



Name : Dr. T. Nagarajan
Designation : Professor and Head
Department : Computer Science and Engineering
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Profile Summary

Dr. T. Nagarajan earned his PhD degree from the Computer Science and Engineering department of IIT Madras in the year 2004. In his doctoral research, he was working on spoken language identification task. After his PhD, he joined TeNet group of IITM as a Senior-project-officer. During this period, he was working on a project, named, Multimodal Interface. Subsequently, he joined the National Institute of Scientific Research (INRS), Montreal, Canada, as a postdoctoral fellow and worked there for two years. During his postdoctoral research he was focusing on Continuous speech recognition task, in which he specifically focused on discriminative training techniques for better classification. After two years of postdoctoral research, he has joined SSN College of Engineering as a professor and he has been serving SSN since then.

Educational Qualifications:

- 2004 Ph. D - Computer Science and Engineering, IIT Madras
- 1992 M. E - Madurai Kamaraj University

Work Experience

- 2009 – till date Professor and Head, Department of IT, SSN College of Engineering
- 2006 – 2009 Professor, Department of IT, SSN College of Engineering
- 2005 – 2006 Post-Doctoral Fellow, INRS, University of Quebec, Montreal, Canada
- 2004 – 2005 Senior Project Officer, IC & SR, IIT Madras
- 2000 – 2004 Teaching Assistant, Department of CSE, IIT Madras
- 1995 – 2000 Assistant Professor and Head, PMC Tech, Thanjavur
- 1992 – 1995 Senior Lecturer, PMC Tech, Thanjavur

Research Areas

- Automatic Speech Recognition
- Text-to-Speech Synthesis
- Speech Signal Processing
- Acoustic Modeling
- Machine Learning
- Music Signal Processing

Courses Taught (frequently handled alone)

- Speech Signal Processing
- Digital Signal Processing
- Data Mining
- Big Data Analytics

Awards:

2020 Chief Minister's Award for Tamil Computing for the year 2019, from the government of Tamil Nadu, for his contribution to Tamil for building a lightweight HMM-Based speech synthesizer and developing various applications.

Scholarly Activity:

(a) Projects

- Title: Standalone Domain Specific Speech to Speech translator for English and Indian Languages
Funding Agency: **IMPREST IIC**
Investigator: **Dr. T. Nagarajan**
Co-Investigator: Dr. P. Vijayalakshmi
Status: Proposal Submitted – consortium mode with IITDh as lead
SSN's part of total fund: Rs. 113 lakhs
Duration: 2020 – 2024
- Title: **Tamil Pronunciation Error Detection Aid for Children – Prototype**
Funding Agency: **Murasu Systems Sdn Bhd**, Malaysia

Chief Investigator: **Dr. T. Nagarajan**
Co-Investigator: Dr. P. Vijayalakshmi
Status: Completed
Duration: Sep 2019 – Sep 2019
Amount: Rs. 0.5 lakh

