Julia Hirschberg
Professor of Computer Science
Columbia University
Highlights, 2002–2003

## 1 Research

I began teaching at Columbia in September 2002, leaving AT&T Labs – Research (though i still consult there one day a week) after 18 years at AT&T and Bell Labs. I was lucky enough to get two excellent GRAs from this year's crop of new students, Jackson Liscombe and Sameer Maskey, and a great postdoc, Jennifer Venditti. Together we have begun new research efforts on emotional speech, and on the summarization of email and of (spoken) newscasts, the latter as part of the NSF KDD project (with Kathy McKeown, Luis Gravano, and Owen Rambow) and on the DARPA/TIDES project (with Kathy McKeown). We have also written quite a few grant proposals, one of which just was funded and several of which are still pending, and have recently submitted two papers to EUROSPEECH 2003. These document early results on a) the acoustic and prosodic features of emotional speech, which we hope will eventually allow us to identify emotions in spoken dialogue systems such as anger, frustration, confidence or anxiety; and b) the automatic summarization of broadcast news from structural features (e.g. location, duration, and type of speaker turns in a newscast). This summer we will also begin work in speech data mining, the discovery of 'interesting' patterns of word and phrase usage in broadcast news data.

I continue working on audio browsing and retrieval in the voicemail domain with colleagues at AT&T Labs and on the identification of system errors and user corrections in spoken dialogue systems, based upon acoustic and prosodic evidence, with colleagues now at the University of Pittsburgh and University of Tilburg.

## 2 Major Professional Activities

I have been Editor in Chief of *Computational Linguistics*, the major journal in the field, since 1993 and serve on executive committees of several organizations which actually require considerable work, the Executive Committee of the Association for Computational Linguistics (ACL) (also since 1993) and the Executive Board of the International Speech Communication Association (ISCA) (since 2001). I am vice president of ISCA and also serve as liaison to the major annual conferences it sponsors, Eurospeech and ICSLP, which attract about 1000 attendees and are the major international conferences in the speech area. This year I am organizing a workshop to be held before Eurospeech with colleagues at KTH in Stockholm and at the University of Tilburg (Rolf Carlson and Marc Swerts): the ISCA Tutorial and Research Workshop on Error Handling in Spoken Dialogue Systems, Chateau-d'Oex-Vaud, Switzerland, August 28-31. I've served on the program committees this year for EUROSPEECH-03, ACL-03, NAACL/HLT-03, ICSLP-02, Prosody 2002, and ACL-02.

## 3 Courses and Students

**Current Dissertation Committees** :
Smaranda Muresan, 2003–; Pablo Duboue, 2003–; Regina Barzilay, 2003; Jinmook Kim, University of Maryland, 2001–; Raul Galt, MIT Media Lab, 2001–.

**Candidacy Exam Committees** : Michel Galley, 2003; Melania Degeratu, 2002.

**PhD Students Currently Advising** : Jackson Liscombe, 2002–; Sameer Maskey, 2002–.

**Courses this Academic Year** :

- CS4705: Introduction to Natural Language Processing, Fall 2002 (22).
- CS6998: Advanced NLP: Speech Research and Technology, Spring 2003 (11).

## 4 Grants

I have some funding currently from NSF and DARPA and have submitted five proposals to NSF and DARPA since November, three as PI and two as co-PI. One has just been funded (NSF), one denied (DARPA), and the rest are still being reviewed. I'm currently working on another (DARPA) with a large group of people in the department.

**Current** :

- "Dialogue Prosody in Interactive Voice Response Systems," (PI; co-PI Gregory Ward), NSF:IIS:HLC, $525,000 for 3 years beginning June 1, 2003.
- "Tools for Monitoring Online Information Sources," (PIs: Kathleen McKeown, Luis Gravano, Julia Hirschberg), NSF-KDD, IIS-98-17434, $695,000 per year (renewed annually with expected duration of 3 years), 6/1/02-.
- "Multilingual Multidocument Information Tracking and Summarization," DARPA, (senior personnel; PIs: Kathleen McKeown, Vasilieios Hatzivassiloglou, and Judith Klavans), $500,000 for 3/1/04-2/28/05.

**Pending** :

- "Recognizing and Understanding Emotion in Speech," (PI; co-PIs: Dan Jurafsky and Bryan Pellom, U Colorado; Jennifer Venditti, Columbia; Elizabeth Shriberg, ICSI/SRI), NSF, requesting $3,993,205 for 9/1/3-8/31/07.
- "ITR: LiveActor: Live and Virtual Embodied Agent Interaction using Psychosocial Agent Models and Story Plot Lines," (co-PI; PI Norm Badler, U Penn), NSF, requesting $4,000,000 for09/1/03-08/31/07.
- "Collaborative: Monitoring Student State in Spoken Tutorial Systems" (PI, collaborative with Diane Litman, University of Pittsburgh), NSF, requesting $484236 for 9/1/03-8/30/06.

**Not Funded** :

- "Enduring, Personalized, Cognitive Assistant Based on a Commercial Communications Infrastructure," (co-PI; PI Peter Patel-Schneider, Lucent Technologies) DARPA $1,507,247 requested for 4/1/03-3/31/06.

## 5 Publications, Invited Talks, Workshops and Tutorials

I've published two journal articles and three conference papers this year and have one article to appear in a refereed collection and one invited contribution — I've spent most of my time since September starting new projects and writing proposals. I gave six invited talks (3 in distinguished lecturer series) during the year and gave a 3-day course at Charles University during spring break; the latter is part of a long-term series I've participated in 3-4 times, which targets East European graduate students who have relatively little access to classes on current computational linguistics at their home institutions. Also, with colleagues at KTH and Tilburg I am organizing a workshop to occur before Eurospeech 2003.

**Publications** :

- To appear. Beckman, M. E., Hirschberg, J., and Shattuck-Hufnagel, S., "The original ToBI system and the evolution of the ToBI framework," S.-A. Jun, ed., *Prosodic Models and Transcription: Towards Prosodic Typology.* Oxford University Press.
- To appear. "Pragmatics and Intonation," *Handbook of Pragmatics*, ed. L. Horn and G. Ward, Blackwell.
- 2002. Shimei Pan, Kathleen McKeown, and Julia Hirschberg, "Exploring Features from Natural Language Generation for Prosody Modeling," *Computer Speech and Language*, 16 (3-4), pp.457–90.
- 2002. J. Hirschberg, "The Pragmatics of Intonational Meaning", in B. Bel & I. Marlien, eds., Proceedings of the Speech Prosody 2002 conference, Aix-en-Provence: Laboratoire Parole et Langage, April 11-13, pp. 65–68.
- 2002. M. Ringel and J. Hirschberg, "Automated Message Prioritization: Making Voicemail Retrieval More Efficient," CHI 2002.
- 2002. J. Hirschberg, "Communication and Prosody: Functional Aspects of Prosody," *Speech Communication: Special Issue on Dialogue and Prosody*: 36:31–43, ed. J. Terken and M. Swerts.
- 2002. S. Whittaker, J. Hirschberg, B. Amento, L. Stark, M. Bacchiani, P. Isenhour, L. Stead, G. Zamchick, and A. Rosenberg, "SCANMail: a voicemail interface that makes speech browsable, readable and searchable," *Proceedings of CHI-02.*

**Invited Talks** :

- 2003. "Experiments in Emotional Speech," ISCA & IEEE Workshop on Spontaneous Speech Recognition, Tokyo, 15 April.
- 2003. "Intonational Variation in Spoken Dialogue Systems," Wilem Mathesius Courses, Charles University, Prague, March.
- 2003. "Browsing and Searching Audio Data: SCANMail," University of Pittsburgh, 24 January.
- 2002. "Seeing What is Said: New Methods for Extracting Information from Speech," Computer Science Seminar, Institute for Applied Mathematics and Systems, Universidad Autonoma de Mexico, December 6 (broadcast throughout Mexico).
- 2002. "Navigating Audio Like Text: Browsing and Searching Voicemail Messages in SCANMail," Distinguished Speaker, Department of Computer Science Colloquium Series, University of Maryland, 2 December.
- 2002. "SCANMail: Audio Browsing and Retrieval for Voicemail," IBM Multimedia Seminar, June 19.
- 2002. "The Pragmatics of Intonational Meaning," Speech Prosody 2002, Aix-en-Provence, 12 April.

## 6 Service at Columbia

I chaired the PhD Admissions Committee for 2002-2003 which was a **huge** amount of work. Thanks to some excellent committee members who met at least once a week this term for several hours each time, we processed 742 applications successfully and are proud that all three of our Presidential Fellowship winners will be coming to Columbia. I serve on the advisory committee of the new Center for Computational Learning Systems, am a sophomore CS major adviser, and am on the search committee looking for a new CRF director.