K Venkata Vijay Girish

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Date of Birth

23-10-1985

Present position

Senior Technical Leader, Huawei Technologies India, April 2017- present
Worked on:

- Machine learning for cloud computing and big data: anomaly prediction
- Preparing proposals for university collaboration
- Analysis of Machine Learning as a Service on various cloud platforms

Research Interests

- Machine Learning, Data Analytics and Audio Signal Processing
- Sparse Signal Processing, Dictionary Learning and Adaptation, Image and Video Processing
- Machine Listening: Audio Source Classification pertaining to Speaker, Background Noise and Language Classification, Source Separation, Audio Signal Analysis and Detection of Transitions

Education

PhD, Systems and Signal Processing, August 2010- April 2017
Department of Electrical Engineering, Indian Institute of Science, Bangalore, GPA: 6.0/8.0

- *Research Advisors: Prof. A. G. Ramakrishnan, Department of Electrical Engineering, Indian Institute of Science and Dr. T. V. Ananthapadmanabha, Voice and Speech Systems, Bangalore*

B.Tech., Electrical and Electronics Engineering, August 2004- May 2008
National Institute of Technology Karnataka, Surathkal, GPA: 7.75/10.00

Class- 10+2, CBSE, May 2003
Kendriya Vidyalaya No.-2, Kharagpur, Percentage: 82.0

Class- 10, CBSE, May 2001
Kendriya Vidyalaya No.-2, Kharagpur, Percentage: 75.8

Research Publications

Conference publications

Published:

- Sayan Ghosh, K V Vijay Girish, T.V. Sreenivas, *Relationship between Indian Languages Using Long Distance Bigram Language Models*, Proc. International Conference on Natural Language Processing (ICON 2011), Dec 16-19, 2011, Chennai, India, pp. 104-113
- Vikram Ramesh Lakkavalli, K V Vijay Girish, A G Ramakrishnan, *Sub-band Envelope Approach to Obtain Instants of Significant Excitation in Speech*, Proc. National Conference on Communications (NCC 2012), Feb 3-5, 2012, Kharagpur, India, pp. 19

- Vikram R L, K V Vijay Girish, Harshavardhan S, A G Ramakrishnan, T V Ananthapadmanabha, *Sub-band Analysis of Linear Prediction Residual for the Estimation of Glottal Closure Instants*, Proc. IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2014), May 4-9, 2014, Florence, Italy

- K V Vijay Girish, A G Ramakrishnan and T V Ananthapadmanabha, *Hierarchical classification of speaker and background noise and estimation of SNR using sparse representation*, Interspeech 2016, September 8-12, 2016, San Francisco

- K V Vijay Girish, Veena Vijai and A G Ramakrishnan, *Relationship between spoken Indian languages by clustering of long distance bigram features of speech*, INDICON 2016, IISc Bangalore

- K V Vijay Girish, T V Ananthapadmanabha and A G Ramakrishnan, *Cosine similarity based dictionary learning and source recovery for classification of diverse audio sources*, INDICON 2016, IISc Bangalore

Technical Reports

- T V Ananthapadmanabha, K V Vijay Girish, A G Ramakrishnan, *Detection of transitions between broad phonetic classes in a speech signal*, arXiv:1411.0370 [cs.SD]

- K V Vijay Girish, A G Ramakrishnan and T V Ananthapadmanabha, *Adaptive dictionary based approach for background noise and speaker classification and subsequent source separation*, arXiv:1609.09764 [cs.SD]

Technical Skills

- Relevant Subjects:
  During B.Tech *August 2004 - May 2008:*
  Computer Programming, Introduction to Algorithms and Data Structures, Numerical Methods, Digital Signal Processing, Digital System Design, Microprocessors, Computer Organization and Architecture
  During PhD *August 2010- current:*
  Matrix Theory, Linear and Non Linear Optimization, Probability Theory, Convex Optimization, Advanced Digital Signal Processing, Pattern Recognition and Neural Networks, Machine Learning, Data Mining, Compressive Sensing and Sparse Signal Processing, Time Frequency Analysis, Speech Information Processing, Automatic Speech Recognition Algorithms, Digital Image Processing