- Title: **Speech Assistive Aids for Visually-Challenged People**
Funding Agency: **Tamil Virtual Academy (TVA)**, Chennai
Chief Investigator: **Dr. T. Nagarajan**
Co-Investigator: Dr. P. Vijayalakshmi
Status: Completed
Duration: Aug 2018 – Aug 2019
Amount: Rs. 25 lakhs
- Title: **Speech-Input Speech-Output Communication Aid (SISOCA) for Speakers with Cerebral Palsy**
Funding Agency: **DST-TIDE**
Chief Investigator: Dr. P. Vijayalakshmi
Co-Investigator: **Dr. T. Nagarajan**
Status: Ongoing
Duration: May 2017 – Apr 2020
Amount: Rs. 13.72 lakh
- Title: **HMM-based Text-to-Speech Synthesis System for Malaysian Tamil**
Funding Agency: **Murasu Systems Sdn Bhd**, Malaysia
Chief Investigator: **Dr. T. Nagarajan**
Co-Investigator: Dr. P. Vijayalakshmi
Status: Completed
Duration: Nov 2016 – Jul 2017
Amount: Rs. 4 lakh
- Title: **Speech-Enabled Interactive Enquiry System in Tamil**
Funding Agency: **Tamil Virtual Academy (TVA)**, Chennai
Chief Investigator: **Dr. T. Nagarajan**
Co-Investigators: Dr. P. Vijayalakshmi, Dr. B. Bharathi, Ms. S. Sasirekha
Status: Completed
Duration: Mar 2016 – July 2017
Amount: Rs. 9.52 lakh
- Title: **Development of Text-to-Speech System in Indian Languages: High-Quality Text-to-Speech Synthesis and Small Footprint TTS Integrated with Disability Aids** (A consortium project with IIT Madras as Team Leader)
Funding Agency: **Ministry of Electronics and Information Technology (MeitY)**, Government of India, New Delhi
Chief Investigator at SSNCE: **Dr. T. Nagarajan**
Co-Investigators at SSNCE: Dr. P. Vijayalakshmi and Dr. A. Shahina
Status: Completed
Duration: 2012 – 2017
Amount: Rs.77 lakh

- Title: **An assessment and intelligibility modification system for dysarthric speakers**
Funding Agency: **AICTE – RPS (A), New Delhi**
Investigators: Dr. P. Vijayalakshmi and **Dr. T. Nagarajan**
Status: Completed
Duration: 2010 – 2012
Amount: Rs. 9 lakh
- Title: **Design of lab model of speech processor for cochlear implants**
Funding Agency: **SSN Trust**
Investigators: Dr. P. Vijayalakshmi, **Dr. T. Nagarajan** & Dr. A. Shahina
Status: Completed
Duration: 2010 – 2012
Amount: Rs. 0.8 lakh
- Title: **Anatomical vibration sensor speech corpus for speech applications in noisy environments.**
Funding Agency: **SSN Trust**
Investigators: Dr. A. Shahina, **Dr. T. Nagarajan** & Dr. P. Vijayalakshmi
Status: Completed
Duration: 2010 – 2012
Amount: Rs. 1.23 lakh
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(b) Journal Publications (accepted or published)

1. Rachel, G.A., Vijayalakshmi, P. & **Nagarajan, T.** Analysis of algorithms to estimate glottal closure instants from speech signals. *International Journal of Speech Technology* (Sept 2020). <https://doi.org/10.1007/s10772-020-09752-5>
2. M. P. A. Jeeva, **T. Nagarajan** and P. Vijayalakshmi, "Adaptive multi-band filter structure-based far-end speech enhancement," in *IET Signal Processing*, vol. 14, no. 5, pp. 288-299, June 2020, doi: 10.1049/iet-spr.2019.0226.
3. Lavanya T, **Nagarajan. T** and Vijayalakshmi. P, Multi-Level Single-Channel Speech Enhancement Using a Unified Framework for Estimating Magnitude and Phase Spectra, *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, 28, 1315-1327, 13 April 2020
4. T. A. M. Celin, **T. Nagarajan** and P. Vijayalakshmi, Data Augmentation Using Virtual Microphone Array Synthesis and Multi-Resolution Feature Extraction for Isolated Word Dysarthric Speech Recognition, *IEEE Journal of Selected Topics in Signal Processing*, 14, 2, 346-354, Feb 2020. doi: 10.1109/JSTSP.2020.2972161. (IF 6.68)
5. A. Mariya Celin, G. Anushiya Rachel, **T. Nagarajan** and P. Vijayalakshmi, "A Weighted Speaker-Specific Confusion Transducer Based Augmentative and Alternative Speech Communication Aid for Dysarthric Speakers", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, Vol. 27, Issue 2, pp. 187-197, Feb 2019.
6. Mrinalini, **T. Nagarajan** and P. Vijayalakshmi, "Pause-Based Phrase Extraction and Effective OOV Handling for Low-Resource Machine Translation Systems", *ACM*

Transactions on Asian and Low Resource Language Information Processing, Vol. 18, Issue 2, pp. 12:1-12:22, Feb 2019.

