

Contact

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Education

Ph.D. Computer Science, Columbia University, May, 2007.
M.Sc. Computer Science, Columbia University, 2005.
B.A. Linguistics, University of California at Santa Barbara, 1999; Distinction in major.

Work Experience

Speech Scientist/Programmer Roberto Pieraccini
SpeechCycle June, 2007 - present
Automatic tuning of rule-based grammars and building of statistical semantic models for automated spoken dialog systems. Development of web-based tools for continuous performance analysis and visualization, a real-time automatic detector of unsuccessful calls, and automated caller satisfaction monitoring.

Summer Research Intern Derrick Higgins, Klaus Zechner
Educational Testing Service (ETS) Summer, 2006
Development of a computational model for the prosodic structure of non-native speech for use in evaluating and providing diagnostic feedback in the mixed-entropy environment of the TOEFL-iBT and language-learning software. Composed an annotation manual for stress and intonation labeling. Wrote a program for automatic feature extraction and prosodic label prediction.

Summer Research Intern Giuseppe Riccardi, Dilek Hakkani-Tür
AT&T Labs – Research Summer, 2004
Extracted prosodic features from a commercially-deployed human-machine call center spoken dialogue system and ran automatic classification experiments to predict negative emotion in human callers. Results indicate that the use of novel context-dependent features increases prediction accuracy over state-of-the-art systems by 4%.

Associate Scientist/Research Linguist Roland Kuhn
Panasonic Speech Technology Laboratory 2000-2002
Aided in the development of an automatic letter-to-sound transducer, corpus-based statistical language processing, and database recording and management. Provided general linguistic advice in the areas of automatic speech recognition and speech synthesis.

Vocal Coder/Programmer Kevin Doe
V*STAR/1KTV 1999-2000
Utilized text-to-speech technology for computer-generated 3D characters. Made necessary adjustments in TTS output to ensure accurate intonation, allophony, personality, etc. Developed automatic algorithms to achieve this goal.

Teaching Experience

Teaching Assistant Julia Hirschberg
Columbia University Fall, 2003
Assisted in the teaching of a course on Natural Language Processing (COMS W4705) consisting of 40 graduate and advanced undergraduate students. Developed and graded programming assignments, held office hours, and lectured on occasion. Received student evaluation scores of 4.7 out of 5 in all assessment areas: overall quality, knowledgeability, approachability, availability, communication.

Academic Research

Modeling Emotion in Spoken Dialogue 2004–Present
Columbia University

Julia Hirschberg, Diane Litman

Development of a computational model to predict and respond to the emotional state of users of Spoken Dialogue Systems using lexical, prosodic, voice quality, and contextual features. Contributions include exploration of novel cues as well as practical implementation as part of ITSpoke, an Intelligent Tutoring Spoken Dialogue System.

Automatic Question Detection 2005–Present
Columbia University

Julia Hirschberg, Jennifer Venditti

Exploration of intonational form of spoken questions in a corpus of human-human tutorial dialogues. Statistical analysis of pitch slope and phonological prosodic structure as well as automatic prediction using automatic feature extraction and machine learning techniques.

Automatic Emotional Speech Synthesis Summer, 2006
Columbia University

Julia Hirschberg, Michael Picheny, Ellen Eide, Raul Fernandez

Trained an emotional speech classifier for a variety of prototypical emotions (e.g., anger and sadness) and automatically classified IBM's training corpus for their concatenative speech synthesizer. Currently conducting perceptual experiments to gauge the effectiveness of such a method in the conveyance of emotion.

Automatic Emotion Recognition in Speech 2002–2004
Columbia University

Julia Hirschberg, Jennifer Venditti

Explored several aspects of acted emotional speech, including prosodic-acoustic correlates. Ran a web-based survey to record listener perception of emotional speech and to explore emotional ambiguity. Implemented an eye-tracking experiment to record subjective judgments of emotional speech.

Phonetics/Phonology 1998-1999
University of California at Santa Barbara
Carol Genetti

Undergraduate Honor's Thesis. Firsthand elicitation and extensive analysis of Dokpa Tibetan phonology, a previously undocumented language spoken in Nepal. Utilized generative, autosegmental, and acoustic analyses in order to write a comprehensive, albeit introductory, phonological grammar.

Discourse Analysis Winter, 1998
University of California at Santa Barbara

Patricia Clancy

Case study evaluating minority speech patterns such as back channeling, uptake, interruption, and topic dominance. Gained insight into gay speech and how it might override ethnicity in forming in-groups.

Publications**2008**

Schmitt, A., Hank, C., & Liscombe, J. (2008). Detecting Problematic Calls With Automated Agents. In *Proceedings of the IEEE Tutorial and Research Workshop on Perception and Interactive Technologies for Speech-based Systems (PIT08)*, Kloster Irsee, Germany.

2007

Liscombe, J. (2007). Prosody and Speaker State: Paralinguistics, Pragmatics, and Proficiency. PhD Thesis, Columbia University.

2006

Liscombe, J. (2006). Detecting Emotion in Speech: Experiments in Three Domains. In *Proceedings of HLT/NAACL 2006*, New York, NY. Published as part of the Doctoral Consortium.

Liscombe, J., Venditti, J., & Hirschberg, J. (2006). Detecting Question-Bearing Turns in Spoken Tutorial Dialogues. In *Proceedings of Interspeech 2006 – ICSLP*, Pittsburgh, PA. Won Best Student Paper Award.

Venditti, J., Hirschberg, J., & Liscombe, J. (2006). Intonational Cues to Student Questions in Tutoring Dialogs. In *Proceedings of Interspeech 2006 – ICSLP*, Pittsburgh, PA.

2005

Liscombe, J., Hirschberg, J., & Venditti, J. (2005). Detecting Certainty in Spoken Tutorial Dialogues. In *Proceedings of Interspeech 2005 – Eurospeech*, Lisbon, Portugal.

Liscombe, J., Riccardi, G., & Hakkani-Tür, D. (2005). Using Context to Improve Emotion Detection in Spoken Dialogue Systems. In *Proceedings of Interspeech 2005 – Eurospeech*, Lisbon, Portugal.

2003

Liscombe, J., Venditti, J., & Hirschberg, J. (2003). Classifying Subject Ratings of Emotional Speech Using Acoustic Features. In *Proceedings of Interspeech 2003 – Eurospeech*, Geneva, Switzerland.

Awards and Service

Student organizer of the HLT-NAACL 2007 Doctoral Consortium.

Best Student Paper Award at Interspeech 2006 – ICSLP Conference: “Detecting Question-Bearing Turns in Spoken Tutorial Dialogues.”

Reviewer for the Journal of Natural Language Engineering (JNLE).

Organizer of bi-weekly NLP Group Colloquia, Columbia University, 2004-2006.

Andrew P. Kosoresow Memorial Award for Excellence in Teaching, Columbia University, 2004.

National Science Foundation Graduate Research Fellowship Honorable Mention, 2003.

Computer Skills

Languages: C, HTML, Java, Javascript, Perl, Python.

Programs: Eclipse, Visual Studio, Photoshop, Splunk, Matlab, Weka, Ripper, Praat.

Operating Systems: Unix, Linux, Windows, Mac.