

PRACHI SINGH

PhD Scholar

LEAP Lab

Electrical Engineering

Indian Institute of Science, Bangalore

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RESEARCH INTERESTS

Speaker Diarization, Machine Learning, Variational Inference, Metric Learning, Self-supervised learning, Graph based Clustering.

SKILLS

Languages	Python, C, C++, Shell
Libraries	Kaldi, Pytorch, OpenCV
Software & Tools	Spyder, Jupyter Notebook, MATLAB, MS Office, Visual Studio

EDUCATION & COURSES

Ph.D. 2017 - Present
Electrical Engineering (CGPA : 8.00/10)
Indian Institute of Science, Bangalore

B.Tech 2011 - 2015
Electronics & Telecommunication (CGPA : 8.67/10)
College of Engineering, Pune

Courses

- Machine Learning for Signal Processing
- Pattern Recognition and Neural Networks
- Data Structures
- Computational Methods of Optimization
- Speech Information Processing
- Stochastic Models and Applications
- Matrix Theory
- Detection and Estimation Theory
- Adaptive Signal Processing

EXPERIENCE

Software Modelling Engineer

Fiat Chrysler Automobiles

July 2015 - July 2017

- Electronic Control Unit (ECU) modelling and Network Management using CAN communication, Hardware In Loop Testing and Validation of Infotainment system.
- Validation of issues in modules (ECU) present in automobile.

ACHIEVEMENTS

- Interview published in theinterviewportal.com for career guidance.
- ISCA Travel Grant for INTERSPEECH, 2019
- Runner-up in "Second DIHARD Challenge 2019", April 2019
- Late Shri Manoharbhay Patel Memorial Gold Medal in XII Std
- Dhirubhai Foundation Scholarship in XII Std

RECENT PROJECTS

Research advisor: Dr. Sriram Ganapathy

Third DIHARD speech diarization Challenge

- Contributed in baseline system setup for the DIHARD-III challenge. It involves task to partition an audio into speaker segments, in challenging environment.
- Team Lead of our LEAP team from IISc in the challenge which ranked 7th out of 23 teams across globe. Our system involved End-to-End diarization based on transformers for telephone conversation. We also introduced graph based clustering for diarization.

Self-supervised Speaker Diarization

- This work involves learning representations using clustering based loss. The task is self-supervised because we learn the representations using the clustering output given by the Clustering algorithm to make the representations more speaker discriminative. Accepted in INTERSPEECH 2020

PUBLICATIONS

- P. Singh, R. Varma, V. Krishnamohan, S. R. Chetupalli, and S. Ganapathy. "LEAP Submission for the Third DIHARD Diarization Challenge." arXiv preprint arXiv:2104.02359 (2021).
- N. Ryant, P. Singh, V. Krishnamohan, R. Varma, K. Church, C. Cieri, J. Du, S. Ganapathy, and M. Liberman. "The Third DIHARD Diarization Challenge." arXiv preprint arXiv:2012.01477 (2020).
- P. Singh and S. Ganapathy, "Deep Self-Supervised Hierarchical Clustering for Speaker Diarization", INTERSPEECH 2020.
- S. Ramoji, P. Krishnan, B. Mysore, P. Singh, S. Ganapathy, "LEAP System for SRE19 Challenge - Improvements and Error Analysis", Speaker Odyssey Workshop 2020.
- S. Ramoji, P. Krishnan, B. Mysore, P. Singh, S. Ganapathy, "Pairwise Discriminative Neural PLDA for Speaker Verification", arXiv 2020.
- P. Singh, Harsha Vardhan MA, S. Ganapathy, A. Kanagasundaram, "LEAP Diarization System for the Second DIHARD Challenge", INTERSPEECH 2019.
- A. Kanagasundaram, S. Sridharan, S. Ganapathy, P. Singh, C. Fookes, "A Study of X-vector Based Speaker Recognition on Short Utterances", INTERSPEECH 2019.
- S. Ramoji, A. Mohan, B. Mysore, A. Bhatia, P. Singh, Harsha Vardhan, S. Ganapathy, "The LEAP Speaker Recognition System for NIST SRE 2018 Challenge", ICASSP 2019.

WORKSHOPS AND CONFERENCES

- Women in Research Talk, PyConIndia 2020, Online
- Presented paper in Interspeech 2020.
- Winter School on Speech and Audio Processing (WiSSAP) 2020, IIT Mandi, India
- Presented paper and poster in Interspeech 2019, Graz, Austria
- Summer school on mathematics for data science 2019 organised by IFCAM and IISc
- Winter School on Speech and Audio Processing (WiSSAP) 2019, Trivandrum, India
- Interspeech 2018, Hyderabad, India
- Brain Computation and Learning Workshop, 2018, Bangalore, India
- International Conference on Signal Processing and Communications (SPCOM), 2018

TEACHING EXPERIENCE

- Teaching Assistant
Advanced Deep Learning [E9:309]
📅 Fall 2020
- Teaching Assistant
Deep learning theory and Practice [CCE]
📅 Spring 2020
- Teaching Assistant
Machine Learning and Signal Processing [E9:205]
📅 Fall 2019