7. Anushiya Rachel, N. Sripriya, P. Vijayalakshmi and **T. Nagarajan**, "Significance of Differenced EGG Signal as a Spectrum in Phase-Difference Computation for the Estimation of Glottal Closure Instants", *Circuits, Systems, and Signal Processing*, Vol. 37, Issue 5, pp. 2074 – 2097, May 2018.
8. Vijayalakshmi, B. Ramani, M. P. Actlin Jeeva and **T. Nagarajan** "A Multilingual to Polyglot Speech Synthesizer for Indian Languages Using a Voice-Converted Polyglot Speech Corpus", *Circuits, Systems and Signal Processing*, Vol. 37, Issue 5, pp. 2142 – 2163, May 2018.
9. Dhanalakshmi, T. A. Mariya Celin, **T. Nagarajan** and P. Vijayalakshmi, "Speech-Input Speech-Output Communication for Dysarthric Speakers Using HMM-Based Speech Recognition and Adaptive Synthesis System", *Circuits, Systems and Signal Processing*, Vol. 37, Issue 2, pp. 674 – 703, Feb. 2018.
10. Anushiya Rachel, P. Vijayalakshmi and **T. Nagarajan**, "Estimation of Glottal Closure Instants from Degraded Speech using a Phase-Difference-Based Algorithm", *Computer Speech, and Language*, Vol. 46, pp. 136 – 153, Nov. 2017.
11. Sherlin Solomi, P. Vijayalakshmi and **T. Nagarajan**, "Exploiting Acoustic Similarities Between Tamil and Indian English in the Development of an HMM-based Bilingual Synthesizer", *IET Signal Processing*, Vol. 11, Issue 3, pp. 332-340, May 2017.
12. Ramani, M. P. Actlin Jeeva, P. Vijayalakshmi and **T. Nagarajan**, "A Multi-level GMM-Based Cross-Lingual Voice Conversion Using Language-Specific Mixture Weights for Polyglot Synthesis", *Circuits, Systems and Signal Processing*, Vol. 35, pp. 1283-1311, Apr. 2016.
13. P. Actlin Jeeva, **T. Nagarajan**, P. Vijayalakshmi, "DCT derived spectrum-based speech enhancement algorithm using temporal-domain multiband filtering", *IET Signal Processing*, Vol. 10, Issue 8, pp. 965-980, Oct. 2016.
14. Anushiya Rachel, V. Sherlin Solomi, K. Naveenkumar P. Vijayalakshmi and **T. Nagarajan**, "A small footprint context-independent HMM-based speech synthesizer for Tamil", *International Journal of Speech Technology*, Vol. 18, Issue 3, pp. 405 – 418, Sep. 2015.
15. Sripriya, **T. Nagarajan**, "Estimation of glottal closure instants considering the speech signal as a spectrum", *IET Electronic Letters*, Vol. 51, Issue 8, pp. 649 – 651, Apr. 2015.
16. Bharathi, **T. Nagarajan**, "Speaker verification using speaker-specific-text", in *WSEAS Transactions on Signal Processing*, Vol. 10, pp. 320-330, July 2014.
17. Bharathi, C. Arunkumar and **T. Nagarajan**, "Improving the performance of speaker and language identification task using unique characteristics of a class", *International Journal of Speech Technology*, Vol. 16, Issue 1, pp. 115-124, 2012.
18. Vijayalakshmi, **T. Nagarajan** and Preethi Mahadevan, "Improving speech intelligibility in cochlear implants using acoustic models", *WSEAS Transactions on Signal Processing*, Vol. 7, Issue 4, pp. 103 – 116, Oct. 2011.

