Mano Ranjith Kumar M | Resume

✉ manoranjith@smail.iitm.ac.in • 🔗 Linked In • 🎓 Google Scholar • 🖥 manoranjith.live

Education

Program	Specialization	Institution	%/CGPA	Year
M.S.	Applied Machine Learning (Speech processing)	Indian Institute of Technology Madras	**8.23**	2022 (expected)
B.E.	Computer Science	Velammal College of Engineering and Technology	**8.47**	2019
XII	Computer Science	TVS Matriculation Higher Secondary School	**90.4**	2015
X	-	TVS Matriculation Higher Secondary School	**94.0**	2013

Keywords

o Machine learning o Speech signal processing o Text-to-speech (TTS) Synthesis o Lip-Syncing /Video transcreation o Automatic speech recognition (ASR)

Key Projects

Lipsyncing Efforts for Transcreating Lecture Videos in Indian Languages — **Aug 2021**
Advisors - Prof. Hema A. Murthy — *Thesis research project*

o This work proposes a lip-syncing module for the transcreation of lecture videos from English to Indian languages.

o The audio from video is transcribed using ASR and translated using Machine Translation (MT) System and then synthesized using TTS system. The synthesized audio is synchronized back into the video in this work.

o Advanced machine learning concepts with signal processing cues has led us to develop a transcreation system without using visual cues.

Exploration of End-to-end Synthesisers for Zero Resource Speech Challenge 2020 — **March 2020**
Advisors - Prof. Hema A. Murthy — *Other research project*

o A Spoken dialogue system for an unseen language is referred to as Zero resource speech. It is especially beneficial for developing applications for languages that have low digital resources.

o Zero resource speech synthesis is the task of building text-to-speech (TTS) models in the absence of transcriptions.

o In this work, speech is modelled as a sequence of transient and steady-state acoustic units, and a unique set of acoustic units is discovered by iterative training. Using the acoustic unit sequence, TTS models are trained. The main goal of this work is to improve the synthesis quality of zero resource TTS system.

A Hybrid HMM-Waveglow Based Text-to-Speech Synthesizer Using Histogram Equalization for Low Resource Indian Languages — **March 2020**
Advisors - Prof. Hema A. Murthy — *Other research project*

o Conventional text-to-speech (TTS) synthesis requires extensive linguistic processing for producing quality output. The advent of end-to-end (E2E) systems has caused a relocation in the paradigm with better synthesized voices.

o However, hidden Markov model (HMM) based systems are still popular due to their fast synthesis time, robustness to less training data, and flexible adaptation of voice characteristics, speaking styles, and emotions.

o This work proposes a technique that combines the classical parametric HMM-based TTS framework (HTS) with the neural-network-based Waveglow vocoder using histogram equalization (HEQ) in a low resource environment.

Music Genre Classification — **March 2019**
*Advisors - Prof. Hema A. Murthy; **Teammates** - Saish Jaiswal* — *Other project*

o A musical genre is characterized by the common characteristics shared by its members. These characteristics typically are related to the instrumentation, rhythmic structure, and harmonic content of the music.

o A statistical classifier is built using the features : Spectral Centroid, Zero Crossing Rate, MFCC, CFCC, Roll-off frequency and P'th order spectral bandwidth

o Classifiers used : Gaussian Mixture Models (GMM), HMM, dynamic time warping (DTW), support vector machine (SVM), artifical neural network (ANN) and SVM based on UBM-GMM

Academic Achievements and Positions of Responsibility

o Achieved 12th global rank in Zero Speech Challenge 2020 - Task 2019

o Office Bearer, Department of Computer Science, Velammal College of Engineering and Technology

o Training and Placement Representative, Department of Computer Science, Velammal College of Engineering and Technology.

- Overall Chief Coordinator of "CZENIA 2018", Technical Symposium organized by Department of Computer Science, Velammal College of Engineering and Technology.

Skills

- **Tools/Libraries**: Matlab, TensorFlow, Kaldi, ESPnet, Git
- **Documentations**: LaTeX, word processor, spreadsheets
- **Programming Languages**: C, C++, Python
- **Scripting**: Shell, Python

Relevant Course Work

- Pattern Recognition and Machine Learning
- Linear Algebra and Random Processes
- Advanced Data Structures and Algorithms
- Speech Technology
- Computational Models of Cognition
- Advanced Programming Laboratory (Audit)

Work Experience

Research Scholar, Project Associate & Teaching Assistant   **July 2019 - Present**
Indian Institute of Technology, Madras

- Teaching Assistant : Advanced Programming Laboratory: CS6510 (July-Nov 2021)
- Project Associate : Speech to Speech Machine Translation (Funded by Office of the Principal Scientific Adviser (PSA) to the Government of India) (2020-2021,IITM)
- Project Associate : Text to Speech Generation with chosen accent and noise profile for Aerospace and Industrial domains (Funded by Department of Science and Technology (DST)) (2020-2021, IITM)
- Project Associate : Natural Language Translation Mission (Funded by the Ministry of Electronics and Information Technology (MeitY)) (2019-2020, IITM)

Member Technical Staff   **Dec 2018 - July 2019**
Zoho Corporation

- Worked as a part of team EventLogAnalyzer of Manage Engine's IT solutions.

Project Trainee/Intern   **Dec 2018 - May 2019**
Zoho Corporation

Conference Publications

[MKS+21]   Mano Ranjith Kumar M, Jom Kuriakose, Karthik Pandia D S, and Hema A Murthy. "Lipsyncing efforts for transcreating lecture videos in Indian languages". In: *Proc. 11th ISCA Speech Synthesis Workshop (SSW 11), 26-28 August 2021, Budapest, Hungary*. 2021, pp. 216–221. DOI: 10.21437/SSW.2021-38.

[MSP+20]   Mano Ranjith Kumar M., Sudhanshu Srivastava, Anusha Prakash, and Hema A. Murthy. "A Hybrid HMM-Waveglow Based Text-to-Speech Synthesizer Using Histogram Equalization for Low Resource Indian Languages". In: *INTERSPEECH 2020 October 25–29, 2020, Shanghai, China*. 2020, pp. 2037–2041. DOI: 10.21437/Interspeech.2020-3180.

[SPK+20]   Karthik Pandia D S, Anusha Prakash, Mano Ranjith Kumar, and Hema A Murthy. "Exploration of End-to-end Synthesisers forZero Resource Speech Challenge 2020". In: *INTERSPEECH 2020 October 25–29, 2020, Shanghai, China*. 2020. eprint: 2009.04983 (eess.AS).