

Resume

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ACADEMIC DETAILS

| Examination | Institute | Year | CGPA/% |
|--|-----------------------------|-----------|---------|
| <i>Electronics and communication engineering</i> Undergraduate (7th semester) | NITK, Surathkal | 2016-2020 | 9.05/10 |
| 2nd PUC (Karnataka Board) | VVS Sardar Patel PU college | 2014-2016 | 96.67% |
| SSLC exam (Karnataka Board) | Poornaprajna high school | 2014 | 99.2% |

FIELDS OF INTEREST

- Biomedical Signal Processing, Deep Learning, Speech and Audio Processing, Machine Learning.

TECHNICAL SKILLS

- Languages: C , PYTHON , C++ , Java.
- Tools and Frameworks :Keras, PyTorch , MATLAB, Node.js ,React js ,Azure Cognitive Services, L^AT_EX, Android Studio

RELEVANT COURSES COMPLETED

- Digital Processing of Speech and Audio Signals
- Advanced Digital Signal Processing
- Image Processing and Computer Vision
- Information Processing and Compression
- Digital Signal Processing
- Linear Systems and Signals

PROJECTS AND WORKSHOPS

- **Workshop on speech and music processing** (Volunteer at a week-long workshop at NITK, January 23rd-28th, 2020)
(Under the guidance of Prof Deepu Vijayaseenan and Prof Aparna P)
 - The workshop aimed at exploring various research based topics in Automatic Speech Recognition, Text-to-speech synthesis and Music Information Retrieval
 - As a volunteer, I was asked to build a primitive ASR system for spoken digit recognition using Dynamic Time Warping and K-Nearest Neighbours.
 - The workshop also provided exposure to Kaldi tools for ASR, Guassian Mixture Models for speech recognition and Hidden Markov Models
- **Applications of machine learning in medical imaging** (Winter school at NITK in collaboration with Baylor College of Medicine, Houston)
(Under the guidance of Dr. Paul Litvack and Dr. Mandava Pichaiah)
 - This winter school aimed at exploring applications of different neural network architectures in medical applications.
 - We were introduced to MRI sequences and CT modalities, diagnosis of brain tumours and stroke through medical images.
 - The Brain Tumour Segmentation (BRATS) challenge was explored as part of the course. Implementation of UNet architecture gave the best results for segmentation.

- **Handheld doppler scan analysis for perforator evaluation** (major project)

(At NITK , under Prof. Deepu Vijayasen, August 2019 - present)

- Objective : To develop an algorithm to detect peak systolic velocity, heart rate, maximum frequency shift of blood flow using signal processing and machine learning techniques to determine the best perforator from a medical dataset given.
- Beat extraction was done using an efficient algorithm which excluded the diastolic beats.
- Spectrogram analysis was used to find prominent frequency content. A robust algorithm was implemented to find Peak Systolic Velocity using frequency shift.
- An Android application is being developed to model the algorithm for use by the doctors.

- **Comparative analysis of different GAN architectures for multi-domain image to image translation** (mini project)

(At NITK ,under Prof. A V Narsimhadhan, August 2019 - November 2019)

- Objective : To study different GAN architectures for multi-domain image to image translation and tune the hyperparameters for effective results.
- Implemented StarGANs and tuned hyperparameters to get effective results.
- Changed the generator architecture to evaluate performance and loss function variations.

- **Smart Visual Translator for the Visually Impaired** (summer internship)

(At Microsoft, Bangalore, under Guruprasad Ramarao, May 2019 - July 2019)

- Objective :To design a smart visual translator to solve major problems in Object Detection and Optical Character Recognition, faced by people with visual impairment.
- A raspberry pi is used to capture images real time , get the mode of operation and transmit the images as a base64 encoded string to an Android application using bluetooth socket.
- The Android application paired with raspberry pi through bluetooth socket makes an API call to an API manager. The image is further processed and segmented appropriately using suitable algorithms.
- The API manager makes the corresponding call to Azure Cognitive services Computer Vision APIs based on the mode of operation of the raspberry pi device.
- The API returns a caption which is processed into meaningful sentences. These meaningful sentences are further transmitted to an Android application and converted to speech using Text to Speech Engines.

- **Text to speech conversion** (mini project)

(Guide:Prof. Aparna P, August 2018 - November 2018)

- Objective :To study various algorithms for speech synthesis.
- Concatenative synthesis was used to generate speech from a pre recorded lexicon.
- Hidden Markov Models (HMMs) were used for concatenation of syllables generated from the lexicon.
- Implemented a MATLAB program for text to speech conversion and plotted the error function .

- **Self Balancing bot and navigational bot** (summer internship at Embedded Systems Lab ,DESE department, IISc)

(Under Prof. Haresh Dagale , Principal Research Scientist at the Indian Institute of Science , May 7th 2018 - June 30th 2018)

- Objective : i) To build a self balancing bot using TM4C123GH6PM microcontroller , MPU9250 and achieve balance using PID controller. ii) To build a self navigational bot using TM4C123GH6PM microcontroller , MPU9250 , HC SR04 ultrasonic sensors using PID controller for yaw correction .
- Fully working model of the bots were presented in a workshop for employees of Ashok Leyland .

MEMBERSHIPS

- 2017- present : Executive member of the Institution of Engineers , NITK chapter.
- 2016 - present : Member of SPICMACAY Mangalore chapter , Joint Convenor from July 2019 - present

ACADEMIC ACHIEVEMENTS

- Secured state rank three in SSLC board exams with a score of 620/625
- Secured rank 28 in Karnataka Common Entrance Test and All India Rank of 1657 in JEE Mains examination (top 1 percentile)

INTEREST AND HOBBIES

- Reading books and writing poetry .
- Trained in Hindustani vocal music for three years .