19. Vijayalakshmi, T. **Nagarajan** and M. R. Reddy, "Assessment of articulatory and velopharyngeal sub-systems of dysarthric speech", *International Journal of BSCHS*, special issue on Biosensors: Data acquisition, Processing and Control, Vol. 14, No. 2, pp 87 -94, Jun. 2009.
20. Lakshmi Sarada, A. Lakshmi, T. **Nagarajan** and Hema A. Murthy, "Automatic transcription of continuous speech into syllable-like units for Indian languages", *SADHANA*, Vol.34, part 2, pp. 221-233, April 2009.
21. **Nagarajan** and Hema A. Murthy, "Language identification using acoustic log-likelihoods of syllable-like units", *Speech Communications, Elsevier publications*, Vol.48, pp. 913-926, 2006.
22. Douglas O'Shaughnessy, Wayne Wang, Willian Zhu, Vincent Barreaud, **Nagarajan** and R. Muralishankar, "Toward better automatic speech recognition", *Canadian Acoustics Journal*, Vol. 33, No. 3, pp.48-49, 2005.
23. O'Shaughnessy, D., Wang, W., Zhu, W., Barreaud, V., **Nagarajan, T.**, & Muralishankar, R. (2005). Improving automatic speech recognition via better analysis and adaptation. *The Journal of the Acoustical Society of America*, 118(3), 2027-2027.
24. **Nagarajan** and Hema A. Murthy, "Sub-band based Group delay segmentation of spontaneous speech into syllable-like units", *EURASIP Journal on Applied Signal Processing*, Vol. 17, pp. 2612-2625, 2004.
25. Kamakshi Prasad, T. **Nagarajan** and Hema A. Murthy, "Automatic segmentation of continuous speech using minimum phase group delay functions", *Speech Communications, Elsevier publications*, Vol. 42, pp. 429-446, 2004.
26. **Nagarajan T.**, V. Kamakshi Prasad and Hema A. Murthy, "The minimum phase signal derived from the root cepstrum", *IEE Electronic Letters*, Vol. 39, No. 12, pp. 941-942, 2003.

(c) Conference/Symposium

1. Joysingh, S. J., Vijayalakshmi, P., & **Nagarajan, T.** (2019, October). Development of Large Annotated Music Datasets using HMM based Forced Viterbi Alignment. In TENCON 2019-2019 IEEE Region 10 Conference (TENCON) (pp. 1298-1302). IEEE.
2. T. Lavanya, K. Mrinalini, P. Vijayalakshmi and T. **Nagarajan**, "Histogram Matching based Optimized Energy Redistribution for Near End Listening Enhancement," TENCON 2019 - 2019 IEEE Region 10 Conference (TENCON), Kochi, India, 2019, pp. 1307-1312, doi: 10.1109/TENCON.2019.8929292.
3. M. Nanmalar, P. Vijayalakshmi and T. **Nagarajan**, "Literary and Colloquial Dialect Identification for Tamil using Acoustic Features," *TENCON 2019 - 2019 IEEE Region 10 Conference (TENCON)*, Kochi, India, 2019, pp. 1303-1306, doi: 10.1109/TENCON.2019.8929499.
4. V. Aiswarya, N. Naren Raju, S. S. Johanan Joy, T. **Nagarajan** and P. Vijayalakshmi, "Hidden Markov Model-Based Sign Language to Speech Conversion System in TAMIL,"

2018 Fourth International Conference on Biosignals, Images and Instrumentation (ICBSII), Chennai, 2018, pp. 206-212, doi: 10.1109/ICBSII.2018.8524802.

