Srikanth Raj Chetupalli

Contact Information

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Brief Bio

I am a Ph.D student and a TCS research scholar in the department of Electrical communication engineering, Indian Institute of Science (IISc), Bangalore, since Aug. 2013. I am pursuing Ph.D under the guidance of Prof. T. V. Sreenivas in the speech and audio group. Prior to joining IISc, I was a DSP firmware engineer at Ikanos communications, Bangalore. I secured my masters in Engineering degree from IISc, in May 2011, and Bachelor of technology from Jawaharlal technological university (JNTU), Hyderabad, in May 2009.

My research areas include multi channel signal processing applications to speech (dereverberation, localization, diarization, acoustic scene analysis), spatial audio, machine learning approaches to signal processing, compressive sensing and sparsity aware signal processing.

Education

Current (From August 2013)
Pursuing Ph.D in
Dept. of Electrical Communication Engineering,
Indian Institute Of Science, Bangalore.
Advisor: Prof. T.V. Sreenivas
CGPA: 7.7/8.0 — Detailed List of Exams

July 2011
Master of Engineering in Signal Processing,
Indian Institute Of Science, Bangalore.
Advisor: Prof. T.V. Sreenivas
CGPA: 7.2/8.0 Award:*First Class with Distinction*
— Detailed List of Exams

July 2009
Bachelor of Technology in
Electronics and Communication Engineering,
Mahatma Gandhi Institute of Technology, Hyderabad, A.P.
% Marks: 80.2% Award:*First Class with Distinction*

May 2005
Intermediate Education,
A. P. R. Junior College, Nagarjuna Sagar, A.P.
% Marks: 96.9%

May 2003
S.S.C, **A. P. R. School**, Pochampad, A.P.
% Marks: 88.3%

Work Experience

July 2011- July 2013
Engineer-II, DSP Firmware at Ikanos Communications, Bangalore
VDSL2 Formware development
Project involved developing firmware for Ikanos Communications VDSL2 chipsets Vx185 and Vx180. Involved in the development of rate selection algorithms for bonded and non-bonded VDSL2 modes, design and optimization of upstream and downstream PSDs for transmission, estimation of channel transfer function etc. The work involved simulating the system behavior in matlab, porting the algorithms to C and assembly and verifying the real time system performance.

Publications

Thesis

Doctoral Thesis: Signal estimation for spatial speech communication using distributed microphone arrays.

Master's Thesis: Signal Adaptive Compressive Sensing for Speech and Audio signals.

Journal publications

1. Srikanth Raj Chetupalli, and T. V. Sreenivas, "Spatial speech communication using distributed microphone arrays and MCLP signal decomposition" manuscript under preparation.

2. Srikanth Raj Chetupalli, and T. V. Sreenivas, "Speech dereverberation and interference suppression for dynamic sources using joint spatial filtering and multi-channel time-varying linear prediction," manuscript under preparation.

3. Srikanth Raj Chetupalli, and T. V. Sreenivas, "Late Reverberation Cancellation using Bayesian Estimation of Multi Channel Linear Predictors and Students t Source Prior," IEEE/ACM Transactions on Audio, Speech and Language Processing, Vol. 27, No. 6, April 2019.

4. Srikanth Raj Chetupalli, and T. V. Sreenivas, "Joint Bayesian Estimation of Time-Varying LP Parameters and Excitation for Speech," IEEE Signal Processing Letters, Vol. 24, No. 4, April 2017.

Conference publications

1. Srikanth Raj Chetupalli, Anirban Bhowmick, and T. V. Sreenivas, "Ad-hoc mobile array based audio segmentation using latent variable stochastic model," accepted for presentation at EUSIPCO 2019, to be held in Coruna, Spain.
(An older version of the article available in Arxiv, id: 1810.13109).

2. Srikanth Raj chetupalli, and T. V. Sreenivas, "Clean speech AE-DNN PSD constraint for MCLP based reverberant speech enhancement," accepted for presentation at EUSIPCO 2019, to be held in Coruna, Spain.
(An older version of the article available in ArXiv, id: 1812.01346).

3. Srikanth Raj Chetupalli, Anand Gopalakrishnan, and T. V. Sreenivas, "Comparison of low dimension speech segment embeddings: Application to speaker diarization," in Proc. National conference on communications, Bangalore, India, 20-23 Feb 2019.

