

Kartik Audhkhasi

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Education

- **Doctor of Philosophy in Electrical Engineering** (Fall 2008 -)
Advisor: Prof. Shrikanth S. Narayanan
Signal Analysis and Interpretation Lab (SAIL)
Signal and Image Processing Institute (SIPI)
Electrical Engineering Department
University of Southern California
Los Angeles, California, USA
GPA: 4.0/4.0
- **Bachelor of Technology in Electrical Engineering** (Fall 2003 - Spring 2008)
Master of Technology in Information and Communication Technology
Indian Institute of Technology, Delhi, India
GPA: 9.9/10.0 (Graduate), 8.7/10.0 (Undergraduate)

Research Interests

- **Specific:** Context Enriched Speech-to-Speech Translation, Multi-lingual Speech Recognition, Speech Processing, Human Language Technologies
- **General:** Machine Learning, Signal Processing

Publications

1. **Kartik Audhkhasi**, Panayiotis Georgiou and Shrikanth Narayanan, “*Lattice-based lexical cues for word fragment detection in conversational speech*”, Accepted in ASRU, Merano, Italy, December 2009.
2. **Kartik Audhkhasi**, Kundan Kandhway, Om Deshmukh and Ashish Verma, “*Formant-based technique for automatic filled-pause detection in spontaneous spoken English*”, Proc. ICASSP, Taipei, Taiwan, pp. 4857-4860, April 2009.
3. Om Deshmukh, Kundan Kandhway, Ashish Verma and **Kartik Audhkhasi**, “*Automatic evaluation of spoken English fluency*”, Proc. ICASSP, Taipei, Taiwan, pp. 4829-4832, April 2009.
4. **Kartik Audhkhasi** and Ashish Verma, “*Keyword search using modified minimum edit distance measure*”, Proc. ICASSP, Honolulu, Hawaii, vol. 4, pp. 929-932, April 2007.
5. **Kartik Audhkhasi**, “*Automatic evaluation of fluency in spoken language*” (*Review article*), IETE Technical Review, vol. 26, no. 2, pp. 108-114, March-April 2009.

Master’s Thesis

- **Non-Intrusive Speech Quality Evaluation (May 2008, IIT-Delhi)**
Worked on utilizing auditory features for estimating speech quality in a non-intrusive framework. Obtained a performance as good as the ITU-T P.563 algorithm by using neuron firing rate statistics from Lyon’s cochlear model.

Projects at SAIL

- **Context-Enriched Speech-to-Speech Translation (NSF)** (August 2009-present)
Developing algorithms for deriving context-rich representations of speech and text to improve computer mediated human-to-human interactions. Recently worked on detecting word fragments and repetitions from spontaneous spoken language using lexical and acoustic-prosodic cues.
- **TRANSTAC Program (DARPA)** (January 2009-present)
Involved in training acoustic models, writing scripts for data cleaning, and performance evaluation of ASR systems in multiple languages.
- **Iraqi Arabic-English Bilingual ASR** (March 2009-September 2009)
Involved in training and testing of an Iraqi Arabic-English bilingual ASR system.

Course Projects at USC

- **Classification using Noisy Labels from Multiple Evaluators** - Machine Learning (Fall 2009)
Studying and implementing machine learning techniques for classification scenarios with noisy labels from multiple evaluators in the absence of true labels. Conducting experiments on natural datasets, both with simulated and human evaluators.
- **Named Entity Recognition from Text and Speech** - Empirical Methods in NLP (Fall 2009)
Studying and implementing algorithms for detection of named entities from text and automatic speech recognition output.
- **Classification Experiments on Wine and USPS Zip Databases** - Mathematical Pattern Recognition (Spring 2009)
Gained experience with machine learning tools from Weka and PRTools for performing feature selection and classification.
- **Piecewise Linear Pitch Stylization** - Wavelets (Fall 2008)
Performed piecewise linear stylization of the human speech pitch trajectory in the wavelet domain (using footprints) and the time domain (using a suitably chosen over-complete dictionary).

Industrial Experience

- **IBM India Research Lab, Delhi, India** (May-July 2008)
Summer intern, Speech and Business Intelligence group
Worked on filled pause detection and automatic fluency evaluation in spontaneous spoken English.
- **IBM India Research Lab, Delhi, India** (May-July 2006)
Summer intern, Speech and Business Intelligence group
Worked on keyword spotting in spontaneous spoken English.

Academic Honors

- Annenberg Fellow, USC (Fall 2008-Spring 2010)
- Ranked 1st in the Electrical Engineering dual degree 2003 batch at IIT-Delhi at the end of 5 years.
- Three Merit Prizes for Academic Excellence, IIT-Delhi
- Ministry of Human Resource Development Scholarship, IIT-Delhi (Fall 2007-Spring 2008)
- Best Undergraduate Summer Intern Project Award, IBM India Research Lab (2006)
- Ranked 409 (top 0.2%) out of approximately 200,000 candidates from all over India in IIT Joint Entrance Examination, 2003.

- Ranked 54 in the Combined Entrance Examination (2003) for the Delhi College of Engineering.
- Select Graduate Coursework**
- **At IIT-Delhi**
Human and Machine Speech Communication, Multimedia Systems, Detection and Estimation Theory, Image Processing, Signal Theory, Computer Vision, Statistical Signal Processing, Neural Networks and Machine Learning.
 - **At USC**
Random Processes in Engineering, Wavelets, Pattern Recognition, Machine Learning, Empirical Methods in Natural Language Processing, Directed Research.
- Professional Activities**
- Reviewed papers for ICASSP 2009, Interspeech 2009 and MMSP 2009
 - Graduate student member of IEEE
- Computer Skills**
- **Languages and packages:** C, Bash script, Perl, HTML, Matlab/Octave
 - **Speech-related:** Sphinx, HTK, Voicebox, Wavesurfer, Auditory Toolbox, Praat
 - **Machine learning-related:** Weka, PRTools
 - **Operating systems:** Linux, Windows
- Select Extra-Curricular Activities**
- Part of SAIL and SIPI website committees since Fall 2009. Tasks involve writing and managing content for websites.
 - Yellow belt in Dux Ryu Ninjitsu. Part of USC Dux Ryu Ninjitsu club since start of Fall 2009.
 - Part of organizing committees of Tryst 2007 (annual technical festival of IIT-Delhi), SPIC MACAY Virasat 2007 (Indian classical music and culture festival) and I^2 -Tech 2005 (annual open house at IIT-Delhi).
- Miscellaneous**
- Citizen of India on F-1 student visa
- References**
- Upon request