5. G. A. Rachel, P. Vijayalakshmi and **T. Nagarajan**, "Significance of Radius in the Phase-Difference-Based Approach to the Estimation of Glottal Closure Instants," *2018 International Conference on Computer, Communication, and Signal Processing (ICCCSP)*, Chennai, 2018, pp. 1-5, doi: 10.1109/ICCCSP.2018.8452851.
6. M. Dhanalakshmi, T. A. M. Celin, **T. Nagarajan** and P. Vijayalakshmi, "Electromagnetic articulograph sensor-to-sound unit mapping-based intelligibility assessment of dysarthric speech," *TENCON 2017 - 2017 IEEE Region 10 Conference*, Penang, 2017, pp. 1784-1789, doi: 10.1109/TENCON.2017.8228147.
7. Mariya Celin T A, **Nagarajan T** and Vijayalakshmi P, "Dysarthric speech corpus in Tamil for rehabilitation research," *2016 IEEE Region 10 Conference (TENCON)*, Singapore, 2016, pp. 2610-2613, doi: 10.1109/TENCON.2016.7848510.
8. M. P. A. Jeeva, **T. Nagarajan** and P. Vijayalakshmi, "Formant filters-based multi-band speech enhancement algorithm for intelligibility improvement," *2016 Twenty Second National Conference on Communication (NCC)*, Guwahati, 2016, pp. 1-6, doi:10.1109/NCC.2016.7561149.
9. M. P. Actlin Jeeva, **T. Nagarajan** and P. Vijayalakshmi, "Temporal-domain filtering approach for multiband speech enhancement," *2015 International Conference on Microwave, Optical and Communication Engineering (ICMOCE)*, Bhubaneswar, 2015, pp. 385-388, doi: 10.1109/ICMOCE.2015.7489773.
10. Janani Chellam I, Anushiya Rachel G, Vijayalakshmi P and **Nagarajan T**, "Prosodic modification of speech to incorporate happy and sad emotions," *2015 International Conference on Computation of Power, Energy, Information and Communication (ICCPEIC)*, Chennai, 2015, pp. 0183-0188, doi: 10.1109/ICCPEIC.2015.7259461.
11. Rachel, G. A., Vijayalakshmi, P., & **Nagarajan, T.** (2015). Estimation of Glottal Closure Instants from Telephone Speech using a Group Delay-Based Approach that Considers Speech Signal as a Spectrum.
12. Ramani, B., Jeeva, M. A., Vijayalakshmi, P., & **Nagarajan, T.** (2014). Cross-lingual voice conversion-based polyglot speech synthesizer for Indian languages. In Fifteenth annual conference of the international speech communication association.
13. Prakash, A., Reddy, M. R., **Nagarajan, T.**, & Murthy, H. A. (2014, February). An approach to building language-independent text-to-speech synthesis for Indian languages. In 2014 Twentieth National Conference on Communications (NCC) (pp. 1-5). IEEE.
14. V. S. Solomi, M. S. Saranya, G. A. Rachel, P. Vijayalakshmi and **T. Nagarajan**, "Performance comparison of KLD and PoG metrics for finding the acoustic similarity between phonemes for the development of a polyglot synthesizer," *TENCON 2014 - 2014 IEEE Region 10 Conference*, Bangkok, 2014, pp. 1-4, doi: 10.1109/TENCON.2014.7022438.
15. G. A. Rachel, S. Sreenidhi, P. Vijayalakshmi and **T. Nagarajan**, "Incorporation of happiness into neutral speech by modifying emotive-keywords," *TENCON 2014 - 2014*

IEEE Region 10 Conference, Bangkok, 2014, pp. 1-6, doi: 10.1109/TENCON.2014.7022458.

