

HLT-NAACL 2006

**Human Language Technology
Conference of the
North American Chapter of the
Association of Computational Linguistics**

Proceedings of the Main Conference

Robert C. Moore, General Chair
Jeff Bilmes, Jennifer Chu-Carroll and Mark Sanderson
Program Committee Chairs

June 4-9, 2006
New York, New York, USA

Published by the Association for Computational Linguistics
<http://www.aclweb.org>

Production and Manufacturing by
Omnipress Inc.
2600 Anderson Street
Madison, WI 53704

©2006 The Association for Computational Linguistics

Order copies of this and other ACL proceedings from:

Association for Computational Linguistics (ACL)
209 N. Eighth Street
Stroudsburg, PA 18360
USA
Tel: +1-570-476-8006
Fax: +1-570-476-0860
acl@aclweb.org

Preface from the General Chair

This year marks the third time that the conference on Human Language Technology has combined with the North American chapter meeting of the Association for Computational Linguistics. The roster of accepted papers reveals an eclectic mix of topics in natural-language processing, speech processing, and information retrieval. A gratifying number of the papers are difficult to classify because they span more than one of these three major areas of human language technology. For example, the boundary between natural-language processing and information retrieval is hard to draw in the papers that focus on the World Wide Web as a corpus; moreover, several of these include speech-related aspects as well.

The crazy thing about putting on a conference like this is that you start out with a group of people who have never done it before, and by the time they really figure out what they are doing, the conference is over and you replace them with another group of people who have never done it before! To do a good job as general chair, however, there is only one really important thing to learn: pick really good people to do all the other jobs, sit back, and let them do all the work. I have been very fortunate to have a great group of conference organizers to rely on: the NYU local arrangements committee, headed by Satoshi Sekine; the program chairs Jennifer Chu-Carroll, Jeff Bilmes, and Mark Sanderson; the demonstration chairs Alex Rudnicky, John Dowding, and Natasa Milic-Frayling; the publications chairs Sanjeev Khudanpur and Brian Roark; the publicity chairs Dan Gildea, Ciprian Chelba, and Eric Brown; the sponsorship and exhibits chairs Ed Hovy and Patrick Pantel; the tutorial chairs Chris Manning, Doug Oard, and Jim Glass; the workshop chairs Lucy Vanderwende, Roberto Pieraccini, and Liz Liddy; the Doctoral Consortium chairs Matt Huenerfauth and Bo Pang, and their faculty advisor, Mitch Marcus.

I would also like to thank ACL Business Manager Priscilla Rasmussen, who took on even more responsibility than she usually does to insure that the conference is a success; and the NAACL executive committee and HLT advisory board for encouragement and advice when we were just getting started and didn't know much about what needed to be done. Finally, I would like to thank the senior program committee members, all the paper reviewers, the student volunteers, and the conference sponsors, without whom the conference could not happen.

Robert C. Moore
Microsoft Research
General Chair

Preface from the Program Co-Chairs

It is with pleasure that we preface the publications of the 2006 *Human Language Technology conference — North American chapter of the Association for Computational Linguistics annual meeting (HLT-NAACL 2006)*. The conference has a number of formats by which refereed work can be presented: full papers, short papers (either as a talk or poster), and demonstrations. As befits this multi-disciplinary conference, papers were submitted across the three topics of computational linguistics, information retrieval and speech recognition. This year, 257 full papers were submitted and 62 accepted (25% acceptance rate), 127 short papers submitted and 52 accepted (41% rate). It is pleasing to report that these numbers mark a strong increase in submissions compared to the last HLT NAACL conference run in 2004.

The selection of the high quality submissions in these proceedings was the product of a two tiered reviewing system. The three PC chairs selected 28 senior program committee (PC) members, who are internationally recognized for their subject expertise. This group constituted the top tier of the PC. Each of the members selected a group of reviewers to review both the full and short submitted papers. The complete PC numbered around 250. Three reviewers and one senior PC person were assigned per paper. Reviewing was double blinded. The senior PC oversaw the reviewing process, helped resolve any disputes, and at the end produced, for each paper, an overview of the reviewers' comments along with a preliminary decision on whether the submission should be accepted or not. These decisions formed the basis of discussion at a program committee meeting. Separate PC meetings were held for full and short papers. For full, a one day meeting was held at IBM Research Watson, NY; for short papers, a telephone conference call was held between the three PC chairs.

The senior PC also nominated candidates for best paper and best student paper, the two selected for the prizes were chosen by the PC chairs working in conjunction with the senior PCs. The papers that won were "Probabilistic Context-Free Grammar Induction Based on Structural Zeros" by Mehryar Mohri and Brian Roark and "Prototype-Driven Learning for Sequence Models" by Aria Haghighi and Dan Klein. Congratulations to them both.

We are indebted to all those who submitted papers to the conference and to all the reviewers and senior PC members who volunteered their time to help us in the selection process for the conference. We are particularly indebted to all the senior PC members who attended the PC meeting in January and found funds to pay for themselves to attend the meeting. Thanks guys, that was particularly generous of you. We are also grateful to IBM Watson for providing facilities for the PC meeting, Bob Moore for all of his prompt advice and help and a final thanks to Rich Gerber who ran and helped modify the START reviewing system

The HLT-NAACL conference has a PC chair for each of its three disciplines. Although work tasks were shared between the three chairs equally, as computational linguistics received by far the greatest number of submissions, Jennifer Chu-Carroll ended up having to oversee more papers and recruit more senior PC members than the other two chairs, she also volunteered to host the PC meeting at IBM. Therefore, the two other chairs of HLT-NAACL 2006 (Mark Sanderson & Jeff Bilmes), wish to thank Jennifer for all of her additional work in pulling this conference together. Jennifer, it couldn't have been done without you.

Jennifer Chu-Carroll — IBM Research (Watson)
Jeff Bilmes — University of Washington
Mark Sanderson — University of Sheffield
Program Co-Chairs

Conference Organizers

General Chair:

Robert C. Moore - Microsoft Research (Redmond)

Local Arrangements Committee:

Satoshi Sekine, NYU (chair)

Ralph Grishman, NYU (co-chair)

Koji Murakami, NYU (webmaster)

David Westbrook, NYU (associate webmaster)

Adam Meyers, NYU (volunteer coordinator)

Program Committee Chairs:

Jeff Bilmes, University of Washington

Jennifer Chu-Carroll, IBM T.J. Watson Research Center

Mark Sanderson, University of Sheffield

ACL office:

Priscilla Rasmussen

Demonstration Chairs:

Alex Rudnicky, Carnegie Mellon University

John Dowding, University of California, Santa Cruz

Natasa Milic-Frayling, Microsoft Research (Cambridge)

Publications Chairs:

Sanjeev Khudanpur, Johns Hopkins University

Brian Roark, OGI-Oregon Health & Science University

Publicity Chairs:

Dan Gildea, University of Rochester

Ciprian Chelba, Microsoft Research (Redmond)

Eric Brown, IBM Research (Watson)

Sponsorship and Exhibits Chairs:

Ed Hovy, USC-ISI

Patrick Pantel, USC-ISI

Tutorial Chairs:

Chris Manning, Stanford University

Doug Oard, University of Maryland

Jim Glass, MIT

Workshop Chairs:

Lucy Vanderwende, Microsoft Research (Redmond)
Roberto Pieraccini, Tell-Eureka
Liz Liddy, Syracuse University

Doctoral Consortium Chairs:

Matt Huenerfauth, University of Pennsylvania
Bo Pang, Cornell University
Mitch Marcus, University of Pennsylvania (Faculty advisor)

Human Language Technology Advisory Board:

Donna Harman, NIST (2005-06)
Mary Harper, University of Maryland (2005-06)
Julia Hirschberg, Columbia University (2005)
Graeme Hirst, University of Toronto (2005-06)
Sanjeev Khudanpur, Johns Hopkins University (2005-06)
Tatiana Korelsky, NSF (2006)
Raymond Mooney, University of Texas at Austin (2005-06)
Robert Moore, Microsoft Research (2005-06)
Heather McCallum-Bayliss, ARDA (2006)
Joseph Olive, DARPA (2006)
John Prange, ARDA (2005)
Dragomir Radev, University of Michigan (2005)
Owen Rambow, Columbia University (2006)
Ellen Riloff, University of Utah (2005)
Charles Wayne, DARPA (2005)

Senior Program Committee Members:

Johan Bos, University of Roma “La Sapienza”	Dragomir Radev, University of Michigan
Jamie Callan, Carnegie Mellon University	Owen Rambow, CCLS, Columbia University
Joyce Chai, Michigan State University	Steve Renals, University of Edinburgh
Jason Eisner, Johns Hopkins University	Stefan Riezler, Google
Mark Gales, Cambridge University	Rohini Srihari, SUNY Buffalo
Fredric Gey, University of California Berkeley	Amanda Stent, SUNY Stony Brook
Roxana Girju, UIUC	Michael Strube, EML Research
Mark Hasegawa-Johnson, UIUC	Christoph Tillmann, IBM T.J. Watson Research Center
Julia Hirschberg, Columbia University	Peter Turney, National Research Council Canada
Alon Lavie, Carnegie Mellon University	Ellen Voorhees, NIST
Wei-Ying Ma, Microsoft Research Asia	Ralph Weischedel, BBN Technologies
Mehryar Mohri, Courant Institute/Google	Fei Xia, University of Washington
Marius Pasca, Google	ChengXiang Zhai, UIUC
Gerald Penn, University of Toronto	Ming Zhou, Microsoft Research Asia

Program Committee Members:

Steven Abney, U. of Michigan
Cyril Allauzen, Courant Institute
Abeer Alwan, UCLA
Chinatsu Aone, SRA
Michiel Bacchiani, Google Inc
Srinivas Bangalore, AT&T Labs – Research
John Bateman, U. Bremen
Anja Belz, ITRI, U. of Brighton
Timothy Bickmore, Northeastern U.
Eric Brown, IBM
John Burger, MITRE
Donna Byron, Ohio State U.
Chris Callison-Burch, U. of Edinburgh
Rolf Carlson, KTH
Ciprian Chelba, Google
Stanley Chen, IBM
Lee-Feng Chien, Academia Sinica
Grace Chung, MIT
Stephen Clark, Oxford U.
Tom Cornell, Janya Inc.
Cassandre Creswell, Janya Inc.
Dick Crouch, PARC
Tiphaine Dalmas, U. of Edinburgh
Hoa Dang, NIST
Li Deng, Microsoft
Mona Diab, CCLS, Columbia U.
Bonnie Dorr, U. of Maryland
Gunes Erkan, U. of Michigan
Patrick Fan, Virginia Tech
Eric Fosler-Lussier, Ohio State U.
Robert Frank, Johns Hopkins U.
Maria Fuentes, U. Politècnica de Catalunya
Rob Gaizauskas, U. of Sheffield
Jianfeng Gao, Microsoft Research Asia
Daniel Gildea, U. of Rochester
Sharon Goldwater, Brown U.
Mark Greenwood, U. of Sheffield
Joakim Gustafson, TeliaSonera
Thomas Hain, U. of Sheffield
Susan Haller, SUNY Potsdam
Mary Harper, Purdue U.
Marti Hearst, U. of California, Berkeley
James Henderson, U. of Edinburgh
Ulf Hermjakob, USC-ISI
Alex Acero, Microsoft Research
Yaser Al-Onaizan, IBM
Elisabeth Andre, U. Augsburg
Doug Appelt, SRI International
Tim Baldwin, U. of Melbourne
Regina Barzilay, MIT CSAIL
Jerome Bellegarda, Apple Computer, Inc.
Pushpak Bhattacharya, Indian Inst. of Technology
Patrick Blackburn, INRIA Lorraine
Ralf Brown, Carnegie Mellon U.
Bill Byrne, U. of Cambridge
Charles Callaway, U. of Edinburgh
Giuseppe Carenini, U. of British Columbia
Violetta Cavalli-Sforza, San Francisco State U.
John Chen, Janya Inc.
David Chiang, USC-ISI
Tat-Seng Chua, National U. of Singapore
Alexander Clark, Royal Holloway U. of London
Michael Collins, MIT CSAIL
Corinna Cortes, Google Research
Mathias Creutz, Helsinki U. of Technology
Ido Dagan, Bar Ilan U.
Mary Dalrymple, U. of Oxford
Franciska de Jong, U. of Twente
Barbara di Eugenio, U. of Illinois at Chicago
Bill Dolan, Microsoft Research
Markus Egg, Rijksuniversiteit Groningen
Oren Etzioni, U. of Washington
David Farwell, New Mexico State U.
Anette Frank, DFKI
Bob Frederking, Carnegie Mellon U.
Junichi Fukumoto, Ritsumeikan U.
Michel Galley, Columbia U.
Claire Gardent, CNRS/LORIA
John Goldsmith, U. of Chicago
Yoshi Gotoh, U. of Sheffield
Ralph Grishman, New York U.
Nizar Habash, CCLS, Columbia U.
Keith Hall, Johns Hopkins U.
Sanda Harabagiu, U. of Texas at Dallas
Anthony Hartley, U. of Leeds
Peter Heeman, Oregon Graduate Institute
John Henderson, The MITRE Corporation
Djoerd Hiemstra, U. of Twente

Program Committee Members (continued):

Keikichi Hirose, U. of Tokyo
Jerry Hobbs, USC-ISI
Kristy Hollingshead, Oregon Health & Science U.
Fei Huang, IBM
Diana Inkpen, U. of Ottawa
Martin Jansche, CCLS, Columbia U.
Mark Johnson, Brown U.
Hideo Joho, U. of Glasgow
Gareth Jones, Dublin City U.
Nanda Kambhatla, IBM
Frank Keller, U. of Edinburgh
Kevin Knight, USC-ISI
Philipp Koehn, U. of Edinburgh
Wessel Kraaij, TNO
Jonas Kuhn, Saarland U., Saarbrücken
KL Kwok, City U. of New York
Mirella Lapata, U. of Edinburgh
Victor Lavrenko, U. of Massachusetts at Amherst
Esther Levin, CCNY/CUNY
Gina Levow, U. of Chicago
Jimmy Lin, U. of Maryland
Ken Litkowski, CL Research
Bing Liu, U. of Illinois at Chicago
Andrej Ljolje, AT&T Labs - Research
Bernardo Magnini, ITC-irst
Thomas Mandl, U. Hildesheim
Gideon Mann, U. of Massachusetts at Amherst
Katja Markert, Leeds U.
James Mayfield, JHU/APL
Michael McCord, IBM
Ryan McDonald, U. of Pennsylvania
Helen Meng, Chinese U. of Hong Kong
Teruko Mitamura, Carnegie Mellon U.
Marie-France Moens, Katholieke U. Leuven
Christof Monz, Queen Mary, U. of London
Yukiko Nakano, Tokyo U. of Agriculture & Tech.
Mark-Jan Nederhof, Max Planck Inst. of Psych..
Vincent Ng, U. of Texas at Dallas
Cheng Niu, Microsoft Research Asia
Franz Och, Google
Mari Ostendorf, U. of Washington
Martha Palmer, U. of Colorado
Rebecca Passonneau, CCLS, Columbia U.
Fernando Pereira, U. of Pennsylvania
Graeme Hirst, U. of Toronto
Julia Hockenmaier, U. of Pennsylvania
Chiori Hori, CMU
Rebecca Hwa, U. of Pittsburgh
Abraham Ittycheriah, IBM
Rong Jin, Michigan State U.
Michael Johnston, AT&T Labs - Research
Kristiina Jokinen, U. of Helsinki
Joemon Jose, U. of Glasgow
Min Yen Kan, National U. of Singapore
Kazuaki Kishida, Surugadi U.
Kate Knill, Toshiba Research Europe Ltd
Alexander Koller, U. of the Saarland
Emiel Krahmer, Tilburg U.
Shankar Kumar, Google
Philippe Langlais, U. de Montréal
Alex Lascarides, U. of Edinburgh
Lillian Lee, Cornell U.
Lori Levin, Carnegie Mellon U.
Elizabeth Liddy, Syracuse U.
Chin-Yew Lin, Microsoft Research Asia
Diane Litman, U. of Pittsburgh
Karen Livescu, MIT
Bente Maegaard, U. of Copenhagen
Steve Maiorano, ATP
Inderjeet Mani, MITRE
Daniel Marcu, USC-ISI
Yuji Matsumoto, Nara Inst. of Science and Tech.
Andrew McCallum, U. of Massachusetts at Amherst
Iain McCowan, CSIRO ICT Centre, Australia
Dan Melamed, New York U.
Rada Mihalcea, U. of North Texas
Yusuke Miyao, U. of Tokyo
Dan Moldovan, U. of Texas at Dallas
Isabelle Moulinier, Thompson Legal
Shri Narayanan, USC
Hwee Tou Ng, National U. of Singapore
Jian-Yun Nie, U. of Montréal
Tadashi Nomoto, National Inst. of Japanese Lit.
Mohamed Omar, IBM
Iadh Ounis, U. of Glasgow
Kishore Papineni, IBM
Ted Pedersen, U. of Minnesota, Duluth
Jose Perez-Carballo, California State U., LA

Program Committee Members (continued):

Carol Peters, Italian National Research Council
Richard Power, ITRI, U. of Brighton
John Prager, IBM
Rashmi Prasad, U. of Pennsylvania
Vasin Punyakanok, UIUC
Bhuvana Ramabhadran, IBM
Adwait Ratnaparkhi, Microsoft Research
Ehud Reiter, U. of Aberdeen
Christian Retore', U. Bordeaux 1
Michael Riley, Google, Inc
Alex Rudnick, Carnegie Mellon U.
Murat Saraçlar, Boğaziçi U.
Michael Schiehlen, U. of Stuttgart
Falk Scholer, RMIT U.
Frank Seide, Microsoft Research Asia
Ben Shahshahani, Yahoo
Candy Sidner, Mitsubishi Electric Research
Frank Soong, Microsoft Research Asia
Mark Steedman, U. of Edinburgh
Suzanne Stevenson, U. of Toronto
Matthew Stone, Rutgers U.
Tomek Strzalkowski, SUNY Albany
Eiichiro Sumita, ATR
Stan Szpakowicz, U. of Ottawa
Joel Tetreault, U. of Pittsburgh, LRDC
David Traum, USC/Inst. of Creative Tech.
Josef van Genabith, Dublin City U.
Lucy Vanderwende, Microsoft Research
Phil Vines, Royal Melbourne Inst. of Tech.
Andy Way, Dublin City U.
Ji-Rong Wen, Microsoft Research Asia
Yoad Winter, Technion, Haifa
Dekai Wu, HKUST
Steve Young, U. of Cambridge
Hugo Zaragoza, Yahoo! Research
Richard Zens, RWTH Aachen U.
Qifeng Zhu, Texas Instruments
Paul Piwek, The Open U.
Sameer Pradhan, BBN Technologies
Kishore Prallahad, Carnegie Mellon U.
Mark Przybocki, NIST
Matthew Purver, CSLI, Stanford U.
Lance Ramshaw, BBN Technologies
Deepak Ravichandran, Google
Norbert Reithinger, DFKI
Steve Richardson, Microsoft Research
Ellen Riloff, U. of Utah
Gregory Sanders, NIST
Anoop Sarkar, Simon Fraser U.
Frank Schilder, Thomson Legal & Regulatory
Sabine Schulte, Saarlandes U.
Stephanie Seneff, MIT CSAIL
Koichi Shinoda, Tokyo Institute of Technology
Khalil Sima'an, U. van Amsterdam
Richard Sproat, UIUC
Mark Stevenson, U. of Sheffield
Nicola Stokes, U. of Melbourne
Kristina Streignitz, Northwestern U.
Keh-Yih Su, Behavior Design Corporation
Marc Swerts, Tilburg U.
Egidio Terra, Amazon.com
Kentaro Torisawa, Japan Advanced Inst. of Sci&Tech.
Harald Trost, Medical U. of Vienna
Gertjan van Noord, U. of Groningen
Eric Villemonte de la Clergerie, INRIA
Taro Watanabe, NTT Communication Science Lab
Bonnie Webber, U. of Edinburgh
Janyce Wiebe, U. of Pittsburgh
Christa Womser-Hacker, U. Hildesheim
Roman Yangarber, U. of Helsinki
Deniz Yuret, Koc U.
Dmitry Zelenko, SRA
Yi Zhang, U. of California, Santa Cruz

Additional Reviewers:

Oana Frunza, U. of Ottawa
Michael Gamon, Microsoft Research
Preslav Nakov, U. of California, Berkeley
Carlos Prolo, Pontificia U. Católica do Rio Grande do Sul
Marcus Sammer, U. of Washington
Marina Sokolova, U. de Montréal
Ana-Maria Popescu, U. of Washington

Table of Contents

<i>Capitalizing Machine Translation</i>	
Wei Wang, Kevin Knight and Daniel Marcu	1
<i>Do we need phrases? Challenging the conventional wisdom in Statistical Machine Translation</i>	
Chris Quirk and Arul Menezes	9
<i>Improved Statistical Machine Translation Using Paraphrases</i>	
Chris Callison-Burch, Philipp Koehn and Miles Osborne	17
<i>Segment Choice Models: Feature-Rich Models for Global Distortion in Statistical Machine Translation</i>	
Roland Kuhn, Denis Yuen, Michel Simard, Patrick Paul, George Foster, Eric Joanis and Howard Johnson	25
<i>Effectively Using Syntax for Recognizing False Entailment</i>	
Rion Snow, Lucy Vanderwende and Arul Menezes	33
<i>Learning to recognize features of valid textual entailments</i>	
Bill MacCartney, Trond Grenager, Marie-Catherine de Marneffe, Daniel Cer and Christopher D. Manning	41
<i>Acquisition of Verb Entailment from Text</i>	
Viktor Pekar	49
<i>Acquiring Inference Rules with Temporal Constraints by Using Japanese Coordinated Sentences and Noun-Verb Co-occurrences</i>	
Kentaro Torisawa	57
<i>Role of Local Context in Automatic Deidentification of Ungrammatical, Fragmented Text</i>	
Tawanda Sibanda, Ozlem Uzuner and Ozlem Uzuner	65
<i>Exploiting Domain Structure for Named Entity Recognition</i>	
Jing Jiang and ChengXiang Zhai	74
<i>Named Entity Transliteration and Discovery from Multilingual Comparable Corpora</i>	
Alexandre Klementiev and Dan Roth	82
<i>Reducing Weight Undertraining in Structured Discriminative Learning</i>	
Charles Sutton, Michael Sindelar and Andrew McCallum	89
<i>A Maximum Entropy Approach to Combining Word Alignments</i>	
Necip Fazil Ayan and Bonnie J. Dorr	96
<i>Alignment by Agreement</i>	
Percy Liang, Ben Taskar and Dan Klein	104

<i>Word Alignment via Quadratic Assignment</i>	
Simon Lacoste-Julien, Ben Taskar, Dan Klein and Michael I. Jordan	112
<i>An Empirical Study of the Behavior of Active Learning for Word Sense Disambiguation</i>	
Jinying Chen, Andrew Schein, Lyle Ungar and Martha Palmer	120
<i>Unknown word sense detection as outlier detection</i>	
Katrin Erk	128
<i>Understanding Temporal Expressions in Emails</i>	
Benjamin Han, Donna Gates and Lori Levin	136
<i>Partial Training for a Lexicalized-Grammar Parser</i>	
Stephen Clark and James Curran	144
<i>Effective Self-Training for Parsing</i>	
David McClosky, Eugene Charniak and Mark Johnson	152
<i>Multilingual Dependency Parsing using Bayes Point Machines</i>	
Simon Corston-Oliver, Anthony Aue, Kevin Duh and Eric Ringger	160
<i>Multilevel Coarse-to-Fine PCFG Parsing</i>	
Eugene Charniak, Mark Johnson, Micha Elsner, Joseph Austerweil, David Ellis, Isaac Haxton, Catherine Hill, R. Shrivaths, Jeremy Moore, Michael Pozar and Theresa Vu	168
<i>A Fully-Lexicalized Probabilistic Model for Japanese Syntactic and Case Structure Analysis</i>	
Daisuke Kawahara and Sadao Kurohashi	176
<i>Fully Parsing the Penn Treebank</i>	
Ryan Gabbard, Seth Kulick and Mitchell Marcus	184
<i>Exploiting Semantic Role Labeling, WordNet and Wikipedia for Coreference Resolution</i>	
Simone Paolo Ponzetto and Michael Strube	192
<i>Identifying and Analyzing Judgment Opinions</i>	
Soo-Min Kim and Eduard Hovy	200
<i>Learning to Detect Conversation Focus of Threaded Discussions</i>	
Donghui Feng, Erin Shaw, Jihie Kim and Eduard Hovy	208
<i>Towards Automatic Scoring of Non-Native Spontaneous Speech</i>	
Klaus Zechner and Isaac Bejar	216
<i>Unsupervised and Semi-supervised Learning of Tone and Pitch Accent</i>	
Gina-Anne Levow	224
<i>Learning Pronunciation Dictionaries: Language Complexity and Word Selection Strategies</i>	
John Kominek and Alan W Black	232

<i>Relabeling Syntax Trees to Improve Syntax-Based Machine Translation Quality</i> Bryant Huang and Kevin Knight	240
<i>Grammatical Machine Translation</i> Stefan Riezler and John T. Maxwell III	248
<i>Synchronous Binarization for Machine Translation</i> Hao Zhang, Liang Huang, Daniel Gildea and Kevin Knight	256
<i>Modelling User Satisfaction and Student Learning in a Spoken Dialogue Tutoring System with Generic, Tutoring, and User Affect Parameters</i> Kate Forbes-Riley and Diane Litman	264
<i>Comparing the Utility of State Features in Spoken Dialogue Using Reinforcement Learning</i> Joel Tetreault and Diane Litman	272
<i>Backoff Model Training using Partially Observed Data: Application to Dialog Act Tagging</i> Gang Ji and Jeff Bilmes	280
<i>Exploring Syntactic Features for Relation Extraction using a Convolution Tree Kernel</i> Min Zhang, Jie Zhang and Jian Su	288
<i>Integrating Probabilistic Extraction Models and Data Mining to Discover Relations and Patterns in Text</i> Aron Culotta, Andrew McCallum and Jonathan Betz	296
<i>Preemptive Information Extraction using Unrestricted Relation Discovery</i> Yusuke Shinyama and Satoshi Sekine	304
<i>Probabilistic Context-Free Grammar Induction Based on Structural Zeros</i> Mehryar Mohri and Brian Roark	312
<i>Prototype-Driven Learning for Sequence Models</i> Aria Haghighi and Dan Klein	320
<i>Learning Morphological Disambiguation Rules for Turkish</i> Deniz Yuret and Ferhan Ture	328
<i>Cross-Entropy and Estimation of Probabilistic Context-Free Grammars</i> Anna Corazza and Giorgio Satta	335
<i>Estimation of Consistent Probabilistic Context-free Grammars</i> Mark-Jan Nederhof and Giorgio Satta	343
<i>A Better N-Best List: Practical Determinization of Weighted Finite Tree Automata</i> Jonathan May and Kevin Knight	351
<i>Aggregation via Set Partitioning for Natural Language Generation</i> Regina Barzilay and Mirella Lapata	359

<i>Incorporating Speaker and Discourse Features into Speech Summarization</i> Gabriel Murray, Steve Renals, Jean Carletta and Johanna Moore	367
<i>Nuggeteer: Automatic Nugget-Based Evaluation using Descriptions and Judgements</i> Gregory Marton and Alexey Radul	375
<i>Will Pyramids Built of Nuggets Topple Over?</i> Jimmy Lin and Dina Demner-Fushman	383
<i>Creating a Test Collection for Citation-based IR Experiments</i> Anna Ritchie, Simone Teufel and Stephen Robertson	391
<i>A Machine Learning based Approach to Evaluating Retrieval Systems</i> Huyen-Trang Vu and Patrick Gallinari	399
<i>Language Model Information Retrieval with Document Expansion</i> Tao Tao, Xuanhui Wang, Qiaozhu Mei and ChengXiang Zhai	407
<i>Towards Spoken-Document Retrieval for the Internet: Lattice Indexing For Large-Scale Web-Search Architectures</i> Zheng-Yu Zhou, Peng Yu, Ciprian Chelba and Frank Seide	415
<i>A fast finite-state relaxation method for enforcing global constraints on sequence decoding</i> Roy Tromble and Jason Eisner	423
<i>Semantic role labeling of nominalized predicates in Chinese</i> Nianwen Xue	431
<i>Learning for Semantic Parsing with Statistical Machine Translation</i> Yuk Wah Wong and Raymond Mooney	439
<i>ParaEval: Using Paraphrases to Evaluate Summaries Automatically</i> Liang Zhou, Chin-Yew Lin, Dragos Stefan Munteanu and Eduard Hovy	447
<i>Paraphrasing for Automatic Evaluation</i> David Kauchak and Regina Barzilay	455
<i>An Information-Theoretic Approach to Automatic Evaluation of Summaries</i> Chin-Yew Lin, Guihong Cao, Jianfeng Gao and Jian-Yun Nie	463
<i>Cross Linguistic Name Matching in English and Arabic</i> Andrew Freeman, Sherri Condon and Christopher Ackerman	471
<i>Language Model-Based Document Clustering Using Random Walks</i> Gunes Erkan	479
<i>Unlimited vocabulary speech recognition for agglutinative languages</i> Mikko Kurimo, Antti Puurula, Ebru Arisoy, Vesa Siivola, Teemu Hirsimki, Janne Pylkknen, Tanel Alume and Murat Saraclar	487

Conference Program

Sunday, June 4

9:00–5:30 **Doctoral Consortium**

Tutorials

9:00–12:30 **T1: What’s in a Name: Current Methods, Applications, and Evaluation in Multilingual Name Search and Matching**
Sherri Condon and Keith Miller

9:00–12:30 **T2: Beyond EM: Bayesian Techniques for Human Language Technology Researchers**
Hal Daume III

9:00–12:30 **T3: Graph-based Algorithms for Natural Language Processing and Information Retrieval**
Rada Mihalcea and Dragomir Radev

2:00–5:30 **T4: Automatic Spoken Document Processing for Retrieval and Browsing**
Ciprian Chelba and T. J. Hazen

2:00–5:30 **T5: Tutorial on Inductive Semi-supervised Learning Methods: with Applicability to Natural Language Processing**
Anoop Sarkar and Gholamreza Haffari

2:00–5:30 **T6: Automatic Semantic Role Labeling**
Scott Wen-tau Yih and Kristina Toutanova

6:30–9:30 Reception at NYU

Main Conference Program

Monday, June 5

9:00–9:10 Opening Session

9:10–10:10 **Keynote Speaker I: Joshua Goodman**
Email and Spam and Spim and Spat

10:10–10:40 Break

Machine Translation I

10:40–11:05 *Capitalizing Machine Translation*
Wei Wang, Kevin Knight and Daniel Marcu

11:05–11:30 *Do we need phrases? Challenging the conventional wisdom in Statistical Machine Translation*
Chris Quirk and Arul Menezes

11:30–11:55 *Improved Statistical Machine Translation Using Paraphrases*
Chris Callison-Burch, Philipp Koehn and Miles Osborne

11:55–12:20 *Segment Choice Models: Feature-Rich Models for Global Distortion in Statistical Machine Translation*
Roland Kuhn, Denis Yuen, Michel Simard, Patrick Paul, George Foster, Eric Joanis and Howard Johnson

Inference and Entailment

10:40–11:05 *Effectively Using Syntax for Recognizing False Entailment*
Rion Snow, Lucy Vanderwende and Arul Menezes

11:05–11:30 *Learning to recognize features of valid textual entailments*
Bill MacCartney, Trond Grenager, Marie-Catherine de Marneffe, Daniel Cer and Christopher D. Manning

11:30–11:55 *Acquisition of Verb Entailment from Text*
Viktor Pekar

11:55–12:20 *Acquiring Inference Rules with Temporal Constraints by Using Japanese Coordinated Sentences and Noun-Verb Co-occurrences*
Kentaro Torisawa

Monday, June 5 (continued)

Named Entity Recognition

- 10:40–11:05 *Role of Local Context in Automatic Deidentification of Ungrammatical, Fragmented Text*
Tawanda Sibanda, Ozlem Uzuner and Ozlem Uzuner
- 11:05–11:30 *Exploiting Domain Structure for Named Entity Recognition*
Jing Jiang and ChengXiang Zhai
- 11:30–11:55 *Named Entity Transliteration and Discovery from Multilingual Comparable Corpora*
Alexandre Klementiev and Dan Roth
- 11:55–12:20 *Reducing Weight Undertraining in Structured Discriminative Learning*
Charles Sutton, Michael Sindelar and Andrew McCallum
- 12:20–1:50 Lunch

Short Papers: Machine Translation, Multi-Lingual Speech

- 1:50–2:05 *Spectral Clustering for Example Based Machine Translation*
Rashmi Gangadharaiah, Ralf Brown and Jaime Carbonell
- 2:05–2:20 *Bridging the Inflection Morphology Gap for Arabic Statistical Machine Translation*
Andreas Zollmann, Venugopal Ashish and Vogel Stephan
- 2:20–2:35 *Arabic Preprocessing Schemes for Statistical Machine Translation*
Nizar Habash and Fatiha Sadat
- 2:35–2:50 *Thai Grapheme-Based Speech Recognition*
Paisarn Charoenpornasawat, Sanjika Hewavitharana and Tanja Schultz
- 2:50–3:05 *Story Segmentation of Broadcast News in English, Mandarin and Arabic*
Andrew Rosenberg and Julia Hirschberg
- 3:05–3:20 *Word Pronunciation Disambiguation using the Web*
Eiichiro Sumita and Fumiaki Sugaya

Monday, June 5 (continued)

Short Papers: Discourse/Dialogue

- 1:50–2:05 *Agreement/Disagreement Classification: Exploiting Unlabeled Data using Contrast Classifiers*
Sangyun Hahn, Richard Ladner and Mari Ostendorf
- 2:05–2:20 *Using Phrasal Patterns to Identify Discourse Relations*
Manami Saito, Kazuhide Yamamoto and Satoshi Sekine
- 2:20–2:35 *Evaluating Centering for Sentence Ordering in Two New Domains*
Nikiforos Karamanis
- 2:35–2:50 *Computational Modelling of Structural Priming in Dialogue*
David Reitter, Frank Keller and Johanna D. Moore
- 2:50–3:05 *Museli: A Multi-Source Evidence Integration Approach to Topic Segmentation of Spontaneous Dialogue*
Jaime Arguello and Carolyn Rose
- 3:05–3:20 *Automatic Recognition of Personality in Conversation*
Franois Mairesse and Marilyn Walker

Short Papers: Retrieval, Language Models

- 1:50–2:05 *Using the Web to Disambiguate Acronyms*
Eiichiro Sumita and Fumiaki Sugaya
- 2:05–2:20 *Lycos Retriever: An Information Fusion Engine*
Brian Ulicny
- 2:20–2:35 *BioEx: A Novel User-Interface that Accesses Images from Abstract Sentences*
Hong Yu and Minsuk Lee
- 2:35–2:50 *Selecting relevant text subsets from web-data for building topic specific language models*
Abhinav Sethy, Panayiotis Georgiou and Shrikanth Narayanan
- 2:50–3:05 *Factored Neural Language Models*
Andrei Alexandrescu and Katrin Kirchhoff
- 3:05–3:20 *Quantitative Methods for Classifying Writing Systems*
Gerald Penn and Travis Choma
- 3:20–3:50 Break

Monday, June 5 (continued)

Word Alignment

- 3:50–4:15 *A Maximum Entropy Approach to Combining Word Alignments*
Necip Fazil Ayan and Bonnie J. Dorr
- 4:15–4:40 *Alignment by Agreement*
Percy Liang, Ben Taskar and Dan Klein
- 4:40–5:05 *Word Alignment via Quadratic Assignment*
Simon Lacoste-Julien, Ben Taskar, Dan Klein and Michael I. Jordan

Semantics I

- 3:50–4:15 *An Empirical Study of the Behavior of Active Learning for Word Sense Disambiguation*
Jinying Chen, Andrew Schein, Lyle Ungar and Martha Palmer
- 4:15–4:40 *Unknown word sense detection as outlier detection*
Katrin Erk
- 4:40–5:05 *Understanding Temporal Expressions in Emails*
Benjamin Han, Donna Gates and Lori Levin

Parsing I

- 3:50–4:15 *Partial Training for a Lexicalized-Grammar Parser*
Stephen Clark and James Curran
- 4:15–4:40 *Effective Self-Training for Parsing*
David McClosky, Eugene Charniak and Mark Johnson
- 4:40–5:05 *Multilingual Dependency Parsing using Bayes Point Machines*
Simon Corston-Oliver, Anthony Aue, Kevin Duh and Eric Ringger

Tuesday, June 6

Parsing II

- 9:00–9:25 *Multilevel Coarse-to-Fine PCFG Parsing*
Eugene Charniak, Mark Johnson, Micha Elsner, Joseph Austerweil, David Ellis, Isaac Haxton, Catherine Hill, R. Shrivaths, Jeremy Moore, Michael Pozar and Theresa Vu
- 9:25–9:50 *A Fully-Lexicalized Probabilistic Model for Japanese Syntactic and Case Structure Analysis*
Daisuke Kawahara and Sadao Kurohashi
- 9:50–10:15 *Fully Parsing the Penn Treebank*
Ryan Gabbard, Seth Kulick and Mitchell Marcus

Discourse

- 9:00–9:25 *Exploiting Semantic Role Labeling, WordNet and Wikipedia for Coreference Resolution*
Simone Paolo Ponzetto and Michael Strube
- 9:25–9:50 *Identifying and Analyzing Judgment Opinions*
Soo-Min Kim and Eduard Hovy
- 9:50–10:15 *Learning to Detect Conversation Focus of Threaded Discussions*
Donghui Feng, Erin Shaw, Jihie Kim and Eduard Hovy

Spoken and Acoustic Aspects of Language

- 9:00–9:25 *Towards Automatic Scoring of Non-Native Spontaneous Speech*
Klaus Zechner and Isaac Bejar
- 9:25–9:50 *Unsupervised and Semi-supervised Learning of Tone and Pitch Accent*
Gina-Anne Levow
- 9:50–10:15 *Learning Pronunciation Dictionaries: Language Complexity and Word Selection Strategies*
John Kominek and Alan W Black
- 10:15–10:45 Break

Tuesday, June 6 (continued)

Machine Translation II

- 10:45–11:10 *Relabeling Syntax Trees to Improve Syntax-Based Machine Translation Quality*
Bryant Huang and Kevin Knight
- 11:10–11:35 *Grammatical Machine Translation*
Stefan Riezler and John T. Maxwell III
- 11:35–12:00 *Synchronous Binarization for Machine Translation*
Hao Zhang, Liang Huang, Daniel Gildea and Kevin Knight

Dialogue

- 10:45–11:10 *Modelling User Satisfaction and Student Learning in a Spoken Dialogue Tutoring System with Generic, Tutoring, and User Affect Parameters*
Kate Forbes-Riley and Diane Litman
- 11:10–11:35 *Comparing the Utility of State Features in Spoken Dialogue Using Reinforcement Learning*
Joel Tetreault and Diane Litman
- 11:35–12:00 *Backoff Model Training using Partially Observed Data: Application to Dialog Act Tagging*
Gang Ji and Jeff Bilmes

Relation Extraction

- 10:45–11:10 *Exploring Syntactic Features for Relation Extraction using a Convolution Tree Kernel*
Min Zhang, Jie Zhang and Jian Su
- 11:10–11:35 *Integrating Probabilistic Extraction Models and Data Mining to Discover Relations and Patterns in Text*
Aron Culotta, Andrew McCallum and Jonathan Betz
- 11:35–12:00 *Preemptive Information Extraction using Unrestricted Relation Discovery*
Yusuke Shinyama and Satoshi Sekine
- 12:00–1:30 Lunch

Tuesday, June 6 (continued)

Best Paper And Plenary Demo Presentations

1:30–2:00 *Probabilistic Context-Free Grammar Induction Based on Structural Zeros*
Mehryar Mohri and Brian Roark

2:00–2:30 *Prototype-Driven Learning for Sequence Models*
Aria Haghighi and Dan Klein

2:30–3:00 Plenary demos:

InfoMagnets: Making Sense of Corpus Data
Jamie Arguello and Carolyn Rose

Question Answering with Web, Mobile and Speech Interfaces
Edward Whittaker, Joanna Mrozinski, and Sadaoki Furui

From Pipedreams to Products and Promise!
Janet Baker and Patri Pugliese

3:00–3:15 Break

3:15–5:15 Posters and Demos

7:00 Banquet

Wednesday, June 7

9:00–10:00 **Keynote Speaker II: Diane Litman**
Spoken Dialogue for Intelligent Tutoring Systems: Opportunities and Challenges

10:00–10:30 Break

Morphology/Grammar Induction

10:30–10:55 *Learning Morphological Disambiguation Rules for Turkish*
Deniz Yuret and Ferhan Ture

10:55–11:20 *Cross-Entropy and Estimation of Probabilistic Context-Free Grammars*
Anna Corazza and Giorgio Satta

11:20–11:45 *Estimation of Consistent Probabilistic Context-free Grammars*
Mark-Jan Nederhof and Giorgio Satta

11:45–12:10 *A Better N-Best List: Practical Determinization of Weighted Finite Tree Automata*
Jonathan May and Kevin Knight

Wednesday, June 7 (continued)

Generation/Summarization/Question Answering

- 10:30–10:55 *Aggregation via Set Partitioning for Natural Language Generation*
Regina Barzilay and Mirella Lapata
- 10:55–11:20 *Incorporating Speaker and Discourse Features into Speech Summarization*
Gabriel Murray, Steve Renals, Jean Carletta and Johanna Moore
- 11:20–11:45 *Nuggeteer: Automatic Nugget-Based Evaluation using Descriptions and Judgements*
Gregory Marton and Alexey Radul
- 11:45–12:10 *Will Pyramids Built of Nuggets Topple Over?*
Jimmy Lin and Dina Demner-Fushman

Information Retrieval

- 10:30–10:55 *Creating a Test Collection for Citation-based IR Experiments*
Anna Ritchie, Simone Teufel and Stephen Robertson
- 10:55–11:20 *A Machine Learning based Approach to Evaluating Retrieval Systems*
Huyen-Trang Vu and Patrick Gallinari
- 11:20–11:45 *Language Model Information Retrieval with Document Expansion*
Tao Tao, Xuanhui Wang, Qiaozhu Mei and ChengXiang Zhai
- 11:45–12:10 *Towards Spoken-Document Retrieval for the Internet: Lattice Indexing For Large-Scale Web-Search Architectures*
Zheng-Yu Zhou, Peng Yu, Ciprian Chelba and Frank Seide
- 12:10–1:40 Lunch
- 1:40–2:30 NAACL Business Meeting

Wednesday, June 7 (continued)

Short Papers: Morphology/Syntax

- 2:30–2:45 *Subword-based Tagging by Conditional Random Fields for Chinese Word Segmentation*
Ruiqiang Zhang, Kikui Genichiro and sumita eiichiro
- 2:45–3:00 *Accurate Parsing of the Proposition Bank*
Gabriele Musillo and Paola Merlo
- 3:00–3:15 *Early Deletion of Fillers In Processing Conversational Speech*
Matthew Lease and Mark Johnson
- 3:15–3:30 *Parser Combination by Reparsing*
Kenji Sagae and Alon Lavie

Short Papers: Semantics

- 2:30–2:45 *Unsupervised Induction of Modern Standard Arabic Verb Classes*
Neal Snider and Mona Diab
- 2:45–3:00 *Word Domain Disambiguation via Word Sense Disambiguation*
Antonio Sanfilippo, Stephen Tratz and Michelle Gregory
- 3:00–3:15 *Evaluation of Utility of LSA for Word Sense Discrimination*
Esther Levin, Mehrbod Sharifi and Jerry Ball
- 3:15–3:30 *Semi-supervised Relation Extraction with Label Propagation*
Jinxiu Chen, Donghong Ji, Chew Lim Tan and Zhengyu Niu

Short Papers: Speech and Video Processing

- 2:30–2:45 *Initial Study on Automatic Identification of Speaker Role in Broadcast News Speech*
Yang Liu
- 2:45–3:00 *Extracting Salient Keywords from Instructional Videos Using Joint Text, Audio and Visual Cues*
Youngja Park and Ying Li
- 3:00–3:15 *Class Model Adaptation for Speech Summarisation*
Pierre Chatain, Edward Whittaker, Joanna Mrozinski and Sadaoki Furui
- 3:15–3:30 *Summarizing Speech Without Text Using Hidden Markov Models*
Sameer Maskey and Julia Hirschberg
- 3:30–4:00 Break

Wednesday, June 7 (continued)

Semantics II

- 4:00–4:25 *A fast finite-state relaxation method for enforcing global constraints on sequence decoding*
Roy Tromble and Jason Eisner
- 4:25–4:50 *Semantic role labeling of nominalized predicates in Chinese*
Nianwen Xue
- 4:50–5:15 *Learning for Semantic Parsing with Statistical Machine Translation*
Yuk Wah Wong and Raymond Mooney

Evaluation

- 4:00–4:25 *ParaEval: Using Paraphrases to Evaluate Summaries Automatically*
Liang Zhou, Chin-Yew Lin, Dragos Stefan Munteanu and Eduard Hovy
- 4:25–4:50 *Paraphrasing for Automatic Evaluation*
David Kauchak and Regina Barzilay
- 4:50–5:15 *An Information-Theoretic Approach to Automatic Evaluation of Summaries*
Chin-Yew Lin, Guihong Cao, Jianfeng Gao and Jian-Yun Nie

Processing in/for Language Models

- 4:00–4:25 *Cross Linguistic Name Matching in English and Arabic*
Andrew Freeman, Sherri Condon and Christopher Ackerman
- 4:25–4:50 *Language Model-Based Document Clustering Using Random Walks*
Gunes Erkan
- 4:50–5:15 *Unlimited vocabulary speech recognition for agglutinative languages*
Mikko Kurimo, Antti Puurula, Ebru Arisoy, Vesa Siivola, Teemu Hirsimäki, Janne Pytkknen, Tanel Alame and Murat Saraclar

Workshops

Thursday, June 8

- 9:00–5:30 **WS01: The Tenth Conference on Computational Natural Language Learning (CoNLL-X), Day 1**
- 9:00–5:30 **WS02: Document Understanding Conference (DUC), Day 1**
- 9:00–5:30 **WS03: Interactive Question Answering, Day 1**
- 9:00–5:30 **WS04: Statistical Machine Translation, Day 1**
- 9:00–5:30 **WS05: Special Interest Group on Computational Phonology (SIGPHON)**
- 9:00–5:30 **WS06: BioNLP'06: Linking Natural Language Processing and Biology: Towards deeper biological literature analysis**
- 9:00–5:30 **WS08: Analyzing Conversations in Text and Speech (ACTS)**
- 9:00–5:30 **WS09: Third International Workshop on Scalable Natural Language Understanding (ScaNaLU 2006)**

Friday, June 9

- 9:00–5:30 **WS01: The Tenth Conference on Computational Natural Language Learning (CoNLL-X), Day 2**
- 9:00–5:30 **WS02: Document Understanding Conference (DUC), Day 2**
- 9:00–5:30 **WS03: Interactive Question Answering, Day 2**
- 9:00–5:30 **WS04: Statistical Machine Translation, Day 2**
- 9:00–5:30 **WS10: Computationally Hard Problems and Joint Inference in Speech and Language Processing**
- 9:00–5:30 **WS11: First International Workshop on Medical Speech Translation**
- 9:00–5:30 **WS12: Textgraphs: Graph-based Algorithms for Natural Language Processing**

Keynote Speaker:

Joshua Goodman
Microsoft Research

Speaking on:

Email and Spam and Spim and Spat

Abstract

Email is the number one activity that people do on the internet: 74% of internet users check their email on an average day. Email use in offices has more than doubled since 2000, and is now over 8 hours a week. There are many great NLP problems for email, like automatic clustering and foldering, search, prioritization, automatically finding keywords within messages, finding addresses, and summarization. Spam is the number one problem for email. I'll talk about how spam filters work, and the current open problems, as well as other kinds of abuse like chat spam (Spat), IM spam (Spim), blog comment spam (Blat), etc. all of which make great NLP problems.

Email and abuse problems like spam can be some of the most exciting for research: they inspire us to work on new problems we would otherwise not have found. We are exploring areas like adversarial learning, learning with unbalanced costs, and learning with partial user feedback. Shipping solutions to these problems is both surprisingly hard and surprisingly fun. For NLP Researchers, the hardest constraint is that products ship in about 20 languages. By carefully choosing tools like word clustering that are easy to build in many languages, instead of similar tools like taggers that may not exist everywhere, we increase the chance of shipping. When we have actually built complete systems and given them to users, we have found several new and interesting problems in the most exciting way, by shipping solutions that don't work the first time around.

Bio

Joshua Goodman is a Principal Researcher in the Machine Learning and Applied Statistics group at Microsoft Research, where he runs a team focused on Learning for Messaging and Adversarial Problems. Spam filters he helped develop stop over a billion spam messages per day. He has also worked on language modeling and machine learning, and has a Ph.D. in Computer Science from Harvard University for his work on Statistical Parsing. He helped start and is now President of the Conference on Email and Anti-Spam.

Keynote Speaker:

Diane Litman
University of Pittsburgh

Speaking on:

Spoken Dialogue for Intelligent Tutoring Systems: Opportunities and Challenges

Abstract

In recent years, the development of intelligent tutoring dialogue systems has become more prevalent, in an attempt to close the performance gap between human and computer tutors. With advances in speech technology, several systems have begun to incorporate spoken language capabilities, hypothesizing that adding speech technology will promote student learning by enhancing communication richness. Tutoring applications differ in many ways, however, from the types of applications for which spoken dialogue systems are typically developed. This talk will illustrate some of the opportunities and challenges in this area, focusing on issues such as affective reasoning, discourse analysis, error handling, and performance evaluation.

Bio

Diane Litman is Professor of Computer Science, as well as Research Scientist with the Learning Research and Development Center, at the University of Pittsburgh. Previously, Dr. Litman was a member of the Artificial Intelligence Principles Research Department, AT&T Labs - Research (formerly Bell Laboratories); she was also an Assistant Professor of Computer Science at Columbia University. Dr. Litman received her Ph.D. degree in Computer Science from the University of Rochester. Her current research focuses on enhancing the effectiveness of tutorial dialogue systems through the use of spoken language processing, affective computing, and machine learning. She has collaborated on the development of spoken dialogue systems in multiple application areas, including intelligent tutoring (ITSPOKE), chat (CobotDS) and database/web access (NJFun and TOOT). Dr. Litman has been Chair of the North American Chapter of the Association for Computational Linguistics, a member of the Executive Committee of the Association for Computational Linguistics, and a member of the editorial boards of Computational Linguistics and User Modeling and User-Adapted Interaction.