

Chiranjeevi Yarra

Phone: +91-8762741634

Email: chiranjeevi.yarra@iiit.ac.in

Website: <https://faculty.iiit.ac.in/~chiranjeevi.yarra/>

Address: Assistant Professor, F-10,
Kohli Research Block (KRB),
Language Technologies Research Center (LTRC)
IIIT Hyderabad, 500032

OBJECTIVE

Research in statistical signal analysis for speech information retrieval and their application to educational technology and under-resourced development.

RESEARCH INTERESTS

- Speech information processing with application to low-resourced scenarios and multi-lingual societies.
- Time-frequency and non-stationary signal analysis of spoken language for better spoken communication.
- Machine learning based discovery of user-specific informatics and patterns for personalized virtual tutor.

EDUCATION

PhD (in System Science and Signal Processing group of EE Department.), 2013 – 2020
Indian Institute of Science (IISc), Bangalore, India.
Advisor: Dr Prasanta Kumar Ghosh
Dissertation Title: Pronunciation assessment and semi supervised feedback prediction for spoken English tutoring.
CGPA: 6.5/8

M.Tech in Instrumentation, 2007 – 2009
Indian Institute of Technology Kharagpur (IITKGP), Kharagpur, India.
Advisor: Prof. S. Mukhopadhyay
Dissertation Title: Synthesis of analog inputs for testing of digital modules in mixed signal VLSI circuits.
CGPA: 9.08/10 (2nd in the class)

B.Tech in Electrical and Electronics Engineering, 2002 – 2006
National Institute of Technology Warangal (NITW), Warangal, India.
Advisor: Prof. Sailaja Kumari M
Dissertation Title: Reactive power optimization using Hopfield neural network.
Percentage: 82.69/100 (2nd in the class)

HONOURS AND AWARDS

1. **Travel grant** for Interspeech-19 from PratikshaTrust Travel Support.
2. **Travel grants** for Interspeech-19 from IndSCA and ISCA.
3. **Student Invitee** from CII and DST for **Indo-UK summit** Sep 2016, New Delhi.
4. **Student travel grants** for ICASSP-16 from IEEE Signal Processing Society.
5. **Travel grant** for ICASSP-16 from Xerox Research Center India.
6. **Student Invitee** from Ministry of Science and Technology for **7th BRICS youth summit** Jul 2015, Moscow.
7. **Prime Minister's Fellowship for Doctoral research**, 2014 – 2017.
8. **All India Rank of 18** in GATE-2006 (department **best rank in NIT Warangal** for the year 2006).
9. **State Government scholarship** 2002 - 2006
10. **State rank of 9** in Engineering Common Entrance Test-2002 by Andhra Pradesh (erstwhile) state council.
11. **11th Position** in Board of Secondary Education Examination (Class X) at district level, 1998.
12. **State Government merit scholarship** from Class VIII to Class X, 1995 – 1998.

EXPERIENCE

Teaching:

Teaching assistant,
Indian Institute of Science, Bangalore, India.
Course: Stochastic models and Applications

Aug 2015 – Dec 2015

Assistant professor, *Jul 2009 – Jul 2013*
School of Electronics Engineering, KIIT University, Bhubaneswar, India.
Courses taught: Signals and Systems, Digital Signal Processing, Control Systems, Advanced Control Systems.

Teaching assistant, *Jul 2008 – Apr 2009*
Indian Institute of Technology, Kharagpur, India.
Courses: Signal and Networks lab, Measurements lab

Project:

Project Title: An automated feedback system for minimizing nativity influences of language learners in Indian spoken English learning. *Nov 2016 – Present*

PI: Dr Prasanta Kumar Ghosh, *Budget: ~34 lacs.*

Involved significantly in the **project preparation and execution.**

Project Title: English Gyani - An intelligent assistant for tutoring English via learner-tutor interactions.

Jun 2019 – Present

PI: Dr Prasanta Kumar Ghosh, *Budget: ~1 crore.*

Involved significantly in the **project preparation and execution.**

Mentoring:

One PG student *May 2018 – Jun 2019*

Affiliation: **IISc**

Outcome: four conference publications.