16. T. Ramya, S. L. Christina, P. Vijayalakshmi and **T. Nagarajan**, "Analysis on MAP and MLLR based speaker adaptation techniques in speech recognition," *2014 International Conference on Circuits, Power and Computing Technologies [ICCPCT-2014]*, Nagercoil, 2014, pp. 1753-1758, doi: 10.1109/ICCPCT.2014.7054938.
17. S. Sreenidhi, P. Vijayalakshmi, G. A. Rachel and **T. Nagarajan**, "LP and TD-PSOLA-based incorporation of happiness in neutral speech using time-domain parameters," *2014 International Conference on Circuits, Power and Computing Technologies [ICCPCT-2014]*, Nagercoil, 2014, pp. 1158-1162, doi: 10.1109/ICCPCT.2014.7054931.
18. Prahallad, K., Vadapalli, A., Kesiraju, S., Murthy, H., Lata, S., **Nagarajan, T.**, ... & Black, A. W. (2014, February). The blizzard challenge 2014. In *Proc. Blizzard Challenge workshop* (Vol. 2014).
19. Bharathi, B., & **Nagarajan, T.** (2014). Speaker verification using speaker-specific-text. *WSEAS Transactions on Signal Processing*, 10, 320-330.
20. Patil, Hemant A., Tanvina B. Patel, Nirmesh J. Shah, Hardik B. Sailor, Raghava Krishnan, G. R. Kasthuri, **T. Nagarajan** et al. "A syllable-based framework for unit selection synthesis in 13 Indian languages." In 2013 International Conference Oriental COCOSDA held jointly with 2013 Conference on Asian Spoken Language Research and Evaluation (O-COCOSDA/CASLRE), pp. 1-8. IEEE, 2013.
21. Boothalingam, Ramani, V. Sherlin Solomi, Anushiya Rachel Gladston, S. Lilly Christina, P. Vijayalakshmi, **Nagarajan Thangavelu**, and Hema A. Murthy. "Development and evaluation of unit selection and HMM-based speech synthesis systems for Tamil." In 2013 National Conference on Communications (NCC), pp. 1-5. IEEE, 2013.
22. Ramani, B. / Christina, S. Lilly / Rachel, G. Anushiya / Solomi, V. Sherlin / Nandwana, Mahesh Kumar / Prakash, Anusha / Shanmugam, S. Aswin / Krishnan, Raghava / Prahallad, S. Kishore / Samudravijaya, K. / Vijayalakshmi, P. / **Nagarajan, T.** / Murthy, Hema A. (2013): "A common attribute based unified HTS framework for speech synthesis in Indian languages", In SSW8, 291-296, Eighth ISCA Workshop on Speech Synthesis, Barcelona, Catalonia, Spain, August 31-September 2, 2013.
23. Ramani, B., Jeeva, M. A., Vijayalakshmi, P., & **Nagarajan, T.** (2013, October). Voice conversion-based multilingual to polyglot speech synthesizer for Indian languages. In 2013 IEEE International Conference of IEEE Region 10 (TENCON 2013) (pp. 1-4). IEEE.
24. V. S. Solomi, S. L. Christina, G. A. Rachel, B. Ramani, P. Vijayalakshmi and **T. Nagarajan**, "Analysis on acoustic similarities between Tamil and English phonemes using product of likelihood-Gaussians for an HMM-based mixed-language synthesizer," *2013 International Conference Oriental COCOSDA held jointly with 2013 Conference on Asian Spoken Language Research and Evaluation (O-COCOSDA/CASLRE)*, Gurgaon, 2013, pp. 1-5, doi: 10.1109/ICSDA.2013.6709898.
25. Sripriya, N., and **T. Nagarajan**. "Pitch estimation using harmonic product spectrum derived from DCT." *2013 IEEE International Conference of IEEE Region 10 (TENCON 2013)*. IEEE, 2013.

