Aravind Illa

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RESEARCH INTERESTS

Automatic Speech Recognition, Text to Speech Synthesis, Voice Conversion, Assistive tools for Healthcare, Speech Processing, Natural Language Processing, Machine Learning.

EDUCATION

Indian Institute of Science, Bengaluru, Karnataka, India.

- Ph.D. in Electrical Engineering. Jan 2015 – Present
  - Thesis work: Acoustic-to-articulatory inversion: Analysis and Improvements with Neural Network Learning Paradigms.
  - Advisor: Prof. Prasanta Kumar Ghosh, Associate Professor .
  - Cumulative GPA: 8.12 / 10.

National Institute of Technology, Calicut, Kerala, India.

- M.Tech. in Signal Processing. Aug 2012 – May 2014
  - Cumulative GPA: 8.01 / 10.

Andhra university, Vishakapatnam, Andhra Pradesh, India.

- B.Tech. in Electronics and Communication Engineering. Aug 2008 – May 2012
  - Cumulative GPA: 8.43 / 10.

EXPERIENCE

University of Southern California, Los Angeles, California.

- Visiting Scholar in SAIL lab, Electrical and Computer Engineering.
  - Project: Machine Intelligence for Cognitive and Communication Disorders.
  - Worked on Analysis and Modeling of Human Speech Production. Oct 2019 – Nov 2019

Amazon Development Centre India, Bengaluru, Karnataka, India.

- Applied Scientist Intern in Alexa ASR Team.
  - Project: RNN Language Model Rescoring with Domain Embeddings. May 2019 – Aug 2019

PUBLICATIONS

JOURNALS

[1] Aravind Illa and Prasanta Kumar Ghosh, "Closed-set speaker conditioned acoustic to articulatory inversion using bi-directional long short term memory network," *In Journal of the Acoustical Society of America Express Letters*, vol. 147, pp. EL171–EL176, Feb 2020.

[2] Aravind Illa and Prasanta Kumar Ghosh, "The impact of speaking rate on acoustic-to-articulatory inversion," *In Computer Speech & Language*, vol. 59, pp. 75–90, Jan 2020.

[3] Pattem Ashok Kumar, Aravind Illa, Amber Afshan and Prasanta Kumar Ghosh, "Optimal sensor placement in electromagnetic articulography recording for speech production study," *In Computer Speech & Language*, vol. 47, pp. 157–174, Jan 2018.

CONFERENCES/WORKSHOPS

[1] Aravind Illa, Prasanta Kumar Ghosh, "Speaker conditioned acoustic-to-articulatory inversion using x-vectors," accepted in *Interspeech 2020*, Oct 2020.

[2] Jhansi M, Aravind Illa, BK Yamini, Prasanta Kumar Ghosh, "Raw speech waveform based classification of patients with ALS, Parkinson's Disease and healthy controls using CNN-BLSTM," accepted in *Interspeech*, Oct 2020.

[3] Ahayjeet Singh, Aravind Illa, Prasanta Kumar Ghosh, "Attention and Encoder-Decoder based models for transforming articulatory movements at different speaking rates," accepted in *Interspeech*, Oct 2020.

[4] Renuka M, Jyothi R, Aravind Illa, Prasanta Kumar Ghosh, " Speech rate task-specific representation learning from acoustic-articulatory data," accepted in *Interspeech*, Oct 2020.

[5] Renuka M, Jyothi R, Aravind Illa, Prasanta Kumar Ghosh, "Speech rate estimation using representations learned from speech with convolutional neural network," In Proc. *SPCOM*, Jul 2020.

[6] Suhas BN, Jhansi M, Aravind Illa, BK Yamini, Prasanta Kumar Ghosh, "Speech task based automatic classification of ALS and Parkinson's Disease and their severity using log Mel-spectrograms," In Proc. *SPCOM*, Jul 2020.