Sixteen UG students *Feb 2015 – Present*

Affiliation: **IIT Guwahathi** one student, **IIT Roorkee** one student, **IIT Ropar** one student, **IIT(ISM) Dhanbad** one student, **NITK** six students, **NIT Trichy** one student, **Jadavpur University** one student, **PES University** one student, **BMS College of Engineering** two students, **IIIT-RK valley** one student.

Outcome: Two journals are under review, four conference publications, three web-tools are developed.

Six project assistants *Dec 2015 – Present*

Alumni of: **PES University** one, **SSN College of Engineering** one, **PEC University** one, **SKIT Bangalore** one, **JSS academy** two.

Outcome: Ten conference publications, one conference publication is submitted, three web-tools are developed.

Collaboration:

Xerox Research Center India, Bangalore, India *Jan 2014 – Apr 2017*

Central Institute of Indian Languages (CIIL), India *Apr 2017 – Dec 2019*

Maiyas Enterprises, Bangalore, India *Mar 2017 – Jul 2019*

appZoy Technologies Pvt. Ltd. *Oct 2018 – Present*

Bangalore school of English, Bangalore, India *Mar 2017 – Dec 2017*

English age, Bangalore, India *Jul 2017 – Dec 2017*

Professional:

Software engineer, *Aug 2006 – Jun 2007*

Hewlett-Packard (hp), Bangalore, India.

Administration:

UG course curriculum development, *Aug 2010 – Dec 2010*

B. Tech in Electronics and Instrumentation Engineering, KIIT University, Bhubaneswar, India.

Syllabus update/development, *Aug 2010 – Aug 2011*

Signals & Systems, Measurements & Instrumentation, Electrical & Electronic Measurements, Digital Signal Processing, Instrumentation-I, Advanced Control Systems, Process Control-I and Industrial Automation and Control

School of Electronics Engineering, KIIT University, Bhubaneswar, India.

Lab set-up, *Dec 2010 – Aug 2012*

Electrical & Electronic Measurement Lab, Control Systems Lab and Instrumentation Lab

School of Electronics Engineering, KIIT University, Bhubaneswar, India.

PUBLICATIONS

Journals (Accepted and/or Published):

1. **Chiranjeevi Yarra**, Supriya Nagesh, Om D. Deshmukh, Prasanta Kumar Ghosh, “Noise robust speech rate estimation using SNR dependent sub-band selection and peak detection strategy”. in The Journal of Acoustic Society of America, 146(3), pp. 1615-1628, 2019.
2. **Chiranjeevi Yarra**, Prasanta Kumar Ghosh, “Automatic intonation classification for British English speech using temporal patterns in utterance-level pitch contour and perceptually motivated pitch transformation,” in The Journal of Acoustic Society of America, 144(5), pp. EL471-476, 2018.
3. **Chiranjeevi Yarra**, Om D. Deshmukh, Prasanta Kumar Ghosh, “A frame selective dynamic programming (FSDP) approach for noise robust pitch estimation,” in The Journal of Acoustic Society of America, 143(4), pp. 2289-2300, 2018.
4. **Chiranjeevi Yarra**, Om D. Deshmukh, and Prasanta Kumar Ghosh, "A mode-shape classification technique for robust speechrate estimation and syllable nuclei detection", in Speech Communication, Elsevier, 78, pp. 62-71, 2016.