26. Bharathi, B., & **Nagarajan, T.** (2013, October). GMM and i-vector based speaker verification using speaker-specific-text for short utterances. In 2013 IEEE International Conference of IEEE Region 10 (TENCON 2013) (pp. 1-4). IEEE.
27. Rachel, G. A., Christina, S. L., Solomi, V. S., Ramani, B., Vijayalakshmi, P., & **Nagarajan, T.** (2013, November). Development and analysis of various phone-sized unit-based speech synthesizers. In *2013 International Conference Oriental COCOSDA held jointly with 2013 Conference on Asian Spoken Language Research and Evaluation (O-COCOSDA/CASLRE)* (pp. 1-5). IEEE.
28. B. Bharathi and **N. Thangavelu**, "A two-level approach for speaker recognition using speaker-specific-text," *2013 National Conference on Communications (NCC)*, New Delhi, India, 2013, pp. 1-5, doi: 10.1109/NCC.2013.6487997.
29. S. Lilly Christina, P. Vijayalakshmi and **T. Nagarajan**, "HMM-based speech recognition system for the dysarthric speech evaluation of articulatory subsystem," 2012 International Conference on Recent Trends in Information Technology, Chennai, Tamil Nadu, 2012, pp. 54-59, doi: 10.1109/ICRTIT.2012.6206798.
30. M. Saranya, P. Vijayalakshmi and **N. Thangavelu**, "Improving the intelligibility of dysarthric speech by modifying system parameters, retaining speaker's identity," *2012 International Conference on Recent Trends in Information Technology*, Chennai, Tamil Nadu, 2012, pp. 60-65, doi: 10.1109/ICRTIT.2012.6206799.
31. Bharathi, B., Vijayalakshmi, P., & **Nagarajan, T.** (2011, January). Speaker identification using utterances correspond to speaker-specific-text. In IEEE Technology Students' Symposium (pp. 171-174). IEEE.
32. P. Mahadevan, B. Pavithra, S. Shri Ranjani, P. Vijayalakshmi and **T. Nagarajan**, "Design of a lab model of a Digital Speech Processor for cochlear implant," *TENCON 2011 - 2011 IEEE Region 10 Conference*, Bali, 2011, pp. 307-311, doi: 10.1109/TENCON.2011.6129114.
33. T. Monica and **T. Nagarajan**, "Segmentation of speech signal into phonemes using two-level GMM tokenization," *2011 International Conference on Recent Trends in Information Technology (ICRTIT)*, Chennai, Tamil Nadu, 2011, pp. 843-847, doi: 10.1109/ICRTIT.2011.5972311.
34. S. Harish, P. Vijayalakshmi and **T. Nagarajan**, "Significance of segmentation in phoneme based Tamil speech recognition system," *2011 3rd International Conference on Electronics Computer Technology*, Kanyakumari, 2011, pp. 212-215, doi: 10.1109/ICECTECH.2011.5941739.
35. P. Vijayalakshmi, A. Abraham, B. Bharathi and **T. Nagarajan**, "Reducing the complexity of a triphone-based speech recognition system based on degree of coarticulation," *IEEE Technology Students' Symposium*, Kharagpur, 2011, pp. 175-179, doi: 10.1109/TECHSYM.2011.5783820.
36. A. Saranya, N. Sripriya and **T. Nagarajan**, "Design of a VOCODER using instants of significant excitation," *2011 International Conference on Signal Processing, Communication, Computing and Networking Technologies*, Thuckafay, 2011, pp. 742-746, doi: 10.1109/ICSCCN.2011.6024649.

