Nayan Anand Vats

nayanvats.github.io| +91-709-348-0675 | nayan.vats@research.iiit.ac.in

EDUCATION

IIIT HYDERABAD
MS by Research in ECE
Ongoing | Hyderabad, Telangana
Cum. GPA: 7.83 / 10.0

PES UNIVERSITY
B.E. in ECE
May 2016 | Bengaluru, Karnataka
Cum. GPA: 8.15 / 10.0

DELHI PUBLIC SCHOOL
May 2011| Ranchi, India
Percentage: 87%

COURSEWORK

MS BY RESEARCH
Speech Signal Processing
Statisitcal Methods in AI
Adaptive Signal Processing
Signal Detection and Estimation Theory
Time Frequency Analysis
Deep Learning Theory and Practices

UNDERGRADUATE
Differential Equations, Vector Calculus and Special Functions
Signals and Systems
Linear Algebra
Probability and Random Process
Digital Signal Processing
Computer Networks

TECHNICAL SKILLS

PROGRAMMING
Python • Shell • MATLAB
Familiar:
C • JAVA • GO • Verilog
Frameworks:
PyTorch

SPEECH SIGNAL PROCESSING
Speech algorithms to extract Vocal-track, Excitation source, Prosody Features etc • MFCC • LP Analysis • Glottal Volume Velocity(GVV)• Zero Frequency Filtering(ZFF)•Envelope Modulation Spectrum(EMS)•Long Term Average Spectrum(LTAS)•Spectrogram

CLOUD TECHNOLOGY
Familiar:
• Docker • Kubernetes

RESEARCH

LTRC SPEECH PROCESSING LAB | Research Assistant
- My research advised by **Dr. Anil Kumar Vuppala** focuses on the recognition of Alzheimer's Dementia subjects from spontaneous speech.
- Worked with different speech(acoustic) and prosody features and compared their performance for the task of Alzheimer's Dementia classification from spontaneous speech.
- Assembled different Deep Learning Architecture using variants of Feed Forward NN, CNN and RNN to capture the local and temporal properties in speech utterance for AD classification task.
- Finally, my research interests lies in extracting features from texts and speech, using different transformer based Language Models(BERT) and using approaches of transfer learning for small dataset. I also have keen interest in assembling the right deep learning model for different applications.

EXPERIENCE

WIPRO GMT | Associate Consultant
August 2016 - December 2017 | Bengaluru, Karnataka

- CIENA ONOS project : Idnentifying and fixing defects in ONOS(Open Network Operating System) SDN Controller
- Huawei CAE project : Cloud Application Engine, involved developing and hosting application on the cloud using container technology
- CISCO NEXUS 1000v project: Maintainance and development of NEXUS 1000v Switches(CISCO SDN Switch)

PROJECTS

Supervised Learning
- Classified Face using six different features (Eigen Face, Fisher Face, KernelPCA, Kernel Fisher Face, VGG Face, ResNet) by training MLP classifier on Yale Face, Indian Movie Face, and IIIT-CFW and used t-SNE for face visualization using PyTorch.
- Implemented data dimensionality reduction on the CIFAR-10 dataset and classified using SVM.
- Sentiment classification with BERT and Hugging Face

Unsupervised Learning
- Implemented Manifold learning methods - MDS, LLE, and ISOMAP. Performed K-means and Spectral Clustering on the Concentric Circles and Swiss roll dataset and performed visualization using manifold in 2-D using PyTorch.

Speech Projects
- Neural style transfer of audio with PyTorch
- Understanding and implementation of wavelet Transform and Scattering Transform.

PUBLICATIONS

[1] N. A. Vats, A. Yadavalli, K. Gurugubelli, and A. K. Vuppala. Acoustic features, bert model and their complementary nature for alzheimer's dementia detection. In *IC3 2021: Thirteenth International Conference on Contemporary Computing, Noida, India, August 5 - 7, 2021*, pages 267–272. ACM, 2021.