Conferences¹ (Accepted and/or Published):

5. **Chiranjeevi Yarra**, Kausthubha N K, Prasanta Kumar Ghosh, “SPIRE-ABC: An online tool for acoustic-unit boundary correction (ABC) via crowdsourcing”, accepted in Oriental COCODA 2020, Yangon, Myanmar.
6. Avni Rajpal, Achuth Rao MV, **Chiranjeevi Yarra**, Ritu Aggarwal, Prasanta Kumar Ghosh, “Pseudo likelihood correction technique for low resource accented ASR”, in *ICASSP* 2020, Barcelona, Spain.
7. **Chiranjeevi Yarra**, Ritu Aggarwal, Avni Rajpal, Prasanta Kumar Ghosh, “Indic TIMIT and Indic English lexicon: A speech database of Indian speakers using TIMIT stimuli and a lexicon from their mispronunciations”, in Oriental COCODA 2019, Cebu City, Philippines.
8. **Chiranjeevi Yarra**, Aparna Srinivasan, Chandana Srinivasa, Ritu Aggarwal, Prasanta Kumar Ghosh, “voisTUTOR corpus: A speech corpus of Indian L2 English learners for pronunciation assessment”, in Oriental COCODA 2019, Cebu City, Philippines.
9. **Chiranjeevi Yarra**, Manoj Kumar Ramanathi, Prasanta Kumar Ghosh, “Comparison of automatic syllable stress detection quality with time-aligned boundaries and context dependencies”, in *Interspeech* workshop on Speech and Language Technology for Education (SLaTE 2019), Graz, Austria.
10. Aparna Srinivasan, **Chiranjeevi Yarra**, Prasanta Kumar Ghosh, “Automatic assessment of pronunciation and its dependent factors by exploring their interdependencies using DNN and LSTM”, in *Interspeech* workshop on Speech and Language Technology for Education (SLaTE 2019), Graz, Austria.
11. Sweekar Sudhakara, Manoj Kumar Ramanathi, **Chiranjeevi Yarra**, Anurag Das, Prasanta Kumar Ghosh, “A comparative study of noise robustness of goodness of pronunciation (GoP) measures and its modifications based on teacher's utterance”, in *Interspeech* workshop on Speech and Language Technology for Education (SLaTE 2019), Graz, Austria.
12. **Chiranjeevi Yarra**, Prasanta Kumar Ghosh, “voisTUTOR: Virtual Operator for Interactive Spoken English TUTORing”, in *Interspeech* workshop on Speech and Language Technology for Education (SLaTE 2019), Graz, Austria.
13. Areyee Saha, **Chiranjeevi Yarra**, Prasanta Kumar Ghosh, “Low resource automatic intonation classification using gated recurrent unit (GRU) networks pre-trained with synthesized pitch patterns,” in *Interspeech* 2019, Graz, Austria.
14. Manoj Kumar Ramanathi, **Chiranjeevi Yarra**, Prasanta Kumar Ghosh, “ASR inspired unsupervised syllable stress detection for pronunciation evaluation,” in *Interspeech* 2019, Graz, Austria.
15. Sweekar Sudhakara, Manoj Kumar Ramanathi, **Chiranjeevi Yarra**, Prasanta Kumar Ghosh, “An improved goodness of pronunciation (GoP) measure for pronunciation evaluation with DNN-HMM system considering HMM transition probabilities,” in *Interspeech* 2019, Graz, Austria.
16. **Chiranjeevi Yarra**, Aparna Srinivasan, Srivani Gottimukkala, Prasanta Kumar Ghosh, “SPIRE-fluent: A self-learning app for tutoring oral fluency to second language English learners,” in *Interspeech* 2019, Graz, Austria.
17. **Chiranjeevi Yarra**, Prasanta Kumar Ghosh, “An automatic classification of intonation using temporal structure in utterance-level pitch patterns for British English speech,” in Indicon 2018, Coimbatore, India.
18. **Chiranjeevi Yarra**, Achuth Rao MV, Om D. Deshmukh, Prasanta Kumar Ghosh, “Automatic identification of native language from non-native spoken English audio using novel acoustic and prosodic feature selection strategies,” in Indicon 2018, Coimbatore, India.