37. Anu Abraham, P. Vijayalakshmi and **T. Nagarajan**, "Pole-focused linear prediction-based spectrogram for coarticulation analysis," 2010 IEEE Students Technology Symposium (TechSym), Kharagpur, 2010, pp. 94-97, doi: 10.1109/TECHSYM.2010.5469215.
38. P. Vijayalakshmi, P. M. Kumar, R. V. Jayanthan and **T. Nagarajan**, "Cochlear implant models based on critical band filters," TENCON 2009 - 2009 IEEE Region 10 Conference, Singapore, 2009, pp. 1-5, doi: 10.1109/TENCON.2009.5396145.
39. C. A. Kumar, B. Bharathi and **T. Nagarajan**, "A discriminative GMM technique using product of likelihood gaussians," TENCON 2009 - 2009 IEEE Region 10 Conference, Singapore, 2009, pp. 1-6, doi: 10.1109/TENCON.2009.5395959.
40. N. Sripriya, P. Vijayalakshmi, C. A. Kumar and **T. Nagarajan**, "Estimation of instants of significant excitation from speech signal using temporal phase periodicity," *TENCON 2009 - 2009 IEEE Region 10 Conference*, Singapore, 2009, pp. 1-4, doi: 10.1109/TENCON.2009.5395962.
41. P. Vijayalakshmi, **T. Nagarajan** and J. Rav, "Selective pole modification-based technique for the analysis and detection of hypernasality," *TENCON 2009 - 2009 IEEE Region 10 Conference*, Singapore, 2009, pp. 1-5, doi: 10.1109/TENCON.2009.5396117.
42. **T. Nagarajan** and D. O'Shaughnessy, "Bias Estimation and Correction in a Classifier using Product of Likelihood-Gaussians," 2007 IEEE International Conference on Acoustics, Speech and Signal Processing - ICASSP '07, Honolulu, HI, 2007, pp. III-1061-III-1064, doi: 10.1109/ICASSP.2007.366866.
43. **Nagarajan, T.**, & O'Shaughnessy, D. (2006). Discriminative MLE training using a product of Gaussian likelihoods. In *Ninth International Conference on Spoken Language Processing*.
44. **Nagarajan, T.**, Vijayalakshmi, P., & O'Shaughnessy, D. (2006). Combining multiple-sized sub-word units in a speech recognition system using baseform selection. In *Ninth International Conference on Spoken Language Processing*.
45. Hemalatha, N., Sarada, G. L., **Nagarajan, T.**, & Murthy, H. A. (2005). Connected digit recognition using unsupervised and incremental HMMs. In *Proc. of the Eleventh National Conference on Communication (NCC)*.
46. **Nagarajan, T.** / O'Shaughnessy, Douglas (2005): "Explicit segmentation of speech based on frequency-domain AR modeling", In *INTERSPEECH-2005*, 653-656.
47. Rao, M. N., Thomas, S., **Nagarajan, T.**, & Murthy, H. A. (2005, January). Text-to-Speech Synthesis using syllable-like units. In *National conference on communication* (pp. 227-280)
48. **Nagarajan, T.**, Murthy, H. A., & Hemalatha, N. (2004, September). Automatic segmentation and labeling of continuous speech without bootstrapping. In *2004 12th European Signal Processing Conference* (pp. 561-564). IEEE.
49. Sarada, G. L., **Nagarajan, T.**, & Murthy, H. A. (2004, December). Multiple frame size and multiple frame rate feature extraction for speech recognition. In *2004 International Conference on Signal Processing and Communications, 2004. SPCOM'04.* (pp. 592-595). IEEE.

50. **T. Nagarajan** and H. A. Murthy, "Language identification using parallel syllable-like unit recognition," 2004 IEEE International Conference on Acoustics, Speech, and Signal Processing, Montreal, Que., Aug 2004, pp. I-401, doi: 10.1109/ICASSP.2004.1326007.
51. Ghadiyaram, GL Sarada, N. Hemalatha Nagarajan, **T. Nagarajan Thangavelu**, and Hema A. Murthy. "Automatic transcription of continuous speech using unsupervised and incremental training." In Eighth International Conference on Spoken Language Processing. 2004.
52. **Nagarajan, T.**, & Murthy, H. A. (2004, January). An approach to segmentation and labeling of continuous speech without bootstrapping. In *Proceedings of National Conference of Communication* (pp. 508-512).
53. **Nagarajan, T.**, Hema A. Murthy, and Rajesh M. Hegde. "Group delay based segmentation of spontaneous speech into syllable-like units." ISCA & IEEE Workshop on Spontaneous Speech Processing and Recognition. 2003.
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