Ashish Manmode

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EDUCATION

2012–2017 **Indian Institute of Technology, Kharagpur** CGPA: **8.16/10**
Five year Dual Degree Course (B.Tech + M.Tech)
B.Tech: *Electronics and Electrical Communication Engineering*
M.Tech: *Visual Information Processing and Embedded Systems*

2011 **Jawahar Navodaya Vidyalaya, Wardha** Score: **94.4%**
Higher Secondary - *CBSE AISSCE*

2009 **Jawahar Navodaya Vidyalaya, Wardha** Score: **90.4%**
Secondary - *CBSE AISSE*

INTERNSHIPS

May–July 2016 **IBM India** | *Extreme Blue Intern*
- ARGOS : EDA Hierarchical Design modelling & Distributed Graph Processing Framework using Spark
- Client Server Model on Apache Spark which enables handling large designs on distributed platform
- Graph Processing framework using Google Pregel which computes paths between nodes, worst path and neighbours to a node

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

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

July 2015 – present **Deep Neural Network based Speech Synthesis (Bachelors Dissertation)**
- Guide: Prof. Goutam Saha, IIT Kharagpur
- Extracted linguistic contextual features from text for every frame by force aligning the phones to frames 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

July – Nov 2015 **Plagiarism detection in programming language source codes using NLP Tree kernel**
- Guide: Prof. Pawan Goyal, IIT Kharagpur
- 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

July – Nov 2015 **Face Recognition using 2D-Principal Component Analysis**

- Guide: Prof. Sudipta Mukhopadhyay, IIT Kharagpur
- 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

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

- Guide: Prof. Sudipta Mukhopadhyay
- 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

May – July 2014 **Interactive Construction of 3D Models from Panoramic Mosaics**

- Guide : 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 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

TECHNICAL SKILLS

Programming C/C++, PHP, Python, JAVA, Javascript, Scala

Software Visual Studio, MATLAB, Unity

Others LaTeX, OpenCV, SQL, Google BigQuery

COURSEWORK INFORMATION

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

courses with lab component $ courses on coursera

AWARDS AND ACHIEVEMENTS

2015 Achieved an all India rank of 108 in the first round of **ACM-ICPC Asia Chennai**.

2011 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.

2010 Among top 400 students who qualified for **Indian National Mathematics Olympiad**.

2008 Among top 10% scorers in **XL National Mathematics Talent Competition** by 'The Association of Mathematics Teachers of India'.

POSITION OF RESPONSIBILITY/ EXTRA CURRICULAR ACTIVITIES

2015 Won Silver at **Interhall Sketching** and Gold at **InterHall Rangoli** Competition, Technology Students Gymkhana, IIT Kharagpur.

2013 Awarded 'C' and 'B' Certificate in National Cadet Corps (1 Bengal EME Coy NCC).

2013 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.