¹ A1 conferences as per Qualis rankings are highlighted in **Bold** and *Italics*

19. **Chiranjeevi Yarra**, “Temporal analysis of spoken language learning for automatic tutoring” in Fourth Doctoral Consortium, Hyderabad, India.
20. Chandana S, **Chiranjeevi Yarra**, Ritu Aggarwal, Sanjeev Kumar Mittal, Kausthubha N K, Raseena K T, Astha Singh, Prasanta Kumar Ghosh, “Automatic visual augmentation for concatenation based synthesized articulatory videos from real-time MRI data for spoken language training,” in *Interspeech* 2018, Hyderabad, India.
21. Anand P A, **Chiranjeevi Yarra**, Kausthubha N K, Prasanta Kumar Ghosh, “Intonation tutor by SPIRE (In-SPIRE): An online tool for an automatic feedback to the second language learners in learning intonation,” in *Interspeech* 2018, Hyderabad, India.
22. **Chiranjeevi Yarra**, Anand P A, Kausthubha N K, Prasanta Kumar Ghosh, “SPIRE-SST: An automatic web-based self-learning tool for syllable stress tutoring (SST) to the second language learners,” in *Interspeech* 2018, Hyderabad, India.
23. Urvish Desai, **Chiranjeevi Yarra**, Prasanta Kumar Ghosh, "Concatenative articulatory video synthesis using real-time MRI data for spoken language training", in *ICASSP* 2018, Calgary, Canada.
24. Srinivasa Raghavan, Nisha Meenakshi, Sanjeev Kumar Mittal, **Chiranjeevi Yarra**, Anupam Mandal, KR Prasanna Kumar, Prasanta Kumar Ghosh, "A comparative study on the effect of different codecs on speech recognition accuracy using various acoustic modeling techniques", in Twenty-third National Conference on communications (NCC) 2017, Chennai, India.
25. **Chiranjeevi Yarra**, Om D. Deshmukh, Prasanta Kumar Ghosh, "Automatic detection of syllable stress using sonority based prominence features for pronunciation evaluation", in *ICASSP* 2017, New Orleans, USA.
26. Supriya Nagesh, **Chiranjeevi Yarra**, Om D. Deshmukh, Prasanta Kumar Ghosh, "A robust speech rate estimation based on the activation profile from the selected acoustic unit dictionary", in *ICASSP* 2016, Shanghai, China.
27. Nisha Meenakshi, **Chiranjeevi Yarra**, B. K. Yamini, Prasanta Kumar Ghosh, “Comparison of speech quality with and without sensors in electromagnetic articulograph AG 501 recording.”, in *Interspeech* 2014, MAX Atria, Singapore.
28. **Chiranjeevi Yarra**, Santosh Biswas and Siddarth Mukhopadhyay, “Synthesis of analog inputs for testing of digital modules in mixed signal VLSI circuits”, in Thirteenth VDAT symposium 2009, Bangalore, India.

Journals (Under Review):

29. **Chiranjeevi Yarra**, Vijaya Krishna Nagnoor, Prasanta Kumar Ghosh, “A study on speech rhythm discrimination among seven Indian languages -- Hindi, Bengali, Marathi, Kannada, Malayalam, Tamil and Telugu”.
30. **Chiranjeevi Yarra**, Prasanta Kumar Ghosh, “Automatic syllable stress detection under non-parallel label and data conditions”.
31. **Chiranjeevi Yarra**, Prasanta Kumar Ghosh, “Noise robust pitch stylization using minimum absolute error criterion”.
32. Aparna Srinivasan, Divya Singh, **Chiranjeevi Yarra**, Aravind Illa, Prasanta Kumar Ghosh, "A robust speaking rate estimator using a CNN-BLSTM network".

TOOLS DEVELOPED

1. **voisTUTOR**: <https://spire.ee.iisc.ac.in/voisTUTOR>
Online tool for learning spoken English pronunciation.
2. **SPIRE-ABC**: <https://spire.ee.iisc.ac.in/spire-abc/>
Online tool for acoustic-unit boundary correction.
3. **Pronunciation quality analysis**: <https://spire.ee.iisc.ac.in/pqa>
Online tool for annotating the pronunciation quality of the learners spoken English pronunciation.
4. <https://spire.ee.iisc.ac.in/ipaChart>
Online tool for transcribing the phonemes of spoken data.
5. **In-SPIRE**: <https://spire.ee.iisc.ac.in/In-SPIRE/>
Online tool for an automatic feedback to the second language learners in learning intonation.
6. **SPIRE-SST**: <https://spire.ee.iisc.ac.in/SPIRE-SST/>
Automatic web-based self-learning **tool** for syllable stress tutoring to the second language learners.

