IIT Kharagpur
+91 7585 965862
ash.manmode@iitkgp.ac.in
ashishmanmode.com

ASHISH MANMODE

ACADEMIC QUALIFICATIONS

Indian Institute of Technology, Kharagpur CGPA: 8.07
Five year Dual Degree Course (B.Tech + M.Tech) *2012-2017(Expected)*
B.Tech: Electronics and Electrical Communication Engineering
M.Tech: Visual Information and Embedded Systems

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

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

PROJECTS

INFOCARVE: Interactive Focus and Context Visualization for Augmented Reality (Winter Intern) *(Dec 2015)*

- Guide: Dr. John Dingliana, Trinity College, Dublin
  - This project addresses the problem of effective interactive visualization of highly complex dynamic 3D geometric data on augmented reality (AR) displays.
  - 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 (Bachelor's Dissertation) *(July 2015 – present)*

- Guide: Prof. Goutam Saha
  - Extracted linguistic contextual features from text for frames by force aligning the phones to frames.
  - Obtained acoustic features for every frame of waveform using `straight`.
  - Designed a deep neural network architecture and trained on cmu arctic database.
  - 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 –Nov 2015)*

- Guide: Prof. Pawan Goyal
  - 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– April 2016)*

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

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

- Guide: Prof. Sudipta Mukhopadhyay
  - 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 – July 2014)*

- Guide : Prof. P. K. Biswas
  - 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

Software Developer Gray Routes Innovative Distributions, Mumbai *(May – July 2015)*

- Tested the use of google BigQuery for big data parallel query processing.
- 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

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

RELEVANT COURSES UNDERTAKEN/ONGOING

- Digital Image Processing*
- Speech and Natural Language Processing
- Pattern Recognition and Image Understanding
- Algorithms I & II#
- Machine Intelligence and Expert Systems
- Programming and Data Structure*
- Microcontrollers and Embedded Systems*
- Matrix Algebra
- Probability and Stochastic Processes
- 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)*
- 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)*
- Awarded Meritorious Scholarship in Maharashtra Talent Search Examination, 2009. *(2009)*
- Among top 10% scorers in **XL National Mathematics Talent Competition** 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)*