Talent Competition 2008** conducted by 'The Association of Mathematics Teachers of India'. (2008)

POSITION OF RESPONSIBILITY AND EXTRA CURRICULAR ACTIVITIES

- Won Silver at Interhall Sketching Competition, Technology Students Gymkhana, IIT Kharagpur. (2015)
- Part of Silver winning Case Study Event, Technology Students Gymkhana, IIT Kharagpur. (2014)
- **Subhead, National Students Space Challenge'13 (nssc.in)**
Involved coordinating a team of 24 peoples in the design team of the first space fest organized by SPATS, IIT Kharagpur. (2013)
- Member of Gold Winning **Inter-Hall Rangoli** Competition in a team of 5. (2013)
- Awarded '**C**' and '**B**' Certificate in National Cadet Corps (1 Bengal EME Coy NCC). (2012)