Srikanth Raj Chetupalli

Contact Information

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Brief Bio

I have registered for Ph.D program in Department of Electrical Communication Engineering, Indian Institute of Science (IISc), Bangalore in August 2013 under Prof. T. V. Sreenivas. I am awarded with Tata Consultancy Services (TCS) Research Scholar Fellowship in 2015 for a four year period starting from August 2015.

I completed Master of Engineering degree in Signal Processing from Department of Electrical Engineering, IISc in May 2011 under Prof. T. V. Sreenivas.

I have two years of work experience in DSP Firmware at Ikanos Communications, Bangalore. My job skill set includes programming in C, Matlab, Python and assembly language.

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.

Academic Project

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

Compressive sensing (CS) is a novel sensing mechanism, which facilitates accurate reconstruction of a sparse (parsimonious) signal from a far fewer random measurements than required by Nyquist sampling. CS theory assumes the signal to be sparse in a known transform domain. For a signal such as speech or audio, definition of sparsity is tough since it has significant energy spread over a dynamic range of 60-80 dB. In this work, we model the signal as the output of a sparsely excited quasi-stationary linear system. We consider a blind scenario in which the domain of sparsity i.e., the system transfer function is not known. We present an iterative algorithm to estimate both the transform and the sparse signal from just the random measurements.

Publications

1. Srikanth Raj Chetupalli, Anand Gopalakrishnan, T. V. Sreenivas, "Comparison of low dimension speech segment embeddings: Application to speaker diarization," in Proc. of NCC 2019, Bangalore, India.

2. Srikanth Raj Chetupalli, T. V. Sreenivas, "Linear Prediction Based Diffuse Signal Estimation for Blind Microphone Geometry Calibration," in Proc. IWAENC 2018, Tokyo, Japan.

3. 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, 25-28 Feb 2018, IIT Hyderabad, India.

4. 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, 5-8 Nov 2017, Penang, Malaysia.

5. 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, 2-4 March 2017, Chennai, India.

6. Srikanth Raj Chetupalli, T. V. Sreenivas, "Joint Bayesian Estimation of Time-Varying LP Parameters and Excitation for Speech," Signal Processing Letters, vol. 24, April 2017.

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

8. 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.

9. 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.

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

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

12. 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 Intermediate Education.

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**