

IV. CURRICULUM VITAE

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PERSONAL DATA

Date of Birth: 21 September 1953.
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JOB EXPERIENCE

2011–: Research Professor, School of Computer Science, Carnegie Mellon University.
2005–2011: Principal Systems Scientist, School of Computer Science, Carnegie Mellon University.
1996–2005: Senior Systems Scientist, School of Computer Science, Carnegie Mellon University.
1996–1999: Technical Director, Intuitive Interfaces to Information Systems project, Microelectronics and Computer Technology Corp. (MCC).
1989–1996: Systems Scientist, School of Computer Science, Carnegie Mellon University.
1982–1989: Research Associate, School of Computer Science, Carnegie Mellon University.
1981–1982: Post-doctoral Fellow, Department of Psychology, University of Toronto.
1980–1981: Research Associate, Department of Computer Science, Carnegie-Mellon University.

EDUCATION

McGill University B.Sc. 1975, First Class Honours in Psychology
Carnegie Mellon University M.Sc. 1976, Psychology Ph.D. 1980, [Advisor: Ronald A. Cole]
M.Sc. “Adaptation produced by connected speech”, 1976.
PhD “Structure and familiarity in the organization of speech perception”, 1980.

HONORS

University Scholar, McGill University, 1974-1975.
Post-Graduate Scholarship, Carnegie-Mellon University, 1975-1976.
Post-Graduate Scholarship, National Research Council of Canada, 1977-1979.

VI. PUBLICATION LIST

a. Chapters in Books

1. Rudnicky, A. I. Multi-modal dialog systems. In Minker, W., Bühler, D. and Dybkjær, L. *Spoken Multimodal Human-Computer Dialogue in Mobile Environments*. Kluwer Academic, 2004.
2. Bohus, D. and Rudnicky, A. I. [LARRI: A Language-based Maintenance and Repair Assistant](#). In Minker, W., Bühler, D. and Dybkjær, L. *Spoken Multimodal Human-Computer Dialogue in Mobile Environments*. Kluwer Academic, 2004.
3. Rudnicky, A.I. The design of spoken language interfaces. In Syrdal, A., Bennett, R. and Greenspan, S. *Applied Speech Technology*. Boca Raton: CRC Press, 1995, 403-428.
4. Rudnicky, A.I. and Hauptmann, A.G. Multi-modal interaction in speech systems. In Blattner, M. and Dannenberg, R. *Multimedia interface design*. New York: ACM, 1992, 147-182.
5. Cole, R.A., Rudnicky, A.I., Zue, V.W., and Reddy, J.R. Speech as patterns on paper. In R.A. Cole (Ed.) *Perception and Production of Fluent Speech*. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1980.

b. Refereed Journal Articles - Published

6. Bohus, D. and Rudnicky, A. [The RavenClaw dialog management framework: architecture and systems](#). *Computer Speech and Language*, 2008, **23**(3), 332-361.
7. Oh, A. H. and Rudnicky, A. [Stochastic natural language generation for spoken dialog](#). *Computer Speech and Language*, 2002, **16**/3-4, 387-407.
8. Rudnicky, A.I., Lee, K-F. and Hauptmann, A.G. [Survey of current speech technology](#). *Communications of the ACM*, 1994, **37**(3), 52-57.
9. Hauptmann, A.G. and Rudnicky, A.I. Talking to Computers: An empirical investigation. *International Journal of Man-Machine Communication*, 1988, **28**, 583-604. (Also Carnegie-Mellon Computer Science Department Technical Report CMU-CS-87-186.)
10. Jakimik, J.A., Cole, R.A., and Rudnicky, A.I. Sound and spelling in spoken word recognition. *Journal of Verbal Learning and Verbal Behavior*, 1985, **24**, 165-178.
11. Rudnicky, A.I. and Kolers, P.A. Size and case of type as stimuli in reading. *Journal of Experimental Psychology: Human Perception and Performance*, 1984, **10**, 231-249.
12. Cole, R.A. and Rudnicky, A.I. What's new in speech perception? The research and ideas of William Chandler Bagley, 1874-1946. *Psychological Review*, 1983, **90**, 94-101.
13. Rudnicky, A.I. and Cole, R.A. Effect of subsequent context on syllable perception *Journal of Experimental Psychology: Human Perception and Performance*, 1978, **4**, 638-647.
14. Rudnicky, A.I. and Cole, R.A. Adaptation produced by connected speech. *Journal of Experimental Psychology: Human Perception and Performance*, 1977, **3**, 51-61.
15. Bregman, A.S. and Rudnicky, A.I. Auditory segregation: Stream or streams? *Journal of Experimental Psychology: Human Perception and Performance*, 1975, **1**, 263-267.