TALKS/DEMOS/POSTERS

1. Talk delivered at Department of EE, IIT Dharwad, India, Mar 2020.
2. Talk delivered at Department of EE, IIT Gandhinagar, India, Jan 2020.
3. Talk delivered at Oriental COCOSDA, Cebu city, Philippines, Oct 2019.
4. Talk delivered at Interspeech workshop on SLaTE, Sep 2019.
5. Demo presented at Interspeech workshop on SLaTE, Sep 2019.
6. Demo presented at Interspeech-2019, Graz, Austria, Sep 2018.
7. Demo presented at Interspeech-2018, Hyderabad, Sep 2018.
8. Talk delivered at Interspeech-2018, Sep 2018.
9. Talk delivered at Fourth doctoral consortium, Hyderabad, Sep 2018.
10. Talk delivered at EECS symposium, IISc, Bangalore, Apr 2018.
11. Poster presentation at EECS symposium, IISc, Bangalore, Apr 2018.
12. Demo presentation in open day event at Department of Electrical Engineering, IISc, Bangalore, Mar 2018.
13. Demo presentation in open day event at Department of Electrical Engineering, IISc, Bangalore, Mar 2017.
14. Talk delivered in Effective communication series at Department of Electrical Engineering, IISc, Jun 2016.
15. Poster presentation at ICASSP 2016, Shanghai, China, Mar 2016.
16. Demo presentation in open day event at Department of Electrical Engineering, IISc, Mar 2016, Feb 2015.
17. Talk delivered at review meeting by CII and DST, Mumbai, June 2015.
18. Demo presentation in open day event at Department of Electrical Engineering, IISc, Feb 2015.
19. Talk delivered at VDAT Symposium, Bangalore, Jul 2009.

CONFERENCES/WORKSHOPS/SUMMER/WINTER SCHOOLS: (attended)

1. Oriental COCOSDA, Oct 2019, Cebu city, Philippines.
2. Interspeech, Sep 2019, Graz, Austria, India.
3. English in India and Indian Englishes: New horizons in the study of Phonetics and Phonology, Sep 2018, University of Hyderabad, Hyderabad, India.
4. Interspeech, Sep 2018, Hyderabad, India.
5. IEEE International Conference on Acoustics, Speech and Signal Processing, Apr 2018, Calgary, Canada
6. Spatial Audio Processing, WiSSAP, Jan 2017, IISc, Bangalore, India.
7. IEEE International Conference on Acoustics, Speech and Signal Processing, Apr 2016, Shanghai, China
8. Speech prosody, WiSSAP, Jan 2016, SSN College of Engineering, Chennai, India.
9. Learning sparse representations for signal processing, Feb 2015, IISc, Bangalore, India.
10. Production-perception based models of speech analysis, WiSSAP, Jan 2015, DAIICT, Gandhinagar, India.
11. Deep learning for multi-lingual speech processing, WiSSAP, Jan 2014, IIIT, Hyderabad, India.
12. High dimensional network analytics, Dec 2013, IISc, Bangalore, India.
13. Challenges in FPGA based digital system design, Jun 2011, SVECW, Bhimavaram, India.
14. Soft computing and optimization techniques, Apr 2011, KIIT University, Bhubaneswar, India.
15. DSP using LabView, Jul 2010, Indo-US Engineering Faculty Leadership at SVECW, Bhimavaram, India.

MEMBERSHIPS

1. Reviewer, Circuits, Systems & Signal Processing (CSSP)
2. Reviewer, Interspeech 2020
3. Reviewer, ICASSP 2021
4. Student member, International Speech Communication Association.
5. Student member, IEEE
6. Student member, IEEE Signal Processing Society