

Shanmukha Srinivas Battula

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SUMMARY

I am PhD student in Prof. Deliang Wang's Perceptron and NeuroDynamics Lab (PNL) at The Ohio State University (OSU) in CSE dept. Currently, My research focus is on Moving Source Localization and Enhancement using Deep Learning and Signal Processing Techniques in collaboration with Meta. I have nearly 3.5 years of work experience in implementing, developing and evaluating speech processing algorithms mainly enhancement for real time scenarios on edge devices. Fortunately, I have an end to end understanding and experience on implementing solutions, in High Level Languages, Python or Matlab, and efficient Translation to Low level language, C, followed by optimizations using Intrinsics and Assembly language, at a standalone algorithm level and at system level.

WORK EXPERIENCE

Research as PhD Student at OSU, Columbus JAN 2021 - PRESENT

PROJECT TITLE: Moving Source Localization and Enhancement

I am investigating Masking and Mapping based Single and Multi Channel Speech Enhancement networks with various loss functions that deals with either real or complex valued inputs, targets for Stationary and Moving Source Scenarios and the effect of enhancement on Localization at utterance, block and frame level. The current experimental results are promising.

Engineer at QUALCOMM, Hyderabad JUN 2019 - JAN 2021

PROJECT TITLE: Echo Cancellation and Noise Suppression

Worked on far field echo cancellation and noise suppression algorithms, optimizations, which include assembly coding, profiling, for Voice Recognition and Voice, VoIP call applications using Signal Processing and Deep Learning techniques.

Audio DSP Engineer at MEEAMI TECHNOLOGIES , Hyderabad JUN 2017 - MAY 2019

PROJECT TITLE: Blind Source Separation of Audio Mixtures

- Frequency Domain Algorithms:
 - Independent Component Analysis (ICA), Independent Vector Analysis (IVA)
 - Non-Negative Matrix (NMF), Non-Negative Tensor Factorization (NTF)
 - Deep Learning Techniques
- Time Domain Algorithms:
 - Second Order Statistics based Convolutional Mixture Separation
 - Higher Order Statistics based Separation : Diagonalisation of Cross correlation matrices between output and non-linearly transformed output
 - Online ICA
 - * Online Whitening method
 - * LMS, RLS type updates for achieving separation

PROJECT TITLE: Interference Detector

- Extracted Features such as Mean, Variance, Median ..etc from the Spectrum
- Long Term variability in the features to identify the regions

Intern at **QUALCOMM**, Hyderabad

MAY-JULY : 2016

- Crash analysis by extracting the parameters from the logs using Python
- C code development for DDR stress Analysis.

COMPUTER SKILLS

Programming Languages: PYTHON, C, MATLAB, C++
Tools: PYTORCH, PYTORCHLIGHTNING , KERAS,

EDUCATION

JAN 2021-Present	PhD, Ohio State University Major : COMPUTER SCIENCE AND ENGINEERING
JULY 2017	Bachelor of Technology, Indian Institute of Technology Hyderabad Major : ELECTRICAL ENGINEERING Minor : ENTREPRENEURSHIP CGPA: 8.7
JULY 2013	Intermediate, Sri Chaitanya, Visakhapatnam PERCENTAGE: 98.1%
JULY 2011	SSC, Bashyam Public School, Srikakulam PERCENTAGE : 96%

PROJECTS

2016-2017	No-Reference Stereoscopic Video Quality Assessment Using Joint Motion and Depth Statistics Steerable pyramid decomposition on Extracted Depth and Motion Features Model the relation between the Depth and Motion Features in sub-band domain . Quality predict using the model parameters. Estimating the depth from motion features and model parameters.
Jan-Apr : 2016	Number plate Extraction from an Image Locating the number plate region with Sobel Edge detector . Extracted number plate region is transformed into binary image. Template matching or SIFT or online OCR is used to extract the information.
Aug-Nov : 2015	Learning 3D structure from a single image Conversion from RGB domain to YCbCr domain and Filtering the Image Extraction of Features for each patch at multiple scales Modelling the relation between depth and features extracted at multiple scales for a patch. Predict the depth for a given image using the model parameters and features.
Jan-Apr : 2015	JPEG 2000 Reversible color transformation on the image Discrete Wavelet Transform(DWT) and Quantisation Conversion to Bit-planes and Fractional Bit plane coding Arithmetic coding to the output of above stage

PUBLICATIONS

Balasubramanyam Appina, Akshith Jalli, **Shanmukha Srinivas Battula**, Sumohana S. Channappayya, "No Reference Stereoscopic Video Quality Assessment Using Joint Motion and Depth Statistics", *IEEE International Conference on Image Processing (ICIP), 2018*

AREAS OF INTEREST

- Deep Neural Networks, Machine Learning, Signal Processing - Speech & Image

ACHIEVEMENTS

- Ranked in top 0.1% in JEE MAINS, 0.4% in IIT JEE, 0.1% in EAMCET
- Scholarship Grants: MCM(B.Tech), Board of Intermediate

EXTRA CIRCULAR ACTIVITIES

- Graduate Teaching Assistant : Data-Structures and Algorithms, C++
- Position of Responsibilities : Placement Coordinator, Hostel Representative
- Teaching Assistant : Optimisation, Device Physics
- Participated and Won in Inter departmental Badminton, Cricket and Cricket League

INTEREST AND HOBBIES

- Reading Books, Playing Games(Cricket,Badminton,Table Tennis, Carroms)