c. Refereed Conference/Workshop Papers

16. Chen, YN, Sun, M., Rudnicky A.I., and Gershman, A. [Leveraging Behavioral Patterns of Mobile Applications for Personalized Spoken Language Understanding](#), *Proceedings of The 17th ACM International Conference on Multimodal Interaction (ICMI 2015)*, Seattle WA, (to appear).
17. Chen, YN, Wang, WY and Rudnicky, A.I. [Learning Semantic Hierarchy with Distributional Representations for Unsupervised Spoken Language Understanding](#), *Proceedings of The 16th Annual Conference of the International Speech Communication Association (INTERSPEECH 2015)*, Dresden DE, 2015.
18. Sun, M., Chen, YN and Rudnicky, A.I. [Learning OOV through Semantic Relatedness in Spoken Dialog Systems](#) *Proceedings of The 16th Annual Conference of the International Speech Communication Association (INTERSPEECH 2015)*, Dresden DE, 2015.
19. Chiu, J, Yajie Miao, Y, Black, AW and Rudnicky, A.I. [Distributed Representation-based Spoken Word Sense Induction](#), *Proceedings of Interspeech*, Dresden DE, 2015.
20. Marge, M. and Rudnicky, A. [Miscommunication Recovery in Physically Situated Dialogue](#) *Proceedings of SIGdial*, Prague CZ, 2015.
21. Chen, YN, Wang, WY, Gershman, A. and Rudnicky, A.I. [Matrix Factorization with Knowledge Graph Propagation for Unsupervised Spoken Language Understanding](#), *Proceedings of The 53rd Annual Meeting of the ACL and The 7th International Joint Conference on Natural Language Processing of the Asian Federation of Natural Language Processing (ACL-IJCNLP 2015)*, Beijing China, 2015.
22. Chen YN, Wang, WY, Rudnicky, A.I., [Jointly Modeling Inter-Slot Relations by Random Walk on Knowledge Graphs for Unsupervised Spoken Language Understanding](#), *Proceedings of NAACL*, Denver CO, 2015.
23. Yu, Z., Papangelis, A. & Rudnicky, A. [TickTock: Engagement Awareness in a non-Goal-Oriented Multimodal Dialogue System](#). *AAAI Spring Symposium*, 2015.
24. Chen, YN & Rudnicky, A.I. [Dynamically Supporting Unexplored Domains in Conversational Interactions by Enriching Semantics with Neural Word Embeddings](#) *Proceedings of SLT*, December 2014, Lake Tahoe, NV.
25. Chen, YN, Wang, WY & Rudnicky, A.I. [Leveraging Frame Semantics and Distributional Semantics for Unsupervised Semantic Slot Induction in Spoken Dialogue Systems](#) *Proceedings of SLT*, December 2014, Lake Tahoe, NV.
26. Justin Chiu, Rudnicky, A, [LACS System Analysis on Retrieval Models for the MediaEval 2014 Search and Hyperlinking Task](#), *Proceedings of MediaEval*, Barcelona, 2014
27. Pappu, A. & Rudnicky, A.I. [Learning Situated Knowledge Bases through Dialog](#). *Proceedings of Interspeech*, September 2014, Singapore.
28. Justin Chiu, J., Wang, Y., Trmal, J., Povey, D., Chen, G., Rudnicky, A. [Combination of FST and CN Search in Spoken Term Detection](#) *Proceedings of Interspeech*, September 2014, Singapore.
29. Qin, L. & Rudnicky, A.I. [Building a vocabulary self-learning speech recognition system](#), *Proceedings of Interspeech*, September 2014, Singapore.
30. Pappu, A. & Rudnicky, A.I. [Knowledge Acquisition Strategies for Goal-Oriented Dialog Systems](#). *Proceedings of SIGDIAL*, June 2014, Philadelphia, PA.

