

MARI OSTENDORF

Professor

Department of Electrical & Computer Engineering
University of Washington
Box 352500, Seattle, WA 98195-2500
ostendor@uw.edu

SPECIALIZATION:

Statistical modeling for speech and language processing, including both understanding and generation. Current research efforts are in dynamic context-aware models, computational models of prosody at the interface of speech and language processing, conversational artificial intelligence, and educational applications of language technology.

EDUCATION:

Stanford University, Department of Electrical Engineering
Bachelor of Science Degree, 1980
Master of Science Degree, 1981
Doctoral Degree, 1985

EMPLOYMENT:

1999 – present **University of Washington**, Seattle, WA 98195
Professor, Electrical & Computer Engineering, 1999 – present
Vice Provost for Research, 2021 – present
Assoc. Vice Provost for Research, 2017 – 2021.
Assoc. Dean for Research and Graduate Studies, College of Engineering, 2009 – 2012
Assoc. Chair for Research, Electrical Engineering, 2001 – 2003
Adjunct Professor of Linguistics, 2001 – present
Adjunct Professor of Computer Science, 2002 – present

2020 **Google**, London, UK
Visiting Researcher.

2013 **Center for Language Sciences, Macquarie University**, Sydney, Australia
Visiting Professor.

2005 – 2006 **University of Karlsruhe**, Karlsruhe, Germany
Visiting Professor.

1987 – 1999 **Boston University**, Boston, MA 02215
Professor, Electrical & Computer Engineering, 1999.
Associate Professor, Electrical & Computer Engineering, 1993 – 1999.
Assistant Professor, Electrical & Computer Engineering, 1987 – 1993.

1995 **ATR Interpreting Telecommunications Laboratories**, Kyoto, Japan
Visiting Researcher.

1985 – 1986 **BBN Laboratories, Inc.**, Cambridge, MA 02138
Scientist.

1981 – 1984 **Stanford University**, Stanford, CA 94305
Research Assistant.

1980 – 1981 **Bell Telephone Laboratories**, North Andover, MA 01845
Member of Technical Staff.

HONORS/AWARDS:

- Member, National Academy of Engineering, 2021
- Corresponding Fellow, Royal Society of Edinburgh, 2020
- Member, Washington State Academy of Sciences, 2019
- Fellow, Association for Computational Linguistics, 2018
- IEEE James L. Flanagan Speech and Audio Processing Award, 2018
- IEEE Signal Processing Society Meritorious Service Award, 2018
- Faculty Advisor of Winning Team for 2017 Alexa Prize
- IEEE Signal Processing Society Distinguished Lecturer, 2013-2014
- Scottish Informatics and Computer Science Alliance Distinguished Visiting Fellow, 2012, Edinburgh
- Fulbright Scholar, 2012-2013
- IEEE Hewlett-Packard/Harriett B. Rigas Award, 2010
- Fellow, International Speech Communication Association, 2008
- Fellow, IEEE, 2005
- 2008 University of Washington College of Engineering Faculty Research Innovator Award
- 2007 University of Washington Electrical Engineering Department Faculty Service Award
- 1999 – present, Endowed Professor in System Design Methodologies
- 1999 IEEE Signal Processing Society Paper Award (Ostendorf, Digalakis and Kimball, 1996)
- 1998 ATR Interpreting Telecommunications Laboratories Paper Award (Ostendorf and Singer, 1997)
- Member, Sigma Xi

PROFESSIONAL ACTIVITIES:

- **Advisory Committees**
 - Advisory Board, Pacific Institute for the Mathematical Sciences (2022-2024)
 - External Advisory Board, NSF AI Institute of Student-AI Teaming (2021)
 - Standing Council, Engineering Research Visioning Alliance (2021-2024)
 - Board of Trustees, Toyota Technological Institute at Chicago (2017-2027)
 - External Advisory Board, University of Edinburgh Centre for Doctoral Training in Natural Language Processing (2019-present)
 - DARPA ISAT Workshop participant, January & October 2019
 - Review Panel for Ireland SFI Research Centre: ADAPT Centre for Digital Content Technology, Trinity College Dublin, 2017, 2019
 - CMU Language Technologies Institute Advisory Board, 2012
 - Advisory Board, Human Language Technology Center of Excellence, Johns Hopkins University, 2010-2012
 - External reviewer, China-Singapore Institute of Digital Media, 2011

- External reviewer, University of Sheffield Computer Science Department review, 2005
 - Review Panel for the NCCR (IM)2, Swiss National Science Foundation, 2002 - 2006
 - DARPA Spoken Language Research Coordinating Committee, 1993-1994
 - DARPA ISAT Study Group on Multilingual Text and Speech Systems, 1992
 - Advisory Committee for Information, Robotics and Intelligent Systems (IRIS) Program, Computer and Information Science and Engineering (CISE) Division of the National Science Foundation. (1989-1991, appointed by the IRIS director)
- **Editorial Roles**
 - VP Publications, IEEE Signal Processing Society, 2012-2014
 - *IEEE Open Journal on Signal Processing*, founding Editor-in-Chief, 2019-2022.
 - *IEEE Trans. on Audio, Speech and Language Processing*, Editor-in-Chief, 2006-2008
 - *IEEE Trans. on Speech and Audio Processing*, Associate Editor, 2005
 - *J. Special Topics in Signal Processing*, Editorial Board, 2016-2018.
 - *Computational Linguistics*, Editorial Board, 2005-2007.
 - *Computer Speech and Language*, US Editor, 1998-2003; Editorial Board, 1993-2005.
- **Selected Committee Service**
 - Steering Committee, Senior Researcher Officer group of the Association of American Universities (2023-2026)
 - Executive Committee, Council of Research, Association of Public and Landgrant Universities (2023-2026)
 - NAE Peer Committee (2022-2024, Chair 2024)
 - NASEM Panel on Assessment of Selected Divisions of the NIST ITL (2021)
 - ACL Test of Time Paper Award Committee, 2019, 2021
 - IEEE Periodicals Committee, 2018-2019
 - IEEE Ad Hoc Publications Strategy Committee, 2018-2019
 - IEEE Industrial Electronics Society Oversight Committee, 2016-2019
 - IEEE Signal Processing Society Nominations Committee, 2018-2019
 - IEEE Signal Processing Society Awards Board, 2015-2016
 - IEEE Periodicals Review Advisory Committee, 2014-2016
 - IEEE Products and Services Committee, 2013-2014
 - IEEE Signal Processing Society Executive Committee, 2012-2014
 - IEEE Signal Processing Society Board of Governors, 2009-2014
 - IEEE Kilby Award Committee, 2009-2012
 - IEEE Signal Processing Society Awards Committee, 2008, 2015, 2016
 - IEEE Signal Processing Society, Speech Processing Technical Committee, 1990-1993
 - IEEE Signal Processing Society, DSP Education Committee, 1992 - 1993
 - ISCA Advisory Council, 2006 – 2013
 - ISCA Distinguished Lecturer Committee, 2010-2016
 - ASA Speech Technical Committee, 1996-1999
- **Selected Conference and Workshop Service**
 - Co-chair, 2015 Jelinek Speech and Language Technology Workshop

- Co-chair, 2010 IEEE Workshop on Spoken Language Technology
- General Chair, 2009 NAACL Human Language Technologies Conference
- Co-chair, 2003 NAACL Human Language Technologies Conference
- Co-chair, 2001 ISCA Workshop on Prosody and Speech Recognition
- Co-chair, 2000 DARPA Workshop on Corpus-Based Text Generation and Synthesis
- Co-chair, 2000 IMA Workshop on Mathematical Foundations of Speech Processing and Recognition
- Chair, 1998 NSF Workshop for Discussing Research Priorities and Evaluation Strategies in Speech Synthesis
- Area Chair, 2020 ACL Conference
- Area Chair, 2008, 2015, 2017 EMNLP Conference
- Area Chair, 2016, 2018 NAACL Conference
- Area Chair, 2016 Interspeech Conference
- Scientific Committee, Interspeech 2007-2010, 2015, 2017
- Organizing Committee, 2019 NeurIPS Conversational AI Workshop
- Technical Committee, NAACL 2012 Workshop on Predicting and Improving Text Readability
- Technical Committee, ACL Workshop on Language Technology in Educational Applications 2008-2011
- Scientific Committee, 2006 IEEE/ACL Workshop on Spoken Language Technology
- Scientific Committee, 2006 International Conference on Speech Prosody
- North-American liaison, Interspeech 2005 (with N. Morgan)
- ICSLP Standing Committee, 2001 – 2004
- Group Leader at the 1996 DoD workshop on continuous speech recognition at Johns Hopkins University

TEACHING:

- Undergraduate Level
 - The Digital World of Multimedia (a design-oriented first year signal processing course)
 - Fundamentals of EE (Basic Circuit Theory)
 - Introduction to Probability and Statistics
 - Continuous- and Discrete-time Linear Systems
 - Introduction to Professional Issues
- Graduate Level
 - Stochastic Processes
 - Introduction to Statistical Learning
 - Spectral Estimation and Modeling
 - Continuous-Space Language Processing
 - Professional Communications: Speaking about your Research
- Short Courses
 - Computational Extraction of Social and Interactional Meaning from Speech (Linguistics Institute 2011, with D. Jurafsky)

PUBLICATIONS:

Publications are listed by main areas of research. Journal publications are indexed with *, invited papers and book chapters with +, and conference papers with •. Reprints of papers appearing in book compilations are noted by those papers.

Acoustic Modeling for Spoken Language Processing

- A. Johnson, V. M. Shetty, M. Ostendorf and A. Alwan, “Leveraging Multiple Sources in Automatic African American English Dialect Detection for Adults and Children,” *Proc. ICASSP*, 2023.
- A. Johnson, K. Everson, V. Ravi, A. Gladney, M. Ostendorf and A. Alwan, “Automatic dialect density estimation for African American English,” *Proc. Interspeech*, 2022.
- * J. Hou, Y. Shi, M. Ostendorf, M.-Y. Hwang, and L. Xie, “Region Proposal Network Based Small-Footprint Keyword Spotting,” *Signal Processing Letters*, vol. 26, no. 10, pp. 1471-1475, 2019.
- S. Sun, C.-F. Yeh, M. Ostendorf, M.-Y. Hwang, and L. Xie, “Training Augmentation using Adversarial Examples for Robust Speech Recognition,” *Proc. Interspeech*, 2018.
- S. Sun, C.-F. Yeh, M.-Y. Hwang, M. Ostendorf, and L. Xie, “Domain adversarial training for accented speech recognition,” *Proc. ICASSP*, 2018.
- * Y. He, P. Baumann, H. Fang, B. Hutchinson, A. Jaech, M. Ostendorf, E. Fosler-Lussier, and J. Pierrehumbert, “Using pronunciation-based morphological subword units to improve OOV handling in keyword search,” *IEEE Trans. Audio, Speech and Language Processing*, vol. 24, no. 1, pp. 79-92, 2016.
- Y. He, B. Hutchinson, P. Baumann, M. Ostendorf, E. Fosler-Lussier, and J. Pierrehumbert, “Subword-based modeling for handling OOV words in keyword spotting,” *Proc. ICASSP*, pp. 7864-7868, 2014.
- * T. Shinozaki, M. Ostendorf and L. Atlas, “Characteristics of speaking style and implications for speech recognition,” *J. Acoustical Society of America*, vol. 126, no. 3, pp. 1500-1510, 2009.
- * A. Mandal, M. Ostendorf and A. Stolcke, “Improved Robustness of MLLR adaptation with Speaker-Clustered Regression Class Trees,” *Computer Speech and Language*, Vol. 23, No. 2, pp.176-199, 2009.
- * T. Shinozaki and M. Ostendorf, “Cross-validation and aggregated EM training for robust parameter estimation,” *Computer Speech and Language*, Vol. 22, No. 2, pp. 185-195, 2008.
- S. Otterson and M. Ostendorf, “Efficient use of overlap information in speaker diarization,” *Proc. ASRU*, pp. 683-686, December 2007.
- G. Peng, M.-Y. Hwang and M. Ostendorf, “Acoustic segmentation for speech recognition on broadcast recordings,” *Proc. Interspeech*, pp. 2977-2980, 2007
- X. Lei and M. Ostendorf, “Word-level tone modeling for Mandarin speech recognition,” *Proc. ICASSP*, pp. IV-665-668, 2007
- T. Shinozaki and M. Ostendorf, “Cross-validation EM training for robust parameter estimation,” *Proc. ICASSP*, pp. IV-437-440, 2007.
- * R. Bates, M. Ostendorf and R. Wright, “Symbolic phonetic features for modeling of pronunciation variation,” *Speech Communication*, Vol. 49, No. 2, pp. 83-97, 2007.
- A. Mandal, M. Ostendorf and A. Stolcke, “Speaker clustered regression-class trees for MLLR adaptation,” *Proc. Interspeech*, September 2006, pp. 1133-1136.
- X. Lei, M. Siu, M.-Y. Hwang, M. Ostendorf and T. Lee, “Improved tone modeling for Mandarin Broadcast News,” *Proc. Interspeech*, September 2006, pp. 1237-1240.