[7] Ahayjeet Singh, Aravind Illa, Prasanta Kumar Ghosh, "A comparative study of estimating articulatory movements from phoneme sequences and acoustic features," In Proc. *IEEE International Conference on In Acoustics, Speech and Signal Processing (ICASSP)*, May 2020.

[8] Jhansi Mallela, Aravind Illa, Suhas B N, Sathvik Udupa, Yamini Belur, Nalini Atchayaram, Ravi Yadav, Pradeep Reddy, Dipanjan Gope, Prasanta Kumar Ghosh, "Voice based classification of patients with amyotropic lateral sclerosis, parkinson's disease and healthy controls with CNN-LSTM using transfer learning," In Proc. *IEEE International Conference on In Acoustics, Speech and Signal Processing (ICASSP)*, May 2020.

[9] Shankar Narayanan, Aravind Illa, Nayan Anand, Ganesh Sinisetty, Karthick Narayanan and Prasanta Kumar Ghosh, "An acoustic-articulatory database of VCV sequences and words in Toda at different speaking rates," In Proc. *Oriental COCOSDA*, Oct 2019.

[10] Aravind Illa, Prasanta Kumar Ghosh, "An investigation on speaker specific articulatory synthesis with speaker independent articulatory inversion," In Proc. *Interspeech*, Sep 2019.

[11] Renuka M, Jhansi M, Aravind Illa, Prasanta Kumar Ghosh, "Acoustic and articulatory feature based speech rate estimation using a convolutional dense neural network ," In Proc. *Interspeech*, Sep 2019.

[12] Aravind Illa, Prasanta Kumar Ghosh, "Representation learning using convolution neural network for Acoustic-to-articulatory inversion," In Proc. *IEEE International Conference on In Acoustics, Speech and Signal Processing (ICASSP)*, May 2019.

[13] Gokul Srinivasan, Aravind Illa, Prasanta Kumar Ghosh, "A study on robustness of articulatory features for automatic speech recognition of neutral and whispered speech," In Proc. *IEEE International Conference on In Acoustics, Speech and Signal Processing (ICASSP)*, May 2019.

[14] Aravind Illa, Prasanta Kumar Ghosh, "Low resource acoustic-to-articulatory inversion using bi-directional long short term memory," In Proc. *Interspeech*, pp. 3122–3126, Sep 2018.

[15] Aravind Illa, Prasanta Kumar Ghosh, "Inferring speaker identity from articulatory motion during speech," In Proc. of Workshop on *Machine Learning in Speech and Language Processing (MLSLP)*, Sep 2018.

[16] Aravind Illa, Deep Patel, BK Yamini, Prasanta Kumar Ghosh, "Comparison of speech tasks for automatic classification of patients with amyotrophic lateral sclerosis and healthy subjects," In Proc. *IEEE International Conference on In Acoustics, Speech and Signal Processing (ICASSP)*, Apr 2018.

[17] Aravind Illa, Nisha Meenakshi G and Prasanta Kumar Ghosh, "A Comparative Study of Acoustic-to-articulatory inversion for Neutral and Whispered Speech," In Proc. *IEEE International Conference on In Acoustics, Speech and Signal Processing (ICASSP)*, pp. 5075-5079, Mar 2017.

PROFESSIONAL AFFILIATIONS & ACTIVITIES

- Teaching Assistant for *Machine Learning for Signal Processing* in IISc (Aug-Dec 2017).
- Student Member of ISCA and IEEE Signal Processing Society.
- Reviewer of IEEE Transactions on Audio, Speech and Language Processing, Interspeech.
- Student Volunteer: Interspeech 2018, WiSSAP 2017, SPCOM 2016.
- Campus Activities: Student coordinator for EE Effective communication Series (2016–2017), Student Volunteer for Open Day 2017.

CODING SKILLS Python, Tensorflow, MATLAB, Kaldi, HTK, Shell scripting.

REFERENCES

- **Prof. Prasanta Kumar Ghosh**
  Associate Professor, Electrical Engineering,
  Indian Institute of Science, Bangalore.