31. Chen, YN & Rudnicky, AI [Two-Stage Stochastic Natural Language Generation for Email Synthesis by Modeling Sender Style and Topic Structure](#), *Proceedings of the 8th Int'l Natural Language Generation Conference (INLG)*, June 2014, Philadelphia, PA.
32. Pappu, A., Sun, M., Sridharan, S. & Rudnicky, A.I. [Conversational Strategies for Robustly Managing Dialog in Public Spaces](#) *Proceedings of EACL Dialog in Motion Workshop*, 2014, Gothenburg, Sweden.
33. Smailagic, A., D. Siewiorek, A. Rudnicky, S. N. Chakravarthula, A. Kar, N. Jagdale, S. Gautam, R. Vijayaraghavan, S. Jagtap: [Emotion Recognition Modulating the Behavior of Intelligent Systems](#). *Int'l Symp on Multimedia*, 2013: 378-383, Anaheim, CA.
34. Gandhe, A., L. Qin, F. Metze, A. Rudnicky, I. Lane, M. Eck [Using Web Text to Improve Keyword Spotting in Speech](#), *Proceedings of ASRU* , 2013, Olomouc CZ.
35. Qin, L. & A. Rudnicky [Learning Better Lexical Properties for Recurrent OOV Words](#), *Proceedings of ASRU*, 2013, Olomouc, CZ.
36. Y-N Chen, W. Y. Wang, A. I. Rudnicky [Unsupervised Induction and Filling of Semantic Slots for Spoken Dialogue Systems Using Frame-Semantic Parsing](#), *Proceedings of ASRU* 2013, Olomouc, CZ.
37. Pappu, A. & Rudnicky, A. [Predicting Tasks in Goal-Oriented Spoken Dialog Systems using Semantic Knowledge Bases](#), In *Proceedings of the SIGDIAL 2013 Conference*, 2013, Metz, France.
38. Chiu, J. & A.I. Rudnicky [Using Conversational Word Bursts in Spoken Term Detection](#), *Proc. of Interspeech*, 2013, Lyon, France.
39. Qin, L. & A Rudnicky [Finding Recurrent Out-of-Vocabulary Words](#). *Proc. of Interspeech*, 2013, Lyon, France.
40. Teodoro, G., Martin, N., Keshner, E., Shi, J. Y. and Rudnicky, A. [Virtual clinicians for the treatment of aphasia and speech disorders](#) *Proceedings of ICVR*, 2013, Philadelphia, PA US, 158-159.
41. Marge, M. and Rudnicky, A. I. [Towards evaluating recovery strategies for situated grounding problems in human-robot dialogue](#) *Proceedings of RO-MAN*, 2013, Gyeongju, KR, 340-241.
42. Pappu, A., M. Sun, S. Sridharan, A. Rudnicky [Situated Multiparty Interaction between Humans and Agents](#). *Proceedings of HCHI 2013*, Las Vegas, US.
43. Chen, Y-N, Wang, W. Y. and Rudnicky, A.I. [An empirical investigation of sparse log-linear models for improved dialogue act classification](#) *Proceedings of ICASSP*, 2013, Vancouver, BC CA, 8317-8721.
44. Sridharan, S., Y-N Chen, K-M Chang, and A. I. Rudnicky [NeuroDialog: An EEG-enabled spoken language interface](#). *Proceedings of ICMI*, 2012, Santa Monica, CA US.
45. Qin, L. & A. Rudnicky [OOV Word Detection using Hybrid Models with Mixed Types of Fragments](#). *Proceedings of Interspeech*, 2012, Portland, OR US.
46. Pappu, A. & A. Rudnicky [The structure and generality of spoken route instructions](#). *Proceedings of SIGdial* (Seoul, Korea), 2012.
47. Elijah Mayfield, David Adamson, Alexander I. Rudnicky, and Carolyn Penstein Rosé [Computational Representations of Discourse Practices across Populations in Task-based Dialogue](#). *International Conference on Intercultural Collaboration (ICIC)*, 2012.