4. Srikanth Raj Chetupalli, T. V. Sreenivas, "Linear Prediction Based Diffuse Signal Estimation for Blind Microphone Geometry Calibration," in Proc. International Workshop on Acoustic Signal Enhancement, Tokyo, Japan, 17-20 Sep, 2018.

5. Srikanth Raj Chetupalli, Ashwin Ram, T. V. Sreenivas, "Robust offline trained neural network for TDOA based sound source localization", in Proc. National conference on communications, IIT Hyderabad, India, 25-28 Feb, 2018.

6. Amit Kumar Verma, Hemendra Tomar, Srikanth Raj Chetupalli, and T. V. Sreenivas, "Non-Linear Filtering for Feature Enhancement of Reverberant Speech", in Proc. IEEE TENCON 2017, Penang, Malaysia, 5-8 Nov 2017.

7. Neeraj Sharma, Shreepad Potadar, Srikanth Raj Chetupalli, T. V. Sreenivas, "Mel-Scale Sub-band Modelling for Perceptually improved Time-Scale Modification of Speech and Audio Signals, in Proc. National conference on communications, Chennai, India, 2-4 March 2017.

8. Srikanth Raj Chetupalli, Anand Gopalakrishnan, T. V. Sreenivas, "Feature Selection and Model Optimization for Semi-supervised Speaker Spotting," in Proc. of European Signal Processing Conference (EUSIPCO), Budapest, Hungary, Aug 29-Sep 2, 2016.

9. Srikanth Raj Chetupalli, Thippur V. Sreenivas, "Successive Approximation Algorithm for LPC Estimation Using Sparse Residual Constraint," in Proc. of National Conference on Communication (NCC), Mumbai, India, Feb 27-Mar 1, 2015.

10. Srikanth Raj Chetupalli, Thippur V. Sreenivas,"Time Varying Linear Prediction using Sparsity Constraints," in Proc. of IEEE Int. Conf. Acoust. Speech, Signal Process., Florence, Italy, May 4-9, 2014.

11. Ch. Srikanth Raj, T. V. Sreenivas,"Joint Pitch-Analysis Formant-Synthesis framework for CS recovery of speech," in Proc. of INTERSPEECH, Portland Oregon, USA, 9-13 Sep, 2012.

12. Ch. Srikanth Raj, T. V. Sreenivas,"Time-varying signal adaptive transform and IHT recovery of compressive sensed speech," in Proc. of INTERSPEECH, Florence, Italy, Aug 28-31, 2011.

13. Ch. Srikanth Raj, T. V. Sreenivas, "Compressive Sensing for Music signals: Comparison of transforms with coherent dictionaries," in Proc. of 42^{nd} AES International Conference, Ilmenau, Germany, July 22-24, 2011.

Other Awards and Distinctions

August 2015	I am awarded TCS Research Scholar Fellowship.
April 2014	Awarded Travel Grant from Google to attend ICASSP-2014 held in Florence, Italy.
Dec. 2011	Ikanos Pacesetter award for best performing employee in Firmware division.
July 2005	Awarded Gold medal for securing 1st rank in APREI society in 10+2.

Personal Details

Place and Date of Birth:	India — 17 March 1988
Nationality:	Indian
Languages:	Telugu, Hindi and English
Additional Interests:	reading novels, listening music.

Ph.D in Electrical Communication Engineering

Grades

Exam	Credits	Grade Points	Grade
Computational Methods Of Optimization	4	28	A
Numerical Linear Algebra	3	24	S
Compressed Sensing	3	24	S
Machine Learning	4	32	S
		CGPA	**7.7/8.0**

Master of Engineering in Signal Processing

Grades

Exam	Credits	Grade Points	Grade
Random Processes	3	18	B
Matrix Theory	3	21	A
DSP System Design	3	21	A
Digital Image Processing	3	24	S
Digital Communication	3	21	A
Automatic Speech Recognition Algorithms	3	21	A
Adaptive Signal Processing	3	18	B
Time Frequency Analysis	3	24	S
Detection and Estimation Theory	3	24	S
Speech Information Processing	3	24	S
Pattern Recognition and Neural Networks	3	21	A
Digital Array Signal Processing	3	21	A
Advanced Digital Signal Processing	3	24	S
Final Thesis			S
		CGPA	**7.2/8.0**