- * M. Siu, T. Ng, and M. Ostendorf, "A quantitative assessment of the importance of tone in Mandarin speech recognition," *Signal Processing Letters*, Vol. 12, No. 12, pp. 867-870, 2005.
- D. Hillard and M. Ostendorf, "Compensating for word posterior estimation bias in confusion networks," *Proc. International Conference on Acoustics, Speech and Language Processing*, Vol. I, pp. 1153-1156, 2006.
- * with N. Morgan *et al.*, "Pushing the envelope – aside: Beyond the spectral envelope as the fundamental representation for speech recognition," *IEEE Signal Processing Magazine*, 22(5):81-88, 2005.
- X. Lei, M.-Y. Hwang and M. Ostendorf, "Incorporating tone-related MLP posteriors in the feature representation for Mandarin ASR," *Proc. Interspeech Conference*, pp. 2981-2984, 2005.
- T. Shinozaki, M. Ostendorf and L. Atlas, "Data sampling for improved speech recognizer training," *Proc. Interspeech Conference*, pp. 1693-1696, 2005.
- A. Mandal, M. Ostendorf, and A. Stolcke, "Leveraging speaker-dependent variation of adaptation," *Proc. Interspeech Conference*, pp. 1793-1796, 2005.
- O. Çetin and M. Ostendorf, "Multi-rate and variable-rate modeling of speech at phone and syllable time scales," *Proc. ICASSP*, Vol. I, pp. 665-668, 2005.
- X. Lei, G. Ji, M. Ostendorf and J. Bilmes, "DBN-Based Multi-stream Models for Mandarin Toneme Recognition," *Proc. ICASSP*, Vol. I, pp. 349-353, 2005.
- B. Chen, Ö. Çetin, G. Doddington, N. Morgan, M. Ostendorf, T. Shinozaki, and Q. Zhu, "A CTS Task for Meaningful Fast-Turnaround Experiments," *Proc. Rich Transcription Workshop*, November 2004.
- * I. Shafran and M. Ostendorf, "Acoustic Model Clustering Based on Syllable Structure," *Computer Speech and Language*, vol. 17, no. 4, pp. 311-328, 2003.
- O. Çetin and M. Ostendorf, "Cross-stream Observation Dependencies for Multi-stream Speech Recognition," *Proc. Eurospeech*, pp. 2517-2520, September 2003.
- * H. Nock and M. Ostendorf, "Parameter reduction schemes for loosely coupled HMMs," *Computer Speech and Language*, vol. 17, no. 2-3, pp. 233-262, 2003.
- * C. Boullis, M. Ostendorf, E. Riskin, and S. Otterson "Graceful Degradation of Speech Recognition Performance over Packet-Erasure Networks," *IEEE Transactions on Speech and Audio Processing*, vol. 10, no. 8, pp. 580-590, 2002.
- R. Bates and M. Ostendorf, "Modeling Pronunciation Variation in Conversational Speech Using Prosody," *Proc. ISCA Tutorial and Research Workshop on Pronunciation Modeling and Lexicon Adaptation for Spoken Language*, Sept. 2002.
- I. Shafran, M. Ostendorf, and R. Wright, "Prosody and phonetic variability: lessons learned from acoustic model clustering," *Proc. of the ISCA Workshop on Prosody in Speech Recognition and Understanding*, pp. 127-131, October 2001.
- R. Bates and M. Ostendorf, "Reducing the Effects of Pronunciation Variability on Spontaneous Speech Recognition using Prosody and Discourse," *Proc. of the ISCA Workshop on Prosody in Speech Recognition and Understanding*, pp. 17-22, October 2001.
- D. Palmer and M. Ostendorf, "Improved Word Confidence Estimation using Long Range Features," *Proc. of Eurospeech*, pp. 2117-2120, September 2001.
- E. Riskin, C. Boullis, S. Otterson and M. Ostendorf, "Graceful Degradation of Speech Recognition Performance Over Lossy Packet Networks," *Proc. of Eurospeech*, pp. 2715-2718, September 2001.
- *+ M. Ostendorf, "Incorporating linguistic theories of phonological variation into speech recognition models," *Phil. Trans. Royal Society*, vol. 358, no. 1769, pp. 1325-1338, 2000.

- *+ M. Bacchiani and M. Ostendorf, "Joint Lexicon, Acoustic Unit Inventory and Model Design," *Speech Communication*, vol. 29, 2-4, pp. 99-114, 1999.
- I. Shafran and M. Ostendorf, "Use of higher level linguistic structure in acoustic modeling for speech recognition," *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, vol. III, pp. 1643-1646, 2000.
- + M. Ostendorf, "Moving beyond the 'beads-on-a-string' model of speech," *Proc. IEEE ASRU Workshop*, 1999.
- * R. Bates and M. Ostendorf, "Reducing the Effects of Linear Channel Distortion on Continuous Speech Recognition," *IEEE Transactions on Speech and Audio Processing*, vol. 7, no. 5, pp. 594-597, 1999.
- M. Bacchiani and M. Ostendorf, "Using Automatically-Derived Acoustic Subword Units in Large Vocabulary Speech Recognition," *Proc. of the International Conference on Spoken Language Processing*, 1998, vol. 5, pp. 1843-1846.
- + M. Ostendorf, A. Kannan, and O. Ronen, "Tree-based Dependence Models for Speech Recognition," in *Computational Models of Speech Pattern Processing*, K. Ponting (Ed.), Springer-Verlag, pp. 40-53, 1998.
- + M. Ostendorf, "Segmental Acoustic Models," in *Computational Models of Speech Pattern Processing*, K. Ponting (Ed.), Springer-Verlag, pp. 157-172, 1998.
- M. Bacchiani and M. Ostendorf, "Joint Acoustic Unit Design and Lexicon Generation," *Proc. of the ESCA Workshop on Modeling Pronunciation Variation for Automatic Speech Recognition*, 1998, pp. 7-12.
- * A. Kannan and M. Ostendorf, "A comparison of constrained trajectory models for large vocabulary speech recognition," *IEEE Transactions on Speech and Audio Processing*, vol. 6, no. 3, pp. 303-306, May 1998.
- A. Kannan and M. Ostendorf, "Modeling Dependency in Adaptation of Acoustic Models using Multiscale Tree Processes," *Proc. Eurospeech*, vol. 4, pp. 1863-1866, 1997.
- A. Kannan and M. Ostendorf, "Adaptation of Polynomial Trajectory Segment Models for Large Vocabulary Speech Recognition," *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, Vol. II, pp. 1411-1414, 1997.
- * M. Ostendorf and H. Singer, "HMM Topology Design using Maximum Likelihood Successive State Splitting," *Computer Speech and Language*, 11, No. 1, pp. 17-42, 1997. (ATR Interpreting Telecommunications Laboratories paper award.)
- M. Ostendorf, B. Byrne, M. Bacchiani, M. Finke, A. Gunawardana, K. Ross, S. Roweis, E. Shriberg, D. Talkin, A. Waibel, B. Wheatley and T. Zeppenfeld, "Modeling Systematic Variations in Pronunciation via a Language-Dependent Hidden Speaking Mode," *Proc. of the International Conference on Spoken Language Processing*, 1996, supplementary paper.
- * M. Ostendorf, V. Digalakis and O. Kimball, "From HMMs to Segment Models: A Unified View of Stochastic Modeling for Speech Recognition," *IEEE Transactions on Speech and Audio Processing*, vol. 4, no. 5, September 1996, pp. 360-378. (Received 1999 IEEE Signal Processing Society Paper Award.)
- + M. Ostendorf, "From HMMs to Segment Models: Stochastic Modeling for CSR," in *Automatic Speech and Speaker Recognition - Advanced Topics*, C. H. Lee, F. K. Soong and K. K. Paliwal (Eds.), pp. 185-210, Kluwer Academic Publishers, 1996.
- M. Bacchiani, M. Ostendorf, Y. Sagisaka and K. Paliwal, "Design of a Speech Recognition System based on Acoustically Derived Segmental Units," *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, Vol. I, pp. 443-446, 1996.
- O. Ronen and M. Ostendorf, "A Dependence Tree Model of Phone Correlation," *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, Vol. II, pp. 873-876, 1996.

- H. Singer and M. Ostendorf, "Maximum Likelihood Successive State Splitting," *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, Vol. II, pp. 601-604, 1996.
- F. Richardson, M. Ostendorf and J. R. Rohlicek, "Lattice-based Search Strategies for Large Vocabulary Speech Recognition," *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, Vol. 1, pp. 576-579, 1995.
- * A. Kannan, M. Ostendorf and J. R. Rohlicek, "Maximum Likelihood Clustering of Gaussians for Speech Recognition," *IEEE Trans. Speech and Audio Processing*, Vol. 2, No. 3, July 1994, pp. 453-455.
- * V. Digalakis, J. R. Rohlicek, and M. Ostendorf, "ML Estimation of a Stochastic Linear System with the EM Algorithm and its Application to Speech Recognition," *IEEE Transactions on Speech and Audio Processing*, vol. 1, no. 4, October 1993, pp. 431-442.
- A. Kannan and M. Ostendorf, "A Comparison of Trajectory and Mixture Modeling in Segment-based Word Recognition," *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, Vol. II, April 1993, pp. 327-330.
- O. Kimball and M. Ostendorf, "On the Use of Tied-Mixture Distributions," *Proc. of the DARPA Workshop on Human Language Technology*, March 1993, pp. 102-107.
- * V. Digalakis, M. Ostendorf and J. R. Rohlicek, "Fast Algorithms for Phone Classification and Recognition Using Segment-Based Models," *IEEE Transactions on Signal Processing*, vol. 40, no. 12, December 1992, pp. 2885-2896.
- * O. Kimball, M. Ostendorf, and I. Bechwati, "Context Modeling with the Stochastic Segment Model," *IEEE Transactions on Signal Processing*, vol. 40, no. 6, June 1992, pp. 1584-1587.
- M. Ostendorf, I. Bechwati and O. Kimball, "Context Modeling with the Stochastic Segment Model," the *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, March 1992, Vol. I, pp. 389-392.
- B. Necioglu, M. Ostendorf and J. R. Rohlicek, "A Bayesian Approach to Speaker Adaptation of the Stochastic Segment Model," the *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, March 1992, Vol. I, pp. 437-440.
- O. Kimball, M. Ostendorf and J. R. Rohlicek, "Recognition Using Classification and Segmentation Scoring," *Proc. of the DARPA Workshop on Speech and Natural Language*, pp. 197-201, February 1992.
- A. Kannan, M. Ostendorf and J. R. Rohlicek, "Weight Estimation for N-Best Rescoring," *Proc. of the DARPA Workshop on Speech and Natural Language*, pp. 455-456, February 1992.
- + M. Ostendorf and V. Digalakis, "The Stochastic Segment Model for Continuous Speech Recognition," *Proc. of the 25th Asilomar Conference on Signals, Systems and Computers*, pp. 964-968, November 1991.
- V. Digalakis, J. R. Rohlicek, M. Ostendorf, "A Dynamical System Approach to Continuous Speech Recognition," *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, May 1991, pp. 289-292.
- M. Ostendorf, A. Kannan, S. Austin, O. Kimball, R. Schwartz, J. R. Rohlicek, "Integration of Diverse Recognition Methodologies Through Reevaluation of N-Best Sentence Hypotheses," *Proc. of the DARPA Workshop on Speech and Natural Language*, February 1991, pp. 83-87.
- V. Digalakis, M. Ostendorf, J. R. Rohlicek, "Fast Search Algorithms for Connected Phone Recognition Using the Stochastic Segment Model," *Proc. of the DARPA Speech and Natural Language Workshop*, June 1990, pp. 173-178.
- M. Ostendorf and J. R. Rohlicek, "Joint Quantizer Design and Parameter Estimation for Discrete Hidden Markov Models," *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, April 1990, pp. 705-708.

- * M. Ostendorf and S. Roukos, “A Stochastic Segment Model for Phoneme-Based Continuous Speech Recognition,” *IEEE Transactions on Acoustics, Speech and Signal Processing*, Vol. 37, No. 12, December 1989, pp. 1857-1869.
- V. Digalakis, M. Ostendorf and J. R. Rohlicek, “Improvements in the Stochastic Segment Model for Phoneme Recognition,” *Proc. of the 2nd DARPA Speech and Natural Language Workshop*, October 1989, pp. 332-338.
- S. Roucos, M. Ostendorf, H. Gish, A. Derr, “Stochastic Segment Modelling Using the Estimate-Maximize Algorithm,” *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, New York, NY, April 1988, pp. 127-130.
- S. Roucos and M. Ostendorf Dunham, “A Stochastic Segment Model for Phoneme-Based Continuous Speech Recognition,” *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, Dallas, Texas, April 1987, pp. 73-76. (A reprint appears in *Readings in Speech Recognition*, ed. A. Waibel and K.-F. Lee, Morgan Kaufmann Publishers Inc., 1990.)
- with Y. Chow *et al.*, “The Role of Word-Dependent Coarticulatory Effects in a Phoneme-Based Speech Recognition System,” *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, Tokyo, Japan, April 1986.

Language Processing

- B.-R. Lu, N. Haduong, C.-H. Lee, Z. Wu, H. Cheng, P. Koester, J. Utke, T. Yu, N. A. Smith, and M. Ostendorf, “Does Collaborative Human-LM Dialogue Generation Help Information Extraction from Human Dialogues?,” arXiv:2307.07047, 2023.
- B.-R. Lu, N. Haduong, C.-Y. Lin, H. Cheng, N. A. Smith, and M. Ostendorf, “Encode Once and Decode in Parallel: Efficient Transformer Decoding,” arXiv:2403.13112, 2024
- C.-H. Lee, H. Cheng, and M. Ostendorf, “OrchestraLLM: Efficient Orchestration of Language Models for Dialogue State Tracking,” in *Proc. NAACL*, 2024.
- Z. Wu, Y. Hu, W. Shi, N. Dziri, A. Suhr, P. Ammanabrolu, N. A. Smith, M. Ostendorf, and H. Hajishirzi, “Fine-Grained Human Feedback Gives Better Rewards for Language Model Training,” in *Proc. NeurIPS*, 2023.
- Y. Hu, B. Liu, J. Kasai, Y. Wang, M. Ostendorf, R. Krishna and N. A. Smith, “TIFA: Accurate and Interpretable Text-to-Image Faithfulness Evaluation with Question Answering,” in *Proc. IEEE/CVF International Conference on Computer Vision (ICCV)*, pp. 20349-20360, 2023.
- S. Zhou, M. Yetisgen and M. Ostendorf, “Building blocks for complex tasks: Robust generative event extraction for radiology reports under domain shifts,” in *Proc. ACL Clinical Natural Language Processing Workshop*, 2023.
- H. Su, J. Kasai, C. H. Wu, W. Shi, T. Wang, J. Xin, R. Zhang, M. Ostendorf, L. Zettlemoyer, N. A. Smith, and T. Yu, “Selective annotation makes language models better few-shot learners,” in *Proc. ICLR*, 2023.
- Z. Cheng, T. Xie, P. Shi, C. Li, R. Nadkarni, Y. Hu, C. Xiong, D. Radev, M. Ostendorf, N. Smith, L. Zettlemoyer, and T. Yu, “Binding language models in symbolic languages,” *Proc. ICLR*, 2023.
- * Z. Wu, R. Parish, H. Cheng, S. Min, P. Ammanabrolu, M. Ostendorf and H. Hajishirzi, “InSCIt: Information-Seeking Conversations with Mixed-Initiative Interactions,” *Trans. Assoc. Computational Linguistics*, 2023.
- Z. Wu, Y. Luan, H. Rashkin, D. Reitter, H. Hajishirzi, M. Ostendorf and G. S. Tomar, “ConQRR: Conversational query rewriting for retrieval with reinforcement learning,” *Proc. EMNLP*, 2022.
- H. Su, W. Shi, J. Kasai, Y. Wang, Y. Hu, M. Ostendorf, W. Yih, N. Smith, L. Zettlemoyer and T. Yu, “One embedder, any task: instruction-finetuned text embeddings,” in *Proc. Findings of ACL*, 2023.

- S. Zhou, K. Lybarger, M. Yetisgen, and M. Ostendorf, “Generalizing through forgetting – domain generalization for symptom event extraction in clinical notes,” *Proc. Symposium of the American Medical Informatics Association*, 2023.
- B.-R. Lu, Y. Hu, H. Cheng, N. Smith and M. Ostendorf, “Unsupervised learning of hierarchical conversation structure,” *Findings of EMNLP*, 2022.
- Y. Hu, C.-H. Lee, T. Xie, T. Yu, N. Smith, and M. Ostendorf, “In-context learning for few-shot dialogue state tracking,” *Findings of EMNLP*, 2022.
- Z. Wu, Y. Luan, H. Rashkin, D. Reitter, H. Hajishirzi, M. Ostendorf, and G. S. Tomar, “CONQRR: Conversational Query Rewriting for Retrieval with Reinforcement Learning,” *Proc. EMNLP*, 2022.
- C.-H. Lee, H. Cheng and M. Ostendorf, “Dialogue state tracking with a language model using schema-driven prompting,” *Proc. EMNLP*, pp. 4937–4949, 2021.
- Z. Wu, B.-R. Lu, H. Hajishirzi, and M. Ostendorf, “DIALKI: Knowledge identification in conversational systems through dialogue-document contextualization,” *Proc. EMNLP*, pp. 1852–1863, 2021.
- * K. Lybarger, M. Ostendorf, M. Thompson and M. Yetisgen, “Extracting COVID-19 diagnoses and symptoms from clinical text: A new annotated corpus and neural event extraction framework,” *J. Biomedical Informatics*, 117:103761, 2021.
- V. Zayats, K. Toutanova and M. Ostendorf, “Representations for question answering from documents with tables and text,” *Proc. EACL*, pp. 2895-2906, 2021.
- Z. Wu, M. Galley, C. Brockett, Y. Zhang, X. Gao, C. Quirk, R. Koncel-Kedziorski, J. Gao, H. Hajishirzi and M. Ostendorf, “A controllable model of grounded response generation,” *Proc. AAAI*, 2021, pp. 14085-14093.
- * K. Lybarger, M. Ostendorf and M. Yetisgen, “Annotating social determinants of health using active learning and characterizing determinants using neural event extraction,” *J. Biomedical Informatics*, 113:103631, 2021.
- Z. Wu, R. Koncel-Kedziorski, M. Ostendorf and H. Hajishirzi, “Extracting Summary Knowledge Graphs from Long Documents,” arXiv:2009.09162, 2021
- T. Tran, M. Tinkler, G. Yeung, A. Alwan, and M. Ostendorf, “Analysis of Disfluency in Children’s Speech,” *Proc. Interspeech*, 2020.
- F. Nadeem, H. Nguyen, Y. Liu and M. Ostendorf, “Automated essay scoring with discourse-aware neural models,” *Proc. Workshop on Innovative Use of NLP for Building Educational Applications*, pp. 484-493, 2019.
- Y. Luan, D. Wadden, L. He, A. Shah, M. Ostendorf and H. Hajishirzi, “A general framework for information extraction using dynamic span graphs,” *Proc. NAACL*, pp. 3036–3046, 2019.
- H. Cheng, H. Fang and M. Ostendorf, “A dynamic speaker model for conversational interactions,” *Proc. NAACL*, pp. 2772–2785, 2019.
- V. Zayats and M. Ostendorf, “Robust cross-domain disfluency detection with pattern match networks,” arXiv:1811.07236, 2018.
- K. Lybarger, M. Ostendorf and M. Yetisgen, “Using Neural Multi-task Learning to Extract Substance Abuse Information from Clinical Notes,” *Proc. Symposium of the American Medical Informatics Association*, 2018.
- Y. Luan, L. He, M. Ostendorf and H. Hajishirzi, “Multi-task identification of entities, relations and coreference for scientific knowledge graph construction,” *Proc. Empirical Methods for Natural Language Processing*, pp. 3219–3232, 2018.
- A. Jaech and M. Ostendorf, “Personalized language model for query auto-completion,” *Proc. Annual Meeting of the Association for Computational Linguistics*, pp. 700-705, 2018.

- * A. Jaech and M. Ostendorf, “Low-rank RNN adaptation for context-aware language modeling,” *Trans. Association of Computational Linguistics*, vol. 6, pp. 497-510, 2018.
- F. Nadeem and M. Ostendorf, “Estimating linguistic complexity for science texts,” *Proc. Workshop on Innovative Use of NLP for Building Educational Applications*, pp. 45-55, 2018.
- Y. Luan, M. Ostendorf and H. Hajishirzi, “The UWNLP system at SemEval-2018 Task 7: Neural relation extraction model with selectively incorporated concept embeddings,” *Proc. SemEval Workshop*, 2018.
- A. Jaech, S. Hathi and M. Ostendorf, “Community member retrieval on social media using textual information,” *Proc. NAACL*, 2018, pp. 595-601.
- * V. Zayats and M. Ostendorf, “Conversation Modeling on Reddit using a Graph-Structured LSTM,” *Trans. Association of Computational Linguistics*, vol. 6, pp. 121-132, 2018.
- K. Lybarger, M. Ostendorf and M. Yetisgen, “Automatically detecting likely edits in clinical notes created using automatic speech recognition,” *Proc. Symposium of the American Medical Informatics Association*, 2017.
- H. Cheng, H. Fang and M. Ostendorf, “A factored neural network model for characterizing online discussions in vector space,” *Proc. EMNLP*, 2017.
- Y. Luan, H. Hajishirzi and M. Ostendorf, “Scientific information extraction with semi-supervised neural tagging,” *Proc. EMNLP*, 2017, pp. 2641-2651.
- F. Nadeem and M. Ostendorf, “Language-based mapping of science assessment items to skills,” *Proc. Workshop on Innovative Use of NLP for Building Educational Applications*, 2017.
- T. Tran and M. Ostendorf, “Characterizing the language of online communities and its relation to community reception,” *Proc. EMNLP*, 2016.
- J. He, M. Ostendorf, X. He, J. Gao, L. Li and L. Deng, “Deep reinforcement learning with a combinatorial action space for predicting popular Reddit threads,” *Proc. EMNLP*, 2016, pp. 1838-1848.
- H. Fang, H. Cheng and M. Ostendorf, “Learning latent local conversation modes for predicting endorsement in online discussions,” *Proc. Workshop on Natural Language Processing for Social Media*, 2016.
- A. Jaech, G. Mulcaire, S. Hathi, M. Ostendorf, and N. Smith, “Hierarchical character-word models for language identification,” *Proc. Workshop on Natural Language Processing for Social Media*, 2016.
- A. Jaech, L. Heck and M. Ostendorf, “Domain adaptation of recurrent neural networks for natural language understanding,” *Proc. Interspeech*, 2016.
- V. Zayats, M. Ostendorf and H. Hajishirzi, “Disfluency detection using a bidirectional LSTM,” *Proc. Interspeech*, 2016.
- J. He, J. Chen, X. He, J. Gao, L. Li, L. Deng and M. Ostendorf, “Deep reinforcement learning with a natural language action space,” *Proc. ACL*, pp. 1621-1630, 2016.
- A. Jaech, R. Koncel-Kedziorski and M. Ostendorf, “Phonological Pun-derstanding,” *Proc. NAACL*, 2016.
- * H. Fang, M. Ostendorf, P. Bauman and J. Pierrehumbert, “Exponential language modeling using morphological features and multi-task learning,” *IEEE Trans. Audio, Speech and Language Processing*, vol. 23, no. 12, pp. 2410-2421, 2015.
- A. Jaech, V. Zayats, H. Fang, M. Ostendorf and H. Hajishirzi, “Talking to the crowd: what do people react to in online discussions?,” *Proc. EMNLP*, 2015.
- A. Jaech and M. Ostendorf, “What your username says about you,” *Proc. EMNLP*, 2015.
- H. Cheng, H. Fang and M. Ostendorf, “Open-domain name error detection using a multi-task RNN,” *Proc. EMNLP*, 2015.

- A. Marin, M. Ostendorf and J. He, “Learning phrase patterns for ASR error detection using semantic similarity,” *Proc. Interspeech*, 2015.
- V. Zayats, M. Ostendorf and H. Hajishirzi, “Unediting: Detecting disfluencies without careful transcripts,” *Proc. NAACL*, 2015.
- W. Hwang, H. Hajishirzi, M. Ostendorf, and W. Wu, “Aligning sentences from standard Wikipedia to simple Wikipedia,” *Proc. NAACL*, 2015.
- * B. Hutchinson, M. Ostendorf and M. Fazel, “A sparse plus low-rank exponential language model for limited resource scenarios,” *IEEE Trans. Acoustics, Speech and Language Processing*, vol. 23, no. 3, pp. 494-504, 2015.
- A. Axelrod, P. Resnik, X. He and M. Ostendorf, “Data selection with fewer words,” Proceedings of the Tenth Workshop on Statistical Machine Translation, pages 58–65, 2015.
- J. He, A. Marin and M. Ostendorf, “Effective data-driven feature learning for detection of name errors in automatic speech recognition,” *Proc. Spoken Language Technology Workshop*, pp. 230-235, 2014.
- A. Marin, R. Holenstein, R. Sarikaya, and M. Ostendorf, “Learning phrase patterns for text classification using a knowledge graph and unlabeled data,” *Proc. Interspeech*, 2014.
- V. Zayats, M. Ostendorf and H. Hajishirzi, “Multi-domain disfluency and repair detection,” *Proc. Interspeech*, 2014.
- A. Marin and M. Ostendorf, “Domain adaptation for parsing in automatic speech recognition,” *Proc. ICASSP*, pp. 6379-6383, 2014.
- * B. Zhang, M. A. Marin, B. Hutchinson and M. Ostendorf, “Learning phrase patterns for text classification,” *IEEE Trans. Audio, Speech and Language Processing*, vol. 21, no. 6, pp. 1180-1189, 2013.
- M. Ostendorf and S. Hahn, “A sequential repetition model for improved disfluency detection,” *Proc. Interspeech*, 2013.
- B. Hutchinson, M. Ostendorf and M. Fazel, “Exceptions in language as learned from a multi-factor sparse plus low-rank language model,” *Proc. ICASSP*, pp. 8580-8584, May 2013.
- * W. Wu and M. Ostendorf, “Graph-based query strategies for active learning,” *IEEE Trans. Audio, Speech and Language Processing*, 21(2):260-269, 2013.
- B. Hutchinson, M. Ostendorf and M. Fazel, “A sparse plus low rank maximum entropy language model,” *Proc. Interspeech*, September 2012.
- A. Marin, W. Wu, B. Zhang and M. Ostendorf, “Detecting targets of alignment moves in multiparty discussions,” *Proc. ICASSP*, pp. 5129-5132, 2012.
- A. Marin, T. Kwiatkowski, M. Ostendorf and L. Zettlemoyer, “Using syntactic and confusion network structure for out-of-vocabulary word detection,” *Proc. IEEE/ACL Workshop on Spoken Language Technology*, 2012, pp. 159-164.
- B. Zhang and M. Ostendorf, “Semi-Supervised learning for text classification using feature affinity regularization,” *Proc. Symposium on Machine Learning in Speech and Language Processing*, September 2012.
- B. Hutchinson, M. Ostendorf and M. Fazel, “A sparse plus low rank maximum entropy language model,” *Proc. Interspeech*, September 2012.
- M. A. Marin, W. Wu, B. Zhang and M. Ostendorf, “Detecting targets of alignment moves in multiparty discussions,” *Proc. IEEE International Conf. Acoustics, Speech and Signal Processing*, pp. 5129-5132, 2012.

- * J. G. Kahn and M. Ostendorf, "Joint Reranking of Parsing and Word Recognition with Automatic Segmentation," *Computer, Speech and Language*, Vol. 26, No. 1, pp. 1-19, 2012.
- B. Zhang, A. Marin, B. Hutchinson and M. Ostendorf, "Analyzing conversations using rich phrase patterns," *Proc. IEEE Workshop on Automatic Speech Recognition and Understanding*, pp. 443-448, December 2011.
- * B. Hutchinson, M. Ostendorf and M. Fazel, "Low Rank Language Models for Small Training Sets," *Signal Processing Letters*, Vol. 8, No. 9, pp. 489-492, 2011.
- J. Medero and M. Ostendorf, "Identifying Targets for Syntactic Simplification," *Proc. SLaTE Workshop*, 2011.
- A. Marin, B. Zhang and M. Ostendorf, "Detecting Forum Authority Claims in Online Discussions," *Proc. Workshop on Language in Social Media*, pp. 39-47, 2011.
- with E. Bender et al., "Annotating Social Acts: Authority Claims and Alignment Moves in Wikipedia Talk Pages," *Proc. Workshop on Language in Social Media*, pp. 48-57, 2011.
- A. Marin, M. Ostendorf, B. Zhang, J. Morgan, M. Oxley, M. Zachry and E. Bender, "Detecting authority bids in online discussions," *Proc. IEEE Workshop on Spoken Language Technology*, pp. 49-54, 2010.
- A. Margolis, K. Livescu and M. Ostendorf, "Domain adaptation with unlabeled data for dialog act tagging," *Proc. ACL Workshop on Domain Adaptation for Natural Language Processing*, pp. 45-52, 2010.
- W. Wu, B. Zhang and M. Ostendorf, "Automatic generation of personalized annotation tags for Twitter users," *Proc. NAACL HLT*, pp. 689-692, 2010.
- B. Zhang, B. Hutchinson, W. Wu, and M. Ostendorf "Extracting phrase patterns with minimum redundancy for unsupervised speaker role classification," *Proc. NAACL HLT*, pp. 717-720, 2010.
- B. Hutchinson, B. Zhang, and M. Ostendorf, "Unsupervised broadcast conversation speaker role labeling," *Proc. ICASSP*, pp. 5322-5325, 2010.
- B. Zhang, W. Wu, J. G. Kahn and M. Ostendorf, "Improving the recognition of names by document-level clustering," *Proc. Interspeech*, pp. 1035-1038, 2009.
- J. Medero and M. Ostendorf, "Analysis of vocabulary difficulty using Wiktionary," *Proc. SLaTE Workshop*, 2009.
- S. Feldman, M. Marin, J. Medero, and M. Ostendorf, "Classifying factored genres with part-of-speech histograms," *Proc. NAACL HLT*, pp. 173-176, 2009.
- S. Feldman, M. Marin, M. Ostendorf and M. Gupta, "Part-of-Speech Histogram Features for Genre Classification of Text," *Proc. ICASSP*, pp. 4781-4784, 2009.
- + M. Marin, S. Feldman, M. Ostendorf, and M. Gupta, "Filtering web text to match target genres," *Proc. ICASSP*, pp. 3705-3708, 2009.
- * S. Petersen and M. Ostendorf, "A machine learning approach to reading level assessment," *Computer, Speech and Language*, vol. 23, no. 1, pp. 89-106, 2009.
- S. Hahn and M. Ostendorf, "A Comparison of Discriminative EM-Based Semi-supervised Learning Algorithms on Agreement/Disagreement Classification," *Proc. NIPS Workshop on Speech and Language: Learning-based Methods and Systems*, 2008.
- K. Laskowski, M. Ostendorf and T. Schultz, "Modeling vocal interaction for text-independent participant characterization in multi-party conversation," *Proc. SIGDial Workshop on Discourse and Dialogue*, June 2008.
- * I. Bulyko, M. Ostendorf, M. Siu, T. Ng, A. Stolcke and Ö. Cetin, "Web resources for language modeling in conversational speech recognition," *ACM Trans. on Speech and Language Processing*, vol. 5, no. 1, December 2007.

- S. Petersen and M. Ostendorf, “Text simplification for language learners: A corpus analysis,” *Proc. SLaTE Workshop*, pp. 69-72, October 2007.
- K. Laskowski, M. Ostendorf, and T. Schultz, “Modeling vocal interaction for text-independent classification of conversation type,” *Proc. SIGDial Workshop on Discourse and Dialogue*, September 2007, pp. 194-201.
- P. Giesemann and M. Ostendorf, “Problem-sensitive response generation in human-robot dialogs,” *Proc. SIGDial Workshop on Discourse and Dialogue*, September 2007.
- S. Petersen and M. Ostendorf, “Assessing the reading level of web pages,” *Proc. Interspeech*, September 2006, pp. 833-836.
- S. Hahn, R. Ladner and M. Ostendorf, “Agreement/disagreement classification: exploiting unlabeled data using contrast classifiers,” *Proc. HLT-NAACL*, Comp. Vol., pp. 53-56, 2006.
- C. Boulis and M. Ostendorf, “Text classification by augmenting the bag-of-words representation with redundancy-compensated bigrams,” *Proc. International Workshop on Feature Selection in Data Mining*, in conjunction with SIAM SDM-05, 2005, pp. 9-16, 2005.
- C. Boulis and M. Ostendorf, “A quantitative analysis of lexical differences between genders in telephone conversations,” *Proc. of the Annual Meeting of the Association for Computational Linguistics*, June 2005.
- S. Schwarm and M. Ostendorf, “Reading Level Assessment Using Support Vector Machines and Statistical Language Models,” *Proc. of the Annual Meeting of the Association for Computational Linguistics*, June 2005.
- T. Ng, M. Ostendorf, M.-Y. Hwang, M. Siu, I. Bulyko and X. Lei, “Web-data augmented language models for Mandarin conversational speech recognition,” *Proc. ICASSP*, Vol. I, pp. 589-593, 2005.
- * D. Palmer and M. Ostendorf, “Improving Out-of-Vocabulary Name Resolution,” *Computer Speech and Language*, vol. 19, no. 1, pp. 107-128, 2005.
- C. Boulis and M. Ostendorf, “Combining multiple clustering systems,” *Proc. European Conference on Principles of Knowledge Discovery in Databases*, pp. 63-74, 2004.
- * S. Schwarm, I. Bulyko and M. Ostendorf, “Adaptive language modeling with varied sources to cover new vocabulary items,” *IEEE Trans. Speech and Audio Processing*, vol. 12, no. 3, pp. 334-342, 2004.
- I. Bulyko, M. Ostendorf and A. Stolcke, “Getting more mileage from web text sources for conversational speech language modeling using class-dependent mixtures,” *Proc. HLT-NAACL*, Comp. Vol., pp. 7-9, May 2003.
- S. Schwarm and M. Ostendorf, “Text normalization with varied data sources for conversational speech language modeling,” *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, vol. I, pp. 789-792, May 2002.
- * R. Sproat, A. Black, S. Chen, S. Kumar, M. Ostendorf and C. Richards, “Normalization of Non-Standard Words,” *Computer Speech and Language*, vol. 15, no. 3, pp. 287-333, 2001.
- D. Palmer and M. Ostendorf, “Improving Information Extraction by Modeling Errors in ASR Output,” *Proc. of the Human Language Technology Workshop*, pp. 156-160, March 2001.
- * D. Palmer and M. Ostendorf, “Robust Information Extraction from Automatically Generated Speech Transcriptions,” *Speech Communication*, vol. 32, pp. 95-109, 2000.
- M. Siu and M. Ostendorf, “Integrating a Context-Dependent Phrase Grammar in the variable n-gram framework,” *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, vol. II, pp. 1021-1024, 2000.
- * M. H. Siu and M. Ostendorf, “Variable N-grams and Extensions for Conversational Speech Language Modeling,” *IEEE Transactions on Speech and Audio Processing*, vol. 8, no. 1, pp. 63-75, 2000.

- D. Palmer, M. Ostendorf and J. Burger, “Robust information extraction from spoken language data,” *Proc. Eurospeech*, 1999, pp. 1035-1038.
- * R. Iyer and M. Ostendorf, “Relevance Weighting for Combining Multi-Domain Data for N-Gram Language Modeling,” *Computer Speech and Language*, vol. 13, no. 3, pp. 267-282, 1999.
- D. Palmer, J. Burger, and M. Ostendorf, “Information Extraction from Broadcast News Speech Data,” *Proc. of the DARPA Broadcast News and Understanding Workshop*, 1999, pp. 41-46.
- * R. Iyer and M. Ostendorf, “Modeling Long Distance Dependence in Language: Topic Mixtures vs. Dynamic Cache Models,” *IEEE Transactions on Speech and Audio Processing*, vol. 7, no. 1, pp. 30-39, January 1999.
- R. Iyer, M. Ostendorf, and M. Meteer, “Analyzing and Predicting Language Model Improvements,” *IEEE Workshop on Speech Recognition and Understanding Proc.*, (S. Furui, B.-H. Juang, & W. Chou, eds.) pp. 254-261, 1997.
- R. Iyer and M. Ostendorf, “Transforming Out-of-Domain Estimates to Improve In-Domain Language Models,” *Proc. Eurospeech*, vol. 4, pp. 1975-1978, 1997.
- M. H. Siu and M. Ostendorf, “Variable N-gram Language Modeling and Extensions for Conversational Speech,” *Proc. Eurospeech*, vol. 5, pp. 2739-2742, 1997.
- * R. Iyer, M. Ostendorf and H. Gish, “Using Out-of-Domain Data to Improve In-Domain Language Models,” *IEEE Signal Processing Letters*, vol. 4, no. 8, pp. 221-223, August 1997.
- R. Iyer and M. Ostendorf, “Modeling Long Distance Dependence in Language,” *Proc. of the International Conference on Spoken Language Processing*, Vol. 1, pp. 236-239, 1996.
- M.H. Siu, M. Ostendorf, and H. Gish, “Modeling Disfluencies in Conversational Speech,” *Proc. of the International Conference on Spoken Language Processing*, Vol. 1, pp. 386-389, 1996.
- R. Iyer, M. Ostendorf and J. R. Rohlicek, “Language Modeling with Sentence-Level Mixtures,” *Proc. of the ARPA Workshop on Human Language Technology*, March 1994, pp. 82-87.

Prosody Analysis and Modeling for Speech Understanding

- J. Y. Cho, S. Ng, T. Tran and M. Ostendorf, “Leveraging prosody for punctuation prediction of spontaneous speech,” *Proc. Interspeech*, 2022.
- T. Tran and M. Ostendorf, “Assessing the use of prosody in constituency parsing of imperfect transcripts,” *Proc. Interspeech*, 2021.
- V. Zayats, T. Tran, R. Wright, C. Mansfield and M. Ostendorf, “Disfluencies and human speech transcription errors,” *Proc. Interspeech*, 2019.
- T. Tran, J. Yuan, Y. Liu and M. Ostendorf, “On the role of style in parsing speech with neural models,” *Proc. Interspeech*, 2019.
- V. Zayats and M. Ostendorf, “Giving attention to the unexpected: using prosody innovations in disfluency detection,” *Proc. NAACL*, pp. 86-95, 2019.
- T. Tran, S. Toshiwal, M. Bansal, K. Gimpel, K. Livescu and M. Ostendorf, “Parsing speech: A neural approach to integrating lexical and acoustic-prosodic information,” *Proc. NAACL*, pp. 69-81, 2018.
- V. Freeman, G.-A. Levow, R. Wright, and M. Ostendorf, “Investigating the role of ‘yeah’ in stance-dense conversation,” *Proc. Interspeech*, 2015.
- G.-A. Levow, V. Freeman, A. Hrynkevich, M. Ostendorf, R. Wright, J. Chan and T. Tran, “Recognition of stance strength and polarity in spontaneous speech,” *Proc. IEEE SLT Workshop*, pp. 236-241, 2014.

- Y. Luan, R. Wright, M. Ostendorf and G.-A. Levow, “Relating automatic vowel space estimates to talker intelligibility,” *Proc. Interspeech*, 2014.
- J. Medero and M. Ostendorf, “Atypical prosodic structure as an indicator of reading level and text difficulty,” *Proc. North American Association of Computational Linguistics – Human Language Technology (NAACL HLT)*, June 2013.
- A. Margolis and M. Ostendorf, “Question detection in spoken conversations using textual conversations,” *Proc. ACL Conference*, pp. 118-124, 2011.
- A. Margolis, M. ostendorf and K. Livescu, “Cross-genre training for automatic prosody classification,” *Proc. Speech Prosody Conference*, 2010.
- M. Ostendorf, “Transcribing human-directed speech for spoken language processing,” *Proc. Interspeech*, pp. 21-27, 2009.
- A. Margolis and M. Ostendorf, “Acoustic-based pitch-accent detection in speech: Dependence on word identity and insensitivity to variations in word usage,” *Proc. ICASSP*, pp. 4513-4516, 2009.
- A. Dashiell, B. Hutchinson, A. Margolis, and M. Ostendorf, “Non-segmental duration features extraction for prosodic classification,” *Proc. Interspeech*, pp. 1092-1095, 2008.
- * M. Ostendorf *et al.*, “Speech segmentation and its impact on spoken document processing,” *Signal Processing Magazine*, vol. 25, no. 3, pp. 59-69, May 2008.
- B. Favre, R. Grishman, D. Hillard, H. Ji, D. Hakkani-Tur, and M. Ostendorf, “Punctuating speech for information extraction,” *Proc. ICASSP*, pp. 5013-5016, 2008.
- E. Matusov, D. Hillard, M. Magimai-Doss, D. Hakkani-Tur, M. Ostendorf, and H. Ney, “Improving speech translation with automatic boundary prediction,” *Proc. Interspeech*, pp. 2449-2452, 2007.
- D. Hillard, Z. Huang, H. Ji, R. Grishman, D. Hakkani-Tur, M. Harper, M. Ostendorf and W. Wang, “Impact of automatic comma prediction on POS and name tagging of speech,” *Proc. IEEE/ACL Workshop on Spoken Language Technology*, pp. 58-61, December 2006.
- W. McNeill, J. Kahn, D. Hillard and M. Ostendorf, “Phrase structure and segmentation for improving speech recognition,” *Proc. IEEE/ACL Workshop on Spoken Language Technology*, pp. 90-93, December 2006.
- C. Boulis and M. Ostendorf, “Using symbolic prominence to help design feature subsets for topic classification and clustering of natural human-human conversations,” *Proc. Interspeech Conference*, pp. 425-428, 2005.
- J. G. Kahn, M. Lease, E. Charniak, M. Johnson and M. Ostendorf, “Effective use of prosody in parsing conversational speech,” *Proc. EMNLP-HLT*, pp. 233-240, 2005.
- M. Ostendorf and D. Hillard, “Scoring Structural MDE: Towards More Meaningful Error Rates,” *Proc. Rich Transcription Workshop*, November 2004. (Runner-up for paper award.)
- M. Ostendorf, J. Kahn, D. Wong, D. Hillard and W. McNeill, “Leveraging Structural MDE in Language Processing,” *Proc. Rich Transcription Workshop*, November 2004.
- J. Kahn, M. Ostendorf, and C. Chelba, “Parsing Conversational Speech Using Enhanced Segmentation,” *Proc. HLT-NAACL*, comp. vol., pp. 125-128, May 2004.
- D. Hillard, M. Ostendorf, and A. Stolcke, “Improving Automatic Sentence Boundary Detection with N-Best Recognition Results and Confusion Networks,” *Proc. HLT-NAACL*, comp. vol., pp. 69-72, May 2004. (An updated version appears in the 2004 *Proc. Rich Transcription Workshop*.)
- J. Kim, S. Schwarm and M. Ostendorf, “Detecting structural metadata with decision trees and transformation-based learning,” *Proc. HLT-NAACL*, pp. 137-144, May 2004.

- D. Hillard, M. Ostendorf and E. Shriberg, "Detection of agreement vs. disagreement in meetings: training with unlabeled data," *Proc. HLT-NAACL*, Comp. Vol., pp. 34-36, May 2003.
- + M. Ostendorf, I. Shafran and R. Bates, "Prosody models for conversational speech recognition," *Proc. of the 2nd Plenary Meeting and Symposium on Prosody and Speech Processing*, pp. 147-154, Feb. 2003.
- M. Ostendorf, I. Shafran, S. Shattuck-Hufnagel, B. Byrne and L. Carmichael, "A prosodically labeled database of spontaneous speech," *Proc. of the ISCA Workshop on Prosody in Speech Recognition and Understanding*, pp. 119-121, October 2001.
- + M. Ostendorf, "Prosodic Boundary Detection," in *Prosody: Theory and Experiment. Studies Presented to Gösta Bruce*, M. Horne (Ed.), Kluwer, pp. 263-280, 2000.
- *+ M. Ostendorf, "Linking Speech Recognition and Language Processing Through Prosody," *CC-AI*, vol. 15, no. 3, pp. 279-303, 1998.
- A. Stolcke, E. Shriberg, R. Bates, M. Ostendorf, D. Hakkani, M. Plauche, G. Tür and Y. Lu, "Automatic Detection of Sentence Boundaries and Disfluencies based on Recognized Words," *Proc. of the International Conference on Spoken Language Processing*, 1998, vol. 5, pp. 2247-2250.
- + M. Ostendorf and K. Ross, "A Multi-Level Model for Recognition of Intonation Labels," in *Computing Prosody*, Y. Sagisaka, N. Campbell and N. Higuchi (Eds.), pp. 291-308, Springer-Verlag, New York, 1997.
- * M. Swerts and M. Ostendorf, "Prosodic and Lexical Indications of Discourse Structure in Human-Machine Interactions," *Speech Communications*, vol. 22, No. 1, pp. 25-41, 1997.
- + P. Price and M. Ostendorf, "Combining Linguistic with Statistical Methods in Modeling Prosody," in J. L. Morgan and K. Demuth (Eds.), *Signal to syntax: Bootstrapping from speech to grammar in early acquisition*, pp. 67-83, Hillsdale, NJ: Lawrence Erlbaum Associates, 1996.
- * L. Dille, S. Shattuck-Hufnagel and M. Ostendorf, "Glottalization of Vowel-Initial Syllables as a Function of Prosodic Structure," *Journal of Phonetics*, 24, pp. 423-444 1996.
- K. Ross and M. Ostendorf, "A Dynamical System Model for Recognizing Intonation Patterns," *Proc. Eurospeech*, Sept. 1995, Vol. 2, pp. 993-996.
- M. Swerts and M. Ostendorf, "Discourse Prosody in Human-Machine Interactions," *Proc. of the ESCA Tutorial and Research Workshop on Spoken Dialogue Systems - Theories and Applications*, June 1995.
- * C. W. Wightman and M. Ostendorf, "Automatic Labeling of Prosodic Patterns," *IEEE Trans. Speech and Audio Processing*, Vol. 2, No. 4, October 1994, pp. 469-481.
- M. Ostendorf, P. J. Price and S. Shattuck-Hufnagel, "Combining Statistical and Linguistic Methods for Modeling Prosody," *Proc. of the ESCA Workshop on Prosody*, Lund, Sweden, September 1993, pp. 272-275.
- * M. Ostendorf, C. W. Wightman, and N. M. Veilleux, "Parse Scoring with Prosodic Information: An Analysis/Synthesis Approach," *Computer Speech and Language*, July 1993, pp. 193-210.
- N. Veilleux and M. Ostendorf, "Probabilistic Parse Scoring with Prosodic Information," *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, Vol. II, April 1993, pp. 51-55.
- N. Veilleux and M. Ostendorf, "Prosody/Parse Scoring and its Application in ATIS," *Proc. of the ARPA Workshop on Human Language Technology*, March 1993, pp. 335-340.
- N. Veilleux, C. W. Wightman and M. Ostendorf, "Parse Scoring with Prosodic Information," *Proc. of the International Conference on Spoken Language Processing*, October 1992, pp. 1605-1608.
- C. W. Wightman and M. Ostendorf, "Automatic Recognition of Intonational Features," the *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, March 1992, Vol. I, pp. 221-224.

- * C. Wightman, S. Shattuck-Hufnagel, M. Ostendorf and P. J. Price, "Segmental Durations in the Vicinity of Prosodic Phrase Boundaries," *Journal of the Acoustical Society of America*, vol. 91, no. 3, March 1992, pp. 1707-1717.
- N. Veilleux and M. Ostendorf, "Probabilistic Parse Scoring Based on Prosodic Phrasing," *Proc. of the DARPA Workshop on Speech and Natural Language*, pp. 429-434, February 1992.
- * P. J. Price, M. Ostendorf, S. Shattuck-Hufnagel and C. Fong, "The Use of Prosody in Syntactic Disambiguation," *Journal of the Acoustical Society of America*, vol. 90, no. 6, December 1991, pp. 2956-2970.
- P. Price, M. Ostendorf, S. Shattuck-Hufnagel, "The Use of Prosody in Syntactic Disambiguation," *Proc. of the DARPA Workshop on Speech and Natural Language*, February 1991, pp. 372-377. A shorter version appears as "Disambiguating Sentences using Prosody," P. Price, M. Ostendorf, S. Shattuck-Hufnagel, *Proc. Inter. Congr. on Phonetic Sciences*, Vol. II, pp. 418-421, August 1991.
- C. W. Wightman and M. Ostendorf, "Automatic Recognition of Prosodic Phrases," *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, May 1991, pp. 321-324.
- C. W. Wightman, N. M. Veilleux and M. Ostendorf, "Use of Prosody in Syntactic Disambiguation: An Analysis-by-Synthesis Approach," *Proc. of the DARPA Workshop on Speech and Natural Language*, February 1991, pp. 384-389.
- M. Ostendorf, P. Price. J. Bear and C. W. Wightman, "The Use of Relative Duration in Syntactic Disambiguation," *Proc. of the DARPA Speech and Natural Language Workshop*, June 1990, pp. 26-31. A shorter version appears in the *Proc. of the International Conference on Spoken Language Processing*, November 1990, pp. 13-16.
- J. W. Butzberger Jr., M. Ostendorf, P. J. Price and S. Shattuck-Hufnagel, "Isolated Word Intonation Recognition Using Hidden Markov Models," *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, April 1990, pp. 773-776.
- P. J. Price, M. Ostendorf, and C. W. Wightman, "Prosody and Parsing," *Proc. of the 2nd DARPA Speech and Natural Language Workshop*, October 1989, pp. 5-11.

Speech Synthesis and Generation

- * I. Bulyko, K. Kirchhoff, M. Ostendorf and J. Goldberg, "Error-correction detection and response generation in a spoken dialogue system," *Speech Communication*, Vol. 45. No. 3, 2005, pp. 271-288.
- + M. Ostendorf and I. Bulyko, "The Use of Speech Recognition Technology in Speech Synthesis," in *Text-to-Speech Synthesis: New Paradigms and Advances*, ed. S. Narayanan and A. Alwan, Prentice Hall, 2004.
- J. Goldberg, M. Ostendorf and K. Kirchhoff, "The Impact of Response Wording in Error Correction Subdialogs," *Proc. ISCA Workshop on Error Handling in Spoken Dialog Systems*, September 2003.
- * I. Bulyko and M. Ostendorf, "Efficient Integrated Response Generation from Multiple Targets using Weighted Finite State Transducers," *Computer Speech and Language*, vol. 16, no. 3-4, pp. 533-550, 2002.
- + M. Ostendorf and I. Bulyko, "The impact of speech recognition on speech synthesis," *Proc. IEEE Workshop on Speech Synthesis*, Sept. 2002.
- I. Bulyko, M. Ostendorf, and J. Bilmes, "Robust splicing costs and efficient search with BMM models for concatenative speech synthesis," *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, vol. I, pp. 461-464, May 2002.
- I. Bulyko and M. Ostendorf, "A bootstrapping approach to automating prosodic annotation for limited-domain synthesis," *Proc. IEEE Workshop on Speech Synthesis*, Sept. 2002.
- I. Bulyko and M. Ostendorf, "Unit Selection for Speech Synthesis Using Splicing Costs with Weighted Finite State Transducers," *Proc. of Eurospeech*, vol. 2, pp. 987-990, September 2001.

- I. Bulyko and M. Ostendorf, “Joint Prosody Prediction and Unit Selection for Concatenative Speech Synthesis,” *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, vol. II, pp. 781-784, 2001.
- * K. Ross and M. Ostendorf, “A Dynamical System Model for Generating Fundamental Frequency for Speech Synthesis,” *IEEE Transactions on Speech and Audio Processing*, vol. 7, no. 3, pp. 295-309, 1999.
- I. Bulyko and M. Ostendorf, “Predicting Gradient F0 Variation: Pitch Range and Accent Prominence,” *Proc. Eurospeech*, 1999, pp. 1819-1822.
- I. Bulyko, M. Ostendorf and P. J. Price, “On the Relative Importance of Different Prosodic Factors for Improving Speech Synthesis,” *XIVth International Congress of Phonetic Sciences*, 1999, pp. 81-84.
- R. Sproat, A. Hunt, M. Ostendorf, P. Taylor, A. Black, K. Lenzo, and M. Edgington, “SABLE: A Standard for TTS Markup,” *Proc. of the International Conference on Spoken Language Processing*, 1998, vol. 5, pp. 1719-1722.
- C. Fordyce and M. Ostendorf, “Prosody Prediction for Speech Synthesis using Transformational Rule-based Learning,” *Proc. of the International Conference on Spoken Language Processing*, 1998, vol. 3, pp. 843-846.
- * K. Ross and M. Ostendorf, “Prediction of Abstract Prosodic Labels for Speech Synthesis,” *Computer, Speech and Language*, Vol. 10, No. 3, July 1996, pp. 155-185.
- K. Ross and M. Ostendorf, “A Dynamical System Model for Generating F₀ for Synthesis,” *Proc. of the ESCA/IEEE Workshop on Speech Synthesis*, pp. 131-134, September 1994.
- * S. Shattuck-Hufnagel, M. Ostendorf and K. Ross, “Stress Shift and Early Pitch Accent Placement in Lexical Items in American English,” *Journal of Phonetics*, Vol. 22, 1994, pp. 357-388.
- * M. Ostendorf and N. Veilleux, “A Hierarchical Stochastic Model for Automatic Prediction of Prosodic Boundary Location,” *Computational Linguistics*, Vol. 20, No. 1, 1994, pp. 27-54.
- K. Ross, M. Ostendorf and S. Shattuck-Hufnagel, “Factors Affecting Pitch Accent Placement,” *Proc. of the International Conference on Spoken Language Processing*, October 1992, pp. 365-368.
- with K. Silverman *et al.*, “TOBI: A Standard for Labeling English Prosody,” *Proc. of the International Conference on Spoken Language Processing*, October 1992, pp. 867-870.
- S. Shattuck-Hufnagel, M. Ostendorf, and K. Ross, “Pitch Accent Placement within Words,” *Proc. of the IRCS Workshop on Prosody in Natural Speech*, ed. M. Liberman and Cynthia McLemore, August 1992, pp. 181-192.
- N. Veilleux, M. Ostendorf, S. Shattuck-Hufnagel and P. J. Price, “Markov Modeling of Prosodic Phrase Structure,” *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, April 1990, pp. 777-780.

Other Applications

- S. Ng, G. Ellis, P. Souza, F. Gallun, R. Wright, and M. Ostendorf, “Assessing the stability of the spectro-temporal cue weighting angle for listener categorization,” *Proceedings of the Meetings on Acoustics*, vol. 45, no. 1, 2023.
- * A. Jaech, B. Zhang, M. Ostendorf and D. Kirschen, “Real-Time Prediction of the Duration of Distribution System Outages,” *IEEE Transactions on Power Systems*, 34(1):773-781, 2019.
- * K. Lybarger, M. Ostendorf, E. Riskin, T. Payne, A. White and M. Yetisgen, “Asynchronous speech recognition affects physician editing of notes,” *Journal of Applied Clinical Informatics*, 2018.
- N. Nichols and M. Ostendorf, “Weakly supervised click models for odontocete species classification,” *Proc. IEEE OCEANS*, pp. 1-4, 2014.

- M. Ostendorf, J. Bowen, and A. Margolis, “Freshman design: A signal processing approach,” *Proc. ICASSP*, pp. 2325-2328, 2009.
- * O. Çetin, M. Ostendorf and G. Bernard, “Multi-rate Hidden Markov Models for Monitoring of Machining Tool Wear,” *IEEE Trans. Signal Processing*, vol. 55, no. 6, pt. 2, pp. 2885-2896, 2007.
- O. Çetin and M. Ostendorf, “Mult-rate hidden Markov models and their application to machining tool-wear classification,” *Proc. ICASSP*, vol. V, pp. 837-840, May 2004.
- * R. Fish, M. Ostendorf, G. D. Bernard and D. Castanon, “Multilevel Classification of Milling Tool Wear with Confidence Estimation,” *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. 25, no. 1, pp. 75-85, 2003.
- M. Ostendorf, L. Atlas, R. Fish, Ö. Çetin, S. Sukittanon, and G. D. Bernard, “Joint Use of Dynamical Classifiers and Ambiguity Plane Features,” *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, vol. VI, pp. 3589-3592, 2001.
- * A. Kannan, M. Ostendorf, W. C. Karl, D. Castañon and R. Fish, “ML Parameter Estimation of a Multiscale Stochastic Process using the EM Algorithm,” *IEEE Transactions on Signal Processing*, vol. 48, no. 6, pp. 1836-1840, 2000.
- R. Fish, M. Ostendorf, G. Bernard, D. Castañon and H. Shivakumar, “Modeling the progressive nature of milling tools wear,” *Proc. of the International Mechanical Engineering Congress & Exposition*, Nov. 2000.
- L. Atlas, M. Ostendorf, and G. Bernard, “Hidden Markov models for monitoring machining tool-wear,” *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, vol. VI, pp. 3887-3890, 2000.
- * O. Ronen, J. R. Rohlicek and M. Ostendorf, “Parameter Estimation of Dependence Tree Models Using the EM Algorithm,” *IEEE Signal Processing Letters*, Vol. 2, No. 8, August 1995, pp. 157-159.
- * R. M. Gray, M. Ostendorf Dunham and R. Gobbi, “Ergodicity of Markov Channels,” *IEEE Transactions on Information Theory*, Sept. 1987, pp. 656-664.
- S. Roucos and M. Ostendorf Dunham, “A Comparison of Two Methods for Very-Low-Rate Speech Coding,” *Proc. of the Milcom Conference*, Boston, MA, October 1985.
- * J. Foster, R. M. Gray and M. Ostendorf Dunham, Finite-State Vector Quantization for Waveform Coding,” *IEEE Transactions on Information Theory*, May 1985, pp. 348-359. (A reprint appears in *Vector Quantization*, ed. H. Abut, IEEE Press 1990.)
- * M. Ostendorf Dunham and R. M. Gray, “An Algorithm for the Design of Labeled-Transition Finite-State Vector Quantizers,” *IEEE Transactions on Communications*, January 1985, pp. 83-89.

System Overviews, System-Level Optimization and Corpora

- H. Fang, H. Cheng, E. Clark, A. Holtzman, M. Sap, Y. Choi, N. A. Smith and M. Ostendorf, “Sounding Board: A user-driven and content-driven social chatbot,” *Proc. NAACL*, demo paper, 2018.
- V. Freeman, J. Chan, G.-A. Levow, R. Wright, M. Ostendorf and V. Zayats, “Manipulating stance and involvement using collaborative tasks: An exploratory comparison,” *Proc. Interspeech*, 2014.
- * N. Ayan, A. Mandal, M. Frandsen, J. Zheng, P. Blasco, A. Kathol, F. Bechet, B. Favre, A. Marin, T. Kwiatkowski, M. Ostendorf, L. Zettlemoyer, P. Salletmayr, J. Hirschberg, S. Stoyanchev, “Can you give me another word for hyperbaric?: Improving speech translation using targeted clarification,” *Proc. ICASSP*, pp. 8391-8395, 2013.
- * J. G. Kahn, M. Snover, and M. Ostendorf, “Expected Dependency Pair Match: Predicting translation quality with expected syntactic structure,” *Machine Translation*, DOI: 10.1007/s10590-009-9057-6, 2009.

- * M.-Y. Hwang, G. Peng, M. Ostendorf, W. Wang, A. Faria and A. Heidel, "Building a highly accurate Mandarin speech recognizer with language-independent technologies and language-dependent modules," *IEEE Trans. Audio, Speech and Language Processing*, vol. 17, no 7, pp. 1253-1262, 2009.
- * M. Ostendorf, B. Favre, R. Grishman, D. Hakkani-Tur, M. Harper, D. Hillard, J. Hirschberg, H. Ji, J.G. Kahn, Y. Liu, S. Maskey, E. Matusov, H. Ney, A. Rosenberg, E. Shriberg, W. Wang and C. Wooters, "Speech segmentation and spoken document processing," *IEEE Signal Processing Magazine*, vol. 25, no. 3, pp.59-69, 2008.
- J. G. Kahn, M. Ostendorf and B. Roark, "Automatic syntactic MT evaluation with expected dependency pair match," Proc. of the NIST MetricsMATR Workshop, 2008.
- D. Hillard, M. Hwang, M. Harper and M. Ostendorf, "Parsing-based objective functions for speech recognition in translation applications," *Proc. ICASSP*, pp. 5109-5112, 2008.
- M.-Y. Hwang, G. Peng, W. Wang, A. Faria, A. Heidel, and M. Ostendorf, "Building a highly accurate Mandarin speech recognizer," *Proc. ASRU*, pp. 490-493, December 2007.
- D. Hillard, B. Hoffmeister, M. Ostendorf, R. Schülter and H. Ney, "iRover: Improving system combination with classification," *Proc. HLT-NAACL Conference*, pp. 65-68, 2007.
- B. Hoffmeister, D. Hillard, S. Hahn, R. Schülter, M. Ostendorf and H. Ney, "Cross-site and intra-site ASR system combination: Comparisons on lattice and 1-best methods," *Proc. ICASSP*, pp. IV-1145-1148, 2007.
- * with A. Stolcke *et al.*, "Recent innovations in speech-to-text transcription at SRI-ICSI-UW," *IEEE Trans. Audio, Speech and Language Processing*, Vol 14, No. 5, pp. 1729-1744, 2006.
- * Y. Liu, E. Shriberg, A. Stolcke, D. Hillard, M. Ostendorf and M. Harper, "Enriching speech recognition with automatic detection of sentence boundaries and disfluencies," *IEEE Trans. Audio, Speech and Language Processing*, Vol 14, No. 5, pp. 1526-1540, 2006.
- + with C. Fuegen *et al.*, "The ISL RT-06S Speech-to-Text System. In Machine Learning for Multimodal Interaction," (S. Renals, S. Bengio, and J. Fiscus, eds.), Springer Berlin/Heidelberg (Lecture Notes in Computer Science 4299), pp. 407-418, 2006. (A shorter version appears in the *Proc. of the International Conference on Spoken Language Processing*, 2006, pp. 1229-1232.)
- with B. Roark *et al.*, "SParseval: Evaluation metrics for parsing speech," *Proc. LREC*, 2006.
- with Y. Liu *et al.*, "Structural Metadata Research in the EARS Program," *Proc. ICASSP*, Vol. V, pp. 957-960, 2005.
- with M. Hwang *et al.*, "Progress on Mandarin conversational telephone speech recognition," *Proc. ISCSLP*, December 2004.
- M. Hwang, X. Lei, T. Ng, M. Ostendorf, A. Stolcke, W. Wang, J. Zheng and V. Gadde, "Porting Decipher from English to Mandarin," *Proc. Rich Transcription Workshop*, November 2004.
- with Y. Liu *et al.*, "The ICSI-SRI-UW Metadata Extraction System," *Proc. ISCSLP*, vol. I, pp. 577-580, October 2004.
- with N. Mirghafori *et al.*, "From Switchboard to Meetings: Development of the 2004 ICSI-SRI-UW Meeting Recognition System," *Proc. ISCSLP*, vol. III, pp. 1957-1960, October 2004.
- O. Cetin, H. J. Nock, K. Kirchhoff, J. Bilmes and M. Ostendorf, "The 2001 GMTK-based SPINE ASR system," *Proc. International Conference on Spoken Language Processing*, vol. 2, 1037-1040, Sept. 2002.
- M. Ostendorf, F. Richardson, R. Iyer, A. Kannan, O. Ronen and R. Bates, "The 1994 BU NAB News Benchmark System," *Proc. of the ARPA Workshop on Spoken Language Technology*, January 1995, pp. 139-142.

- M. Ostendorf, F. Richardson, S. Tibrewal, R. Iyer, O. Kimball, and J. R. Rohlicek, “Stochastic Segment Modeling for CSR: the BU WSJ Benchmark System,” *Proc. of the ARPA Workshop on Spoken Language Technology*, 1994, pp. 94-97.
- M. Ostendorf, A. Kannan, O. Kimball and J. R. Rohlicek, “Continuous Word Recognition Based on the Stochastic Segment Model,” *Proc. of the DARPA Workshop on Continuous Speech Recognition*, 1992.
- with Y. Chow *et al.*, “BYBLOS: The BBN Continuous Speech Recognition System,” *Proc. of the International Conference on Acoustics, Speech and Signal Processing*, Dallas, Texas, April 1987, pp. 89-92.

Surveys and Columns

- * M. Marge *et al.*, “Spoken language interaction with robots: Recommendations for future research,” *Computer Speech and Language*, vol. 71, 101255, 2022.
- * M. Ostendorf, “Speech technology and information access,” *Signal Processing Magazine*, vol. 25, no. 3, pp. 149-152, May 2008.
- M. Ostendorf, E. Shriberg and E. Stolcke, “Human Language Technology: Opportunities and Challenges,” *Proc. ICASSP*, Vol. V, pp. 949-953, 2005.
- J. Picone and M. Ostendorf, “New Approaches to Stochastic Modeling of Speech,” *Proc. of the IEEE Workshop on Speech Recognition*, Dec. 1995.
- * R. Cole *et al.*, “The Challenge of Spoken Language Recognition: Research Directions for the 90s,” with *IEEE Trans. Speech and Audio Processing*, Vol. 3, No. 1, January 1995, pp. 1-21.

BOOKS EDITED:

Mathematical Foundations of Speech and Language Processing, ed. M. Johnson, S. Khudanpur, M. Ostendorf and R. Rosenfeld, vol. 138, IMA Volumes in Mathematics and its Applications, Springer-Verlag, New York, 2004.

Mentoring for Academic Careers in Engineering: Proceedings of the PAESMEM/Stanford School of Engineering Workshop, ed. E. Riskin, M. Ostendorf, P. Cosman, M. Effros, J. Li, S. Hemami, R. M. Gray, Grayphics Publishing, 2005.

PATENTS:

- U.S. Patent Number 5839105A issued November 1998
Speaker-independent model generation apparatus and speech recognition apparatus each equipped with means for splitting state having maximum increase in likelihood, Mari Ostendorf and Harald Singer
- U.S. Patent Number 9,336,769 issued May 2016
Relative semantic confidence measure for error detection in ASR, Makoto Terao and Mari Ostendorf

SELECTED INVITED TALKS:

“Understanding conversation context is central to conversational AI,” *DialDoc Workshop at ACL*, May 2022.

“Context-Aware Language Processing,” *Asia-Pacific Signal and Information Processing Association Conference*, December 2020.

“Contextualized Language Processing with Explicit Context Representations,” *Beijing Academy of AI Conference Forum on Speech and Natural Language Processing*, June 2020.

“Conversational Systems and the Marriage of Speech and Language,” *International Conf. Acoustics, Speech & Signal Processing*, Barcelona, May 2020.

“Contextualized Language Processing with Explicit Representations of Context,” *Oberlander Lecture*, University of Edinburgh, December 2019.

“Spoken language as a multimodal signal,” *West Coast Natural Language Processing Workshop*, Menlo Park, CA, September 2019.

“Modeling the user in socialbot conversations,” *NeurIPS Workshop on Conversational AI*, Montreal, Canada, December 2018.

“Characterizing the user in socialbot conversations,” *1st Uber Science Symposium*, San Francisco, CA, November 2018.

“Understanding the user in socialbot conversations,” *Search-oriented Conversational AI Workshop*, Belgium, October 2018.

“Understanding the user in socialbot conversations,” *SIGDIAL Conference*, Plenary, Melbourne, Australia, July 2018.

“Building a socialbot: Lessons learned from 10M conversations,” *Speech Signal Processing Workshop*, Association for Computational Linguistics and Chinese Language Processing, Tai-Chung, Taiwan, July 2018.

“Conversational Artificial Intelligence,” *Services Conference Federation*, June 2018.

“Building a socialbot: Lessons learned from 10M conversations,” *Conference of the North American Association for Computational Linguistics*, Industry Track Plenary, New Orleans, LA, June 2018.

“Learning from users: Building a user-centric and content-driven social chatbot,” *Amazon Machine Learning Workshop*, Seattle, WA, April 2018.

“The role of prosody in social artificial intelligence,” *SP/SLP Joint Symposium on Spoken Language*, Waseda University, Japan, December 2017.

“Continuous space language processing: Beyond word embeddings,” *International Conference on Statistical Language and Speech Processing*, plenary, Czech Republic, October 2016.

“Assessing text difficulty via automatic analysis of oral reading,” *IEEE Distinguished Lecture*, ETS, November 2014.

“Language as a signal: A continuous space approach,” *IEEE WIE Brazil Symposium on Signal Processing*, September 2014.

“Language processing as signal processing,” *AT&T Research Distinguished Speaker*, August 2013.

“Language processing as signal processing,” *China Signal and Information Processing Conference*, Beijing, China, July 2013.

Scottish Informatics and Computer Science Alliance (SICSA) Distinguished Visitor Talk Series: University of Edinburgh, University of Glasgow, St. Andrews University, Scotland, November 2012.

“Human language: A signal processing perspective,” *Women’s Workshop on Communications and Signal Processing*, July 2012.

“Translatable language technology – Beyond HMMs and n-grams,” *International Symposium on Chinese Spoken Language Processing*, plenary, December 2010.

“Representations of prosody in computational models for language processing,” *Speech Prosody Conference*, plenary, May 2010.

“Transcribing speech for spoken language processing,” *Interspeech Conference*, plenary, September 2009.

“On the role of local learning for language modeling,” *NIPS Workshop on Speech and Language: Learning-based Methods and Systems*, December 2008.

“Managing spoken documents,” *International Workshop on Multimedia Signal Processing*, plenary, October 2006.

“Understanding prosody for understanding speech,” *Complexity Conference of the Northwestern Institute on Complex Systems*, April 2006.

“Spontaneous speech: challenges and opportunities for parsing,” *International Workshop on Parsing Technologies*, plenary, October 2005.

“Modeling Spoken Language,” USC EE Department Distinguished Lecture Series, September 2004.

“An overview of speech recognition,” *American Association for the Advancement of Science*, February 2004.

“Prosody models for conversational speech recognition,” *2nd Plenary Meeting and Symposium on Prosody and Speech Processing*, University of Tokyo, February 2003.

“The impact of speech recognition on speech synthesis,” *IEEE 2002 Workshop on Speech Synthesis*, September 2002.

“Integrating speech synthesis with language generation,” *International Natural Language Generation Conference*, July 2002.

“Humanizing the voice of the machine,” M. Ostendorf and Jim Fruchterman, *American Association for the Advancement of Science*, February 2000.

“Moving beyond the ‘beads-on-a-string’ model of speech,” *IEEE ASRU Workshop*, December 1999.

“Incorporating linguistic theories of phonological variation into speech recognition models,” *Royal Society/British Academy joint discussion meeting*, London, UK, September 1999.

“A Dynamical System Model for Recognition of Intonation Labels,” *ATR International Workshop on Computational Modeling of Prosody for Spontaneous Speech Processing*, Kyoto, Japan, April 1995.

“Lectures on segment modeling and hierarchical acoustic modeling,” *NATO ASI Workshop on Computational Models of Speech Pattern Processing*, Jersey, UK, July 1997.

“Prosody and Speech Recognition – the ASR View,” *Workshop on Methods and Models of Spoken Word Recognition, at the Max Planck Institute for Psycholinguistics*, Nijmegen, Netherlands, January 1995.

“Linking Speech and Language Processing Through Prosody,” *Meeting of the Acoustical Society of America*, Boston, MA, June 1994.

“Prosody, Generation and Spoken Language Systems,” *International Workshop on Text Generation*, Kennebunkport, Maine, June 1994.

“Computational Models of Prosody for Spoken Language Processing,” Case Western Reserve University, NSF-sponsored Invited Speaker Series, April 1992.

“The Stochastic Segment Model for Continuous Speech Recognition,” *25th Asilomar Conference on Signals, Systems and Computers*, November 1991.

“Research in speech understanding”, NSF CISE Directorate review, September 1989.

Invited lectures in academic and industrial research labs: MIT-LCS (1989, 1991, 1997), BBN (1989), Xerox PARC (1990, 1992), AT&T (1991), SRI (1991, 1995, 1996), IBM (1991), Brown University (1991), NTT Tokyo (1993), ATR (1993, 1995, 1997), Cambridge University, UK (1994), Johns Hopkins University (1994, 1996, 1997), ICSI (1994), Dragon Systems (1994), DRA (1994), Microsoft (1996), MIT-RLE (1998), Ohio State Univer-

sity (1998), University of Edinburgh, Scotland (1999), Oregon Graduate Institute (2001), ISI/USC (2001), UCLA (2001), Tokyo Institute of Technology, Japan (2003), UW/Microsoft Linguistics Symposium (2004), Cambridge University, UK (2005), University of Karlsruhe, Germany (2006), IDIAP, Switzerland (2006), Technical University of Munich, Germany (2006), Northwestern University (2006), University of Erlangen, Germany (2006), Saarland University and DFKI, Germany (2006), INESC, Lisbon, Portugal (2006), Bosch (2007), JHU CLSP (2007), Microsoft (2008), UCLA (2008), National University of Singapore (2011), Nara Institute of Science and Technology, Japan (2012), University of Maryland, College Park (2012), Macquarie University, Australia (2012), University of Texas, Dallas (2012), University of Canberra, Australia (2013), Chinese University of HongKong, Hong Kong (2013), University of New South Wales, Australia (2013), Macquarie University, Australia (2013), University of Western Sydney, Australia (2013), Microsoft Asia, Beijing (2013), University of Pennsylvania (2014), Johns Hopkins University (2014), ICSI (2015), Macquarie University (2015), Microsoft (2015), Google (2015), CMU (2016), JHU (2018), National Taiwan University (2018), Apple (2018), TTIC (2018), Iowa State University (2019), University of Utah (2019), Google (2020), LxMLS (2020), Allstate (2023), Apple (2023), T-Mobile (2023)

VICE PROVOST RESEARCH AWARDS:

- “Washington National Primate Research Center competing renewal Y61-65,” NIH, PI, 6/2022 – 4/2027.
- “PNNL ISST Travel 23-25,” PNNL, 2/2023 – 12/2025.

RESEARCH AWARDS:

- “Improving language models for dialogue with human-AI feedback,” Apple Inc., 12/2023 – 12/2024.
- “Theme 6B: ALTStrong: Advancing AI Learning Technologies for Scalable Early Screening & Ability-based Intervention for Children with Speech and Language Related Concerns,” NSF, UW co-PI with UW PI Julie Kientz, subcontract to SUNY Buffalo, awarded pending IRB approval.
- “Improving Speech Technology for Better Learning Outcomes: The Case of AAE Child Speakers,” NSF, UW PI, Collaborative with PI Abeer Alwan (UCLA), Robin Morris (Georgia State), Julie Washington (UC Irvine), 9/2022 – 8/2025.
- “Spoken Language Processing for Computational Cultural Understanding,” DARPA via subcontract to Language Computer Corporation, PI, 3/2022 – 6/2023.
- “History-informed response generation for a customer interaction dialog system,” Allstate, PI (with co-PI Noah Smith), 10/2019 – 12/2023.
- “Predictive analysis of call center conversations,” T-Mobile (with co-PI Noah Smith), 10/2019 – 9/2020.
- “Improved automatic speech recognition in single channel VHF noise environment,” Boeing, PI (with co-PI Les Atlas), 9/2019 – 9/2020.
- “Automatic profiling of science assessment items to model item parameters: A natural language processing approach,” NSF, co-PI (with PI Min Li), 9/2019 – 9/2022.
- “Leveraging document context in question answering with tables,” Google Faculty Award, PI, 3/2019 – 3/2020.
- “Personalized Learning Companion Robots for Early Literacy and Language Learning: Dialogic Question Generation,” NSF (subcontract from MIT), UW PI, 1/1/2019 – 6/15/2020.
- “Amazon Alexa Fellowship,” Amazon, PI, 2018 – 2019.
- “Embedded sentence representations with structured context,” Tencent AI Lab Rhino-Bird Award, PI, 3/2018 – 12/2019.

- “Amazon Alexa Prize,” Amazon, PI (with Y. Choi and N. Smith), 2017.
- “RI:Small: Modeling Idiosyncracies of Speech for Automatic Spoken Language Processing,” NSF, PI (with co-PI Richard Wright), 9/16/2016 – 9/15/2020.
- “Dynamic context-adaptive models of language,” Google Faculty Award, PI, 2015 – 2016.
- “SURF,” subcontract from Securboration, PI (inherited from C. Guestrin), 9/9/2014 – 6/30/2017.
- “RI:EAGER:ATAROS: Automatic Tagging and Recognition of Stance,” NSF, co-PI (with PI Gina Levow and co-PI Richard Wright), 9/16/2013 – 9/15/2015.
- “Detecting Relations and Anomalies in Text and Speech,” DARPA (subcontract from Columbia), UW PI, 11/13/2012 – 11/31/2016.
- “Detecting contentious discussions and outlier positions via atypical interactions,” DARPA (subcontract from BBN), UW PI, 6/1/2012 – 9/15/2012.
- “Spoken Wordsearch with Rapid Development and Frugal Invariant Subword Hierarchies,” IARPA (subcontract from ICSI), UW PI, 3/2012 – 5/2014.
- “Computational modeling of transient sources for automated marine mammal species detection,” Boeing, PI, 1/1/2012 – 6/31/2015.
- “Broad Operational Language Technology,” DARPA (subcontract to SRI), UW PI, 10/2011 – 3/2014.
- “Northwest Alliance for Access to Science, Technology, Engineering and Mathematics (AccessStemII),” Co-PI with Sheryl Burgstahler, NSF, 11/2009 – 10/2013.
- “Simplifying Text for Individualized Reading Needs,” NSF, PI, 9/2009 – 8/2014.
- “Linguistic Cues to Social Goals in Spoken and Virtual, Private and Broadcast Interactions,” IARPA, 8/2009 – 10/2011.
- “A Collaborative Program for EE Systems Education,” NSF, PI, 9/2005 – 2/2008.
- “GALE: Rich Transcription for Machine Translation,” DARPA (subcontract to SRI), UW PI, 9/2005 – 6/2009.
- “ITR: Translation Technology for Language Modeling,” NSF, (includes subcontract to ISI), PI, 9/2003 – 8/2008, with supplement to support a summer workshop on semi-supervised learning.
- “Advanced Speech Encoding, Noise Reduction and Speaker Authentication Incorporating Non-Acoustic Measurements,” DARPA, senior investigator (with PI Les Atlas), 2003.
- “EARS Novel Approaches: Rethinking Acoustic Processing,” DARPA (subcontract via ICSI), UW PI, 6/02 – 12/04.
- “Effective Affordable Reusable Speech-to-Text: Semantic Annotation for Rich Transcription of Speech,” DARPA (subcontract via BBN), UW PI, 6/2002 – 12/2004.
- “Effective Affordable Reusable Speech-to-Text,” DARPA (subcontract via SRI), UW PI, 5/2002 – 12/2004.
- “Mapping Meetings: Language Technology to Make Sense of Human Interaction,” NSF (subcontract via ICSI), UW PI, 9/2001 – 9/2005.
- “Correlation of Prosodic Structure and Phonetic Prototypes: Implications for Human and Automatic Speech Recognition,” UW Center for Mind, Brain and Learning, PI, 7/2001 – 3/2002.
- “Information Access to Spoken Documents,” NSF (subcontract via Mississippi State University), UW PI, 9/2000 – 12/2004.

- “Feature-Based Automatic Language Identification,” Department of Defense, PI, 7/2000 – 9/2002.
- “Adaptive language modeling for automatic speech recognition of meetings,” IBM, PI, 6/2000 – 6/2002.
- “Robust recognition and dialog tracking for interactive information access,” DARPA (includes subcontract to ICSI), PI, 1/2000 – 12/2003.
- “Acquisition of Computer Facilities to Support and Interdisciplinary Multidata Signal and Image Processing Laboratory,” NSF, Co-PI (with PI H. Nawab and co-PIs W. C. Karl, and D. Castañon), 9/1998 – 8/2001.
- “Workshop for Discussing Research Priorities and Evaluation Strategies in Speech Synthesis,” NSF, PI, 7/1998 – 6/1999.
- “Modeling Structure in Speech above the Segment for Spontaneous Speech Recognition,” NSF, PI, 3/1997 – 2/2000.
- “Center for Auditory and Acoustics Research,” co-PI with PI L. Atlas, ONR (subcontract via the University of Maryland), 1997 - 2002.
- “Speech Generation for Human-Computer Language Interfaces,” ARPA-ONR, 9/1996 – 8/1997.
- “Acoustic Modeling for Spontaneous Speech Recognition,” ATR Interpreting Telecommunications Research Laboratories, 8/1996 – 7/1998.
- “Speech Generation for Human-Computer Interaction,” NSF, 5/1996 – 4/1999.
- “Development of Automatic Training Algorithms for Speaker-Specific F0 Generation,” subcontract to Entropic Research Lab, 1/1996 – 12/1996.
- “Structural Assumptions and Training Techniques for Improving the Portability of Statistical Language Models,” subcontract to BBN Inc., 9/95 – 9/98.
- “High-order Modeling Techniques for Continuous Speech Recognition,” ONR, 1/95 – 3/97.
- “Computational Modeling of Intonation,” NYNEX, 6/93 - 3/95.
- “Annotating a Radio News Corpus,” Linguistics Data Consortium, 5/93-4/94.
- “Segment-Based Acoustic Models for Continuous Speech Recognition,” DARPA-ONR, 6/92-5/95 (with BBN).
- “Duration Prediction for Text-to-Speech Synthesis,” Apple Computer, Inc., 6/92-8/92.
- “Evaluating the Use of Prosodic Information in Speech Recognition and Understanding,” NSF-DARPA, 8/89-8/92; NSF creativity award follow-on “Use of Prosody in Speech Understanding,” 7/92-7/96 (with MIT and SRI).
- “Segment-based Acoustic Models with Multi-Level Search Algorithms for Continuous Speech Recognition,” NSF-DARPA, 8/89-8/92 (with BBN).
- “Prosody Analysis/Synthesis Using Probabilistic Models and Linguistic Theory,” NSF, 12/88-12/91 (with MIT and SRI).
- Additional industrial gifts for collaborative research from Microsoft, Bosch, AT&T, and MobVoi, and from Intel for educational activities.

RESEARCH AND PROJECT SUPERVISION:

- Post-doctoral researcher supervision:

- Tao Yu (2021-2022), co-supervised with N. Smith
- Harriet Nock (2001-2002)
- Ivan Bulyko (2002-2004)
- Takahiro Shinozaki (2004-2006)
- Gang Peng (2006-2007)
- Ph.D. Thesis supervision: (41 graduated, 7 in progress)
 - In progress: Bo-Ru (Roy) Lu (ECE), Chia-Hsuan (Michael) Lee (ECE), Sara Ng (Linguistics, co-supervised with R. Wright), Kevin Everson (ECE), Sitong Zhou (ECE, co-supervised with M. Yetisgen), Yushi Hu (ECE, co-supervised with N. Smith), Junkai Wu (ECE)
 - Zequi (Ellen) Wu, EE Ph.D. 2024, University of Washington (w/ H. Hajishirzi)
Human-centered interactive information seeking
(Now at Microsoft)
 - Trang Tran, EE Ph.D. 2020, University of Washington
Neural models for integrating prosody in spoken language understanding
(Now a post-doctoral fellow at USC Institute for Creative Technologies.)
 - Vicky Zayats, EE Ph.D. 2020, University of Washington
Architectures for language processing that leverage observable structure in language
(Now a Research Scientist at Google.)
 - Kevin Lybarger, EE Ph.D. 2020, University of Washington (w/ M. Yetisgen)
Extracting information from clinical text with limited annotated data
(Now an Assistant Professor at George Mason University.)
 - Farah Nadeem, EE Ph.D. 2020, University of Washington
Automatic analysis of language use in K-16 STEM education and impact on student performance
(Now at UNICEF Pakistan.)
 - Hao Cheng, EE Ph.D. 2019, University of Washington
Unsupervised text representation learning with interactive language
(Now at Microsoft.)
 - Yi Luan, EE Ph.D. 2019, University of Washington (w/ H. Hajishirzi)
Multi-task graph-based information extraction with global context
(Now at Google AI.)
 - Hao Fang, EE Ph.D. 2019, University of Washington
Building a user-centric and content-driven socialbot
(Now at Microsoft.)
 - Aaron Jaech, EE Ph.D. 2018, University of Washington
Low-rank RNN adaptation for context-aware language modeling
(Now at OpenAI, formerly at Facebook and Apple.)
 - Ji He, EE Ph.D. 2017, University of Washington
Deep reinforcement learning in natural language scenarios
(Now at Citadel.)
 - Nicole Nichols, EE Ph.D. 2016, University of Washington
Marine mammal species detection and classification
(Now at PNNL.)
 - Alex Marin, EE Ph.D. 2015, University of Washington
Effective use of cross-domain parsing in automatic speech recognition and error detection
(Now at Microsoft.)
 - Julie Medero, EE Ph.D. 2014, University of Washington
Automatic Characterization of Text Difficulty
(Now an Associate Professor at Harvey Mudd College)

- Amittai Axelrod, EE Ph.D. 2014, University of Washington (w/ X. He)
Domain adaptation for machine translation
(Now at Apple.)
- Bin Zhang, EE Ph.D. 2013, University of Washington
Learning features for text classification
(Now at Google.)
- Brian Hutchinson, EE Ph.D. 2013, University of Washington (w/ M. Fazel)
Low rank models for speech and language processing tasks
(Now an Associate Professor at Western Washington University)
- Wei Wu, EE Ph.D. 2012, University of Washington
Graph-based algorithms for lexical semantics and its applications
(Now at Facebook.) 8
- Anna Margolis, EE Ph.D. 2011, University of Washington
Automatic annotation of spoken language using out-of-domain resources and domain adaptation
(Formerly at Vlingo; now at Nuance.)
- Jeremy Kahn, Linguistics Ph.D. 2010, University of Washington
Parse decoration of the word sequence in the speech-to-text machine-translation pipeline
(Now at Meta.)
- Dustin Hillard, EE Ph.D. 2008, University of Washington
Automatic Sentence Structure Annotation for Spoken Language Processing
(Formerly at Yahoo and Microsoft; now at eSentire.)
- Scott Otterson, EE Ph.D. 2008, University of Washington
Use of Speaker Location Features in Meeting Diarization
(Formerly at 3Tier, Fraunhofer Institute; now at Clean Power Research.)
- Arindam Mandal, EE Ph.D. 2007, University of Washington
Transformation Sharing Strategies for MLLR Speaker Adaptation
(Formerly at SRI International; now at Amazon.)
- Sarah Petersen, CSE Ph.D. 2007, University of Washington
Natural Language Processing Tools for Reading Level Assessment and Text Simplification for Bilingual Education
(Now at MITACS, Inc.)
- Xin Lei, EE Ph.D. 2006, University of Washington
Modeling lexical tones for Mandarin large vocabulary continuous speech recognition
(Formerly at Microsoft, SRI International and Google; now at Mobvoi Inc.)
- Constantinos Boulis, EE Ph.D. 2005, University of Washington
Topic Learning in Text and Conversational Speech
(Formerly at Stanford University and Medio Systems; now at Microsoft.)
- Rebecca Bates, EE Ph.D. 2004, University of Washington
Dynamic pronunciation modeling in spontaneous speech recognition
(Now Professor at Minnesota State University, Mankato, MN.)
- Ozgur Cetin, EE Ph.D. 2004, University of Washington
Multi-rate modeling, model inference and estimation for statistical classifiers
(Formerly at ICSI, Yahoo and Morgan Stanley; now at Premium Point Investments.)
- Ivan Bulyko, EE Ph.D. 2002, University of Washington
Joint prosody prediction and unit selection for speech synthesis
(Formerly at Raytheon BBN Technologies; now at Amazon.)
- David Palmer, EE Ph.D. 2001, University of Washington
Modeling Uncertainty for Information Extraction from Speech Data
(Formerly at MITRE and Virage; now at HP Autonomy.)

- Izhak Shafran, EE Ph.D. 2001, University of Washington
Clustering wide-contexts and HMM topologies for spontaneous speech recognition
(Formerly at Oregon Health Sciences Institute/OGI; now at Google.)
- Randall Fish, EE Ph.D. 2001, University of Washington
Dynamic models of machining vibrations, designed for classification of tool wear
(Formerly a Professor at Eastern Nazarene College; now a Professor at Messiah College.)
- Michiel Bacchiani, EE Ph.D. 1999, Boston University
Speech recognition system design based on automatically derived units
(Formerly at AT&T Research, IBM Research; now at Google.)
- Man-Hung Siu, EE Ph.D. 1998, Boston University
Learning local lexical structure in spontaneous speech language modeling
(Formerly at Raytheon BBN; now at Apple.)
- Rukmini Iyer, EE Ph.D. 1998, Boston University
Improving and predicting performance of statistical language models in sparse domains
(Formerly at BBN, Nuance and Yahoo; now at Microsoft.)
- Ashvin Kannan, EE Ph.D. 1997, Boston University
Adaptation of spectral trajectory models for large vocabulary continuous speech recognition
(Formerly at Nuance Communications, Yahoo; now at LinkedIn.)
- Orith Ronen, BME Ph.D. 1996, Boston University
Dependence tree models of intra-utterance phone dependence
(Formerly at SRI International; now at Nuance.)
- Ken Ross, EE Ph.D. 1995, Boston University
Modeling of intonation for speech synthesis
(Formerly at BBN, Alphatech, Whitehead Institute; now at Dana Farber Cancer Institute.)
- Nanette Veilleux, SE Ph.D. 1994, Boston University
Computational models of the prosody/syntax mapping for spoken language systems
(Now a Professor of Computer Science, Simmons College.)
- Owen Kimball, EE Ph.D. 1994, Boston University
Segment modeling alternatives for continuous speech recognition
(Now in the Speech Signal Processing Group, Raytheon BBN Technologies.)
- Vassilios Digalakis, SE Ph.D. 1992, Boston University
Segment-based stochastic models of spectral dynamics for continuous speech recognition
(Formerly at SRI International, now a Professor of EE and Rector of the Technical Institute of Crete in Greece.)
- Colin Wightman, EE Ph.D. 1991, Boston University
Automatic detection of prosodic constituents for parsing
(Formerly co-founder of Linguistech, Professor and Chair at Minnesota State University, Professor at Acadia University; Professor at Walden University; deceased.)
- M.S. Thesis Supervision: (16 graduated)
 - Jenny Yeonjin Cho, M.S. EE 2022, University of Washington
Leveraging prosody for punctuation prediction of spontaneous speech
 - Amy Dashiell, M.S. EE 2009, University of Washington
Automatic detection of frustration in spoken dialog systems using non-segmental features and context
 - William McNeill, Linguistics M.A. 2006, University of Washington
Segmentation and Feature Selection for Conversational Speech Syntactic Language Models
 - Jeremy Kahn, Linguistics M.A. 2005, University of Washington
Moving beyond the lexical layer in parsing conversational speech
 - Jay Joungbum Kim, M.S. 2004, University of Washington
Automatic detection of disfluencies in speech

- Yuliya Lobacheva, M.S. EE 2000, Boston University
Discourse mixture language models
- Hariharan Shivakumar, M.S. 2000, Boston University (w/ D. Castañón)
Estimating confidence of milling tool wear classification
- Cameron Fordyce, M.S. EE 1998, Boston University
Control of prosodic patterns for speech generation in human-computer dialogs
- Rebecca Bates, M.S. EE 1996, Boston University
Linear channel estimation and compensation for recognition of telephone speech
- Fred Richardson, M.S. EE 1995, Boston University
Search algorithms for speech recognition
- Rukmini Iyer, M.S. EE 1994, Boston University
Language modeling with sentence-level mixtures
- Cynthia Fong, M.S. EE 1993, Boston University
Statistical models of duration for synthesis and recognition
- Burhan Necioglu, M.S. EE 1992, Boston University
Bayesian adaptation of the stochastic segment model for speech recognition
- Ashvin Kannan, M.S. EE 1992, Boston University
Robust estimation of stochastic segment models for word recognition
- Ibrahim Bechwati, M.S. EE 1990, Boston University
Structural alternatives in stochastic segment modeling for speech recognition
- John Butzberger, Jr., M.S. EE 1989, Boston University
Statistical methods for intonation pattern recognition

UNIVERSITY SERVICE: (at the University of Washington)

- ECE Department
 - Data Science Group Chair (2020-2021)
 - Diversity Committee (2020-2021)
 - Finance Committee (2020)
 - Graduate program coordinator (2015-2017)
 - Promotion and Tenure Committee (2011)
 - Undergraduate admissions (2009, 2012)
 - Executive Committee (2007-2008)
 - Awards Committee (2007-2008)
 - HallowEEn Design Challenge Committee (2007, 2008)
 - Faculty Search Committee (2000, 2007)
 - Merit Review Committee (2007, 2008)
 - Development Committee (2004-2005)
 - EE Chair Search Committee (2003-2004)
 - Associate Chair for Research (2001-2003)
 - Faculty Advisory Board (2001-2003)
 - Research Committee (2000-2004)
 - Signal processing curriculum group chair (2000-2001, 2003-2004, 2013-2015)
 - Curriculum Committee (2000-2001, 2003-3004, 2013-2015)

- Core Curriculum Revision Committee (2000)
- Strategic Planning Committee (1999-2000)
- Ad hoc Committee on Research Computer Support Restructuring (2001)
- College of Engineering
 - Strategic Planning Sub-Committee on Partnerships, co-chair (2020-2021)
 - Allen School Director Search Committee, co-chair (2019)
 - AA Chair Search Committee (2014)
 - Center for Sensorineural Engineering Director Search Committee (2012)
 - PI, Boeing Composites NDI & Repair Project (2010-2012)
 - Boeing-Egtvedt Chair Review Committee (2010)
 - Advisor to the student chapter of the Society of Women Engineers (2006-2009)
 - Aeronautics and Astronautics Department Faculty Search (2008)
 - Chemical Engineering Chair Review Committee (2005)
 - CSE Chair Search Committee (2001)
 - College of Engineering Associate Dean Search Committee (2000)
- University
 - UW Representative for national initiatives: HELIOS, NASEM Action Collaborative for Transforming the Trajectories of Women of Color in Tech
 - AI Task Force, Co-Chair Working Group on Research and Knowledge Transfer (2024)
 - 10-year Review Committee for the Chemical Engineering Department (2018-2019)
 - APL Director Search Committee (2017)
 - 10-year Review Committee for the Department of Economics (2016)
 - APL Director Review Committee, Chair (2011)
 - Activity-based Budgeting ICR subteam (2010)
 - Industrial Relations Task Force (2009-2012)
 - Committee on Risk Assessment of Faculty Recruiting and Retention (2009)
 - Task Force on Graduate Student Support (2009)
 - Research Advisory Board (2009-2012)
 - Academic Advisory Group (2009-2012)
 - 10-year Review Committee for the Mechanical Engineering Department (2007)
 - Advisory Committee for Professional Masters Program in Computational Linguistics, 2004-present