48. L. Qin, M. Sun, A. I. Rudnicky, [System Combination for Out-of-vocabulary Word Detection](#), *Proceedings of ICASSP*, March 2012, Kyoto, Japan.
49. M. Marge and A. I. Rudnicky, [Towards Overcoming Miscommunication in Situated Dialogue by Asking Questions](#). *Proceedings of AAAI Fall Symposium - Building Representations of Common Ground with Intelligent Agents*, November 2011, Arlington, VA
50. Qin, L., Sun, M. & Rudnicky, A.I. [OOV detection and recovery using hybrid models with different fragments](#), *Proceedings of INTERSPEECH*, 2011, Florence, IT.
51. M. Marge and A. I. Rudnicky, [The TeamTalk Corpus: Route Instructions in Open Spaces](#). *RSS Workshop on Grounding Human-Robot Dialog for Spatial Tasks*, July 2011, Los Angeles, CA.
52. C. Lee, T. Kawahara, A. Rudnicky [Combining Slot-based Vector Space Model for Voice Book Search](#). *Proceedings of Int'l Workshop on Spoken Dialog Systems*, 2011.
53. A. I. Rudnicky, A. Pappu, P. Li, and M. Marge, [Instruction Taking in the TeamTalk System](#). *Proceedings of AAAI Fall Symposium - Dialog with Robots*, November 2010, Arlington, VA.
54. M. Marge and A. I. Rudnicky, [Comparing Spoken Language Route Instructions for Robots across Environment Representations](#). *Proceedings of SIGdial*, September 2010, Tokyo, Japan.
55. M. Marge, J. Miranda, A. Black, and A. I. Rudnicky, [Towards Improving the Naturalness of Social Conversations with Dialogue Systems](#). *Proceedings of SIGdial*, September 2010, Tokyo, Japan.
56. M. Marge, S. Banerjee and A. I. Rudnicky [Using the Amazon Mechanical Turk to Transcribe and Annotate Meeting Speech for Extractive Summarization](#). *Workshop on Creating Speech and Language Data with Amazon's Mechanical Turk. NAACL HLT 2010*, June 2010, Los Angeles, CA.
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59. L. Qin and A. Rudnicky [Implementing and improving MMIE training in SphinxTrain](#) *CMU Sphinx User and Developers Workshop*. 2010, Dallas, TX.
60. M. Marge, S. Banerjee and A. I. Rudnicky. [Using the Amazon Mechanical Turk for Transcription of Spoken Language](#). *Proceedings of ICASSP*, March 2010, Dallas, TX.
61. M. Marge, A. Pappu, B. Frisch, T. K. Harris and A. I. Rudnicky [Exploring Spoken Dialog Interaction in Human-Robot Teams](#). *Robots, Games, and Research: Success stories in USARSim IROS Workshop*, October 2009, St. Louis, MO, USA.
62. S Banerjee and AI Rudnicky [Detecting the Noteworthiness of Utterances in Human Meetings](#). *Proceedings of SIGDIAL*, September 2009, London, UK.
63. Kazunori Komatani, Alexander I. Rudnicky [Predicting Barge-in Utterance Errors by using Implicitly-Supervised ASR Accuracy and Barge-in Rate per User](#). *ACL-IJCNLP 09*, Short Papers, pp.89–92, 2009.

64. David Huggins-Daines and Alexander I. