

# PRACHI SINGH

PhD Scholar

LEAP Lab

Electrical Engineering

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## OBJECTIVE

As a PhD scholar, I am looking for research internship where I would be able to align my skills and interest in building a useful product and develop a strong connection with my team and organization as a whole.

## RESEARCH INTERESTS

Speaker Diarization, Machine Learning, Variational Inference, Metric Learning, Dialog system understanding using different neural architectures

## 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)  
Indian Institute of Science, Bangalore

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

XII Std. 2011  
Maharashtra State Board (93.67%)

X Std. 2009  
Maharashtra State Board (92%)

### Courses

- Machine Learning for Signal Processing
- Computational Methods of Optimization
- Speech Information Processing
- Stochastic Models and Applications
- Detection and Estimation Theory

## 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
- Handled different features and modules (ECU) present in automobile and their interaction with IPC and thus validating any issues involved in it

## ACHIEVEMENTS

- ISCA Travel Grant for Interspeech, 2019
- Runner-up in "Second DIHARD Challenge 2019", April 2019
- Late Shri Manoharbai Patel Memorial Gold Medal in XII Std
- Dhirubhai Foundation Scholarship in XII Std

## THESIS WORK

Research advisor: Dr. Sriram Ganapathy

Speaker Diarization using Posterior Scaled VB-HMM

- The project involves identifying different speakers present in different segment of a given audio recording from DIHARD dataset which has challenging scenarios including restaurants, clinical interviews, mother child conversations etc. using posterior scaled Variational Bayes - Hidden Markov Model. The work is published in Interspeech, Graz, Austria 2019.

Diarization for multi-speaker test conditions in SRE 2018 challenge

- SRE 2018 challenge involved test conditions with multiple speaker. We perform diarization to extract individual speaker segments to score against the enrollment. This work is published in ICASSP 2019.

Supervised Speaker Diarization

- The work involves building neural network models for learning more discriminative speaker embeddings along with metric learning using triplet networks and CNN.

## PREVIOUS PROJECTS

Weather Monitoring System-Internet Of Things

- Developed a prototype which involves monitoring weather parameters like Temperature, Humidity and light using Sensors and uploading the data on internet along with controlling devices.
- Tools used: Arduino Uno, Xbee module, C language in Arduino IDE

Portable Image to Text Converter

- Developed a portable image to text converter for English language using the concept of Optical character recognition (OCR).
- Tools used: Raspberry Pi, OpenCV for C/C++ in Raspbian operating system.

B.Tech Project-Accident prevention by drowsiness detection

- Developed C programme to measure parameters like Heart Rate, LF/HF and PNN50 at different instant shows physiological changes of a person, thus detecting drowsiness.
- Tools used: Raspberry Pi, Matlab, Microsoft Visual Studio and Raspbian OS for C.

## WORKSHOPS AND CONFERENCES

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- 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

## PUBLICATIONS

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- **P. Singh**, Harsha Vardhan MA, S. Ganapathy, A. Kanagasundaram, "LEAP Diarization System for the Second DIHARD Challenge" in Proceedings of INTERSPEECH 2019.
- A. Kanagasundaram, S. Sridharan, S. Ganapathy, **P. Singh**, C. Fookes, "A Study of X-vector Based Speaker Recognition on Short Utterances" in Proceedings of 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" in 2019 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP).