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

ASHISH MANMODE

ACADEMIC QUALIFICATIONS

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

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

Jawahar Navodaya Vidyalaya, Wardha *2009*
Secondary – CBSE AISSE 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, Javacsript, 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

- 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

- 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)*
- 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)*