- Programming languages known: *C, Python, Matlab, VHDL, Latex*

- Softwares used: *Maxwell, PSpice, Xilinx, Modelsim, Matlab, Simulink and Praat*

- Operating system: *Worked on Windows XP and Linux*

Academic Projects

During PhD *August 2010- current:*

- Relationship Between Indian Languages Using Bigram Language Models- Group project under Prof. T. V. Sreenivas of Dept of Electrical Communication Engineering, Indian Institute of Science

- Voiced and Unvoiced feature classification of Speech data using multiple features- Individual course project under Prof. A. G. Ramakrishnan of Dept of Electrical Engineering, Indian Institute of Science

- Implementation of Modification of Pitch contour , Duration and Energy for change in Prosody in Tamil Speech Synthesis under Prof. A. G. Ramakrishnan of Dept of Electrical Engineering, Indian Institute of Science

- Voice Modification system using change of sampling frequency and duration normalization under Prof. A. G. Ramakrishnan of Dept of Electrical Engineering, Indian Institute of Science

- Implementation of Parts of Speech and Pause Rules Tagging of Tamil text in Matlab and C under Prof. A. G. Ramakrishnan of Dept of Electrical Engineering, Indian Institute of Science

- Robust estimation of glottal closure instants using dynamic weighting of subband components in Speech under Prof. A. G. Ramakrishnan of Dept of Electrical Engineering, Indian Institute of Science
- Subband Analysis of Linear Prediction Residual for the Estimation of Glottal Closure Instants under Dr. T. V. Ananthapadmanabha of Voice and Speech Systems, Bangalore and Prof. A. G. Ramakrishnan of Dept of Electrical Engineering, Indian Institute of Science
- Detection of transitions among broad phonetic classes in a speech signal using temporal features and a rule based approach under Dr. T. V. Ananthapadmanabha of Voice and Speech Systems, Bangalore and Prof. A. G. Ramakrishnan of Dept of Electrical Engineering, Indian Institute of Science
- A dictionary learning and source recovery based approach to classify diverse audio sources under Dr. T. V. Ananthapadmanabha of Voice and Speech Systems, Bangalore and Prof. A. G. Ramakrishnan of Dept of Electrical Engineering, Indian Institute of Science
- Hierarchical classification of speaker and background noise and estimation of SNR using sparse representation under Prof. A. G. Ramakrishnan of Dept of Electrical Engineering, Indian Institute of Science and Dr. T. V. Ananthapadmanabha of Voice and Speech Systems, Bangalore
- Supervised and adaptive dictionary learning using sparse representation for noisy speech analysis and language classification under Prof. A. G. Ramakrishnan of Dept of Electrical Engineering, Indian Institute of Science and Dr. T. V. Ananthapadmanabha of Voice and Speech Systems, Bangalore

During B.Tech *August 2004 - May 2008:*

- *Major Project:* Steady State Analysis of Unified Power Flow Controller using Matlab 5.3 and Simulink 3.0- group project under Dr. K.N. Shubhanga of Dept of Electrical and Electronics Engineering, NITK Surathkal
- Digital Quiz- group project under Mr. K. Manjunath Sharma of Dept of Electrical and Electronics Engineering, NITK Surathkal
- Pspice Simulation of high frequency signal only during negative half cycle of the power supply- individual project under Mr. A.R.Beig of Dept of Electrical and Electronics Engineering, NITK Surathkal
- Design and implementation of Badminton Scoreboard (for doubles match) using Xilinx VHDL software- individual project under Prof. P.Vittal of Dept of Electrical and Electronics Engineering, NITK Surathkal
- Graphic Equalizer implementation using Matlab 7.0 - individual project under Prof. Jora M Gonda of Dept of Electrical and Electronics Engineering, NITK Surathkal
- Design of a a simplified bus model of Embedded Intel486 SX Processor using Xilinx VHDL software- group project under Prof. P.Vittal of Dept of Electrical and Electronics Engineering, NITK Surathkal
- 2-Dimensional electromagnetic field simulation for high performance electromechanical design using Maxwell SV software- group project under Dr.P.Duraikannu of Dept of Electrical and Electronics Engineering, NITK Surathkal
- Speed Control of DC Motor using PC Generated Pulse Width Modulation (Hardware Project)- group project under Mrs. Vinatha U. of Dept of Electrical and Electronics Engineering, NITK Surathkal
- Implementation of Image Processing Techniques using Graphical User Interface in Matlab 7.0.1- group project under Mrs. Vinatha U. of Dept of Electrical and Electronics Engineering, NITK Surathkal

Project Mentorship

- Veena Vijai, from Birla Institute of Technology and Science, Pilani - K. K. Birla Goa Campus on Relationship between spoken Indian languages by clustering of long distance bigram features of speech, May-July, 2016
- B Shubashree, from SSN College of Engineering, Chennai on Unsupervised background noise change identification using dictionary learning, June- August, 2016

Teaching Experience

Linear and Nonlinear Optimization offered by Prof. Muthuvel Arigovindan at Indian Institute of Science, Bangalore during August-December, 2013: Responsibilities include conducting tutorial classes

Speech Information Processing offered by Prof. A G Ramakrishnan at Indian Institute of Science, Bangalore during January-May, 2014: Responsibilities include preparing assignments and projects

Matrix Theory offered by Prof. A G Ramakrishnan at Indian Institute of Science, Bangalore during August-December, 2014: Responsibilities include preparing assignments, clearing doubts, evaluation and grading of students.

Technical Experience

- Work experience of 2 years from August- 2008 to July- 2010 which includes 1st year as Graduate Engineer Trainee and 2nd year as a Senior Engineer in Relay and Integrated Solutions, Larsen and Toubro Limited, Mumbai
    - Development of new product: Intelligent Motor Protection Relay, MCOMP
    - Indepth testing, troubleshooting and analysis of new product
    - New product documentation and management
    - Development of Data Concentrator Systems
- Industrial Training: Inplant Practical Training at the Bharat Heavy Electricals Limited, Electronics Division, Bangalore (May-June 2006)

Academic Achievements

- Got through AIEEE 2004 with an All India Rank of 4525 and State Rank (West Bengal) of 53
- Secured an All India Rank of 5439 in IIT-JEE 2004
- Got through GATE 2010 (Electrical Engineering) with 98.8 percentile
- Has been among top 3 students of the school consistently
- Distinctive performance in 2nd National Science Olympiad in 2000

Talks and Poster Presentations

- Assisted Prof. A. G. Ramakrishnan in conducting a tutorial on Insights into Signal Processing,Transforms and Linear Algebra at International Conference on Biomedical Engineering, 2011 held at MIT Manipal, during 8-9 December, 2011
- Gave a talk on my accepted paper in National Conference on Communications, held at IIT Kharagpur, during 3-5 February, 2012
- Presented poster on my accepted paper in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2014) at Florence, Italy during 4-9 May, 2014
- Presented poster on my accepted paper in INTERSPEECH-2016 at Hyatt Regency, San Francisco, USA during 8-12 September, 2016
- Gave a talk and poster presentation on "Analysis of audio intercepts: Can we identify and locate the speaker? " at EECS Research Students Symposium - 2016, held at IISc Bangalore during 28-29 April, 2016
- Presented poster on "Adaptive and supervised sparse representation based approach for noisy speech analysis" in IISconnect: Industry Interaction Day at IISc Bangalore on 3rd October, 2016
- Gave an IEEE talk on "Throwing light on sound" in NIT Goa and BITS Goa, on 12th February, 2017

Hobbies and Extra-curricular activities

- Participated in Google Code Jam in the past five years
- Bagged 2nd prize in Foxhunt in the TechFest Engineer 2006 conducted by NITK Surathkal
- Secured 5th position in Simplicity, an International Online Matlab Programming contest conducted during Engineer 2008, a Technical Festival conducted by NITK Surathkal
- Bagged 3rd prize in Science Slam in Pravega Sci-Tech 2014 conducted by Swissnex at IISc Bangalore
- Volunteer in the organization team of IISc Electrical Sciences Divisional Symposium, 2013
- Active Member of Spicmacay, Voice club, IEEE and Management Forum at NITK Surathkal
- Active member of Mess committee at IISc Bangalore from July 2013 - May 2015
- Playing badminton, guitar, photography, running, swimming, biking, triathlon, programming, technology, reading, writing blogs

Languages Known

- English, Hindi and Telugu

August 22, 2017