

Jitendra Kumar Dhiman

CONTACT INFORMATION

Indian Institute of Science Bangalore, C.V. Raman
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RESEARCH INTERESTS EDUCATION

Speech and audio processing, speech synthesis, and machine learning

Ph.D, Speech signal processing, (2014 - Present)
Indian Institute of Science Bangalore, Karnataka
Current G.P.A: 5.5/8

M.Tech, Signal processing, (2011 - 2013)
Indian Institute of Technology of Hyderabad, Telangana, India
C.G.P.A: 8.27/10; class: First

B.Tech, Electronics and telecommunication Engineering, 2010
The Institution of Electronics and Telecommunication Engineers, New Delhi, India
C.G.P.A: 8/10; class: First

CURRENT AREA OF RESEARCH

Ph.D Thesis (2014 - Present)

Tentative title: Spectrotemporal Analysis and Synthesis of Speech Signals

I am working on the development of a unified framework for analysis and synthesis of speech signal towards my Ph.D. thesis. The technique involves processing of speech signals jointly in spectro-temporal domain which employs a new tool referred to as Riesz transform.

JOURNAL PUBLICATIONS

- [1] Jishnu Sadasivan, **Jitendra Kumar Dhiman**, and Chandra Sekhar Seelamantula, "Musical Noise Suppression Using a Low-Rank and Sparse Matrix Decomposition Approach," *Speech Communication* 125, pp. 41-25, Dec 2020.
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CONFERENCE PUBLICATIONS

- [2] **Jitendra Kumar Dhiman**, Nagraj Adiga and Chandra Sekhar Seelamantula, "On the suitability of the Riesz Spectro-Temporal Envelope for WaveNet Based Speech Synthesis," in *Proc. of INTERSPEECH*, 2019.
- [3] **Jitendra Kumar Dhiman** and Chandra Sekhar Seelamantula, "A Spectro-Temporal Technique for Estimating Aperiodicity and Voiced/Unvoiced Decision Boundaries of Speech Signals," in *Proc. of International Conference on Acoustic, Speech and Signal Processing (ICASSP)*, 2019.
- [4] **Jitendra Kumar Dhiman**, Neeraj Sharma and Chandra Sekhar Seelamantula, "Multicomponent 2-D AM-FM Modeling of Speech Spectrograms," in *Proc. of INTERSPEECH*, 2018.

- [5] **Jitendra Kumar Dhiman**, Nagraj Adiga and Chandra Sekhar Seelamantula, "A Spectro-Temporal Demodulation Technique for Pitch Estimation," *in Proc. of INTERSPEECH*, 2017.
 - [6] Karthika Vijayan, **Jitendra Kumar Dhiman**, and Chandra Sekhar Seelamantula, "Time-Frequency Coherence for Periodic-Aperiodic Decomposition of Speech Signals," *in Proc. of INTERSPEECH*, 2017.
 - [7] Senthil Kumar Mani, **Jitendra Kumar Dhiman** and K. Sri Rama Murty, "A Novel Speech Duration Modifier for Packet Based Communication System," *in Proc. of INTERSPEECH*, 2014.
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AWARDS AND HONORS

- Best poster presentation award at the EECS divisional symposium 2018 among 33 candidates at Indian Institute of Science, Bangalore.
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RESEARCH EXPERIENCE

PhD. Scholar, **2014 August - present**

Department of EE, IISc Bangalore, Karnataka

Project: Development of a speech vocoder using the methods from signal processing and deep learning

Investigator: Prof. Chandra Sekhar Seelamantula

Activities involved:

- Research and development of a vocoder for speech synthesis.
- An alternative technique for analysis/synthesis of speech using Riesz transform.
- TTS system building for Hindi using Hidden Markov Model with HTS framework and deep neural networks.

Research Associate, **2014 January - 2014 July**

IISc Bangalore, India

Project: Text-to-Speech synthesizer for Indian languages

Funding Agency: Department of Information technology

Investigator: Prof. Chandra Sekhar Seelamantula

Activities involved:

- Worked on prosody modifications of speech, an algorithm for time and pitch scale modification of speech was developed in C++.
- The developed software was tested in real time on android platform.

Project Associate, **2013 June - 2013 Dec**

IIT Hyderabad, India

Project: Prosodically guided phonetic engine for searching speech databases in Indian languages.

Funding Agency: Department of Information technology

Investigator: K. Sri Rama Murty

Activities involved:

	<ul style="list-style-type: none"> • Development of an audio search engine for searching speech databases in multiple Indian languages.
INDUSTRIAL EXPERIENCE	<hr/> <p>Electronics Engineer, 2010 Sept - 2011 June</p> <p>PEP INFOTECH LIMITED, Meerut, India</p> <p><u>Activities involved:</u></p> <ul style="list-style-type: none"> • Block level experience of different inverter modules. • Development of 800 VA digital UPS. • Troubleshooting and testing of electronics circuits. <hr/>
TEACHING EXPERIENCE	<p>Teaching assistant for the courses,</p> <p>Matrix Theory offered by Prof. A G Ramakrishnan at Indian Institute of Science, Bangalore during August - December, 2016: Responsibilities included conducting tutorial classes and preparing assignments/projects</p> <p>Digital Signal Processing offered by K. Sri Rama Murty at Indian Institute of Technology Hyderabad during January - June, 2012: Responsibilities included conducting weekly quizzes</p> <hr/>
WORKSHOPS AND CONFERENCES	<p>Workshop on image and speech processing (WISP-2012) held at IIIT Hyderabad.</p> <p>Winter school on speech and audio processing (WiSSAP-2015) held at DAI-ICT, Gandhinagar.</p> <p>Winter school on speech and audio processing (WiSSAP-2016) held at SSN college of engineering, Chennai.</p> <p>Winter school on speech and audio processing (WiSSAP-2017) held at IISc, Bangalore.</p> <p>Winter school on speech and audio processing (WiSSAP-2019) held at Thiruvananthapuram, India.</p> <hr/>
ACADEMIC ACHIEVEMENTS	<p>Secured 99.57 percentile in Graduate aptitude test in engineering (GATE) with AIR 579 among 147,000 students.</p> <p>MHRD, Govt. of India GATE Scholarship for Pursuing my M.Tech (2011 June - 2013 June).</p> <hr/>
SKILLS	<p>Speech processing tools: HTK, HTS, DNN, SPTK, Festival, Festvox</p> <p>Scripting: UNIX shell, python.</p> <p>Programming skills: MATLAB, C, C++, pytorch.</p> <p>Lab tools: Working knowledge and experience in usage of C.R.O. and signal generators.</p> <hr/>
PROFESSIONAL MEMBERSHIPS	

ISCA, Graduate student member, 2017–present, Member id 16172.

LANGUAGES
KNOWN

Hindi and English

DATE OF BIRTH

14/08/1985

REFERENCE
AVAILABLE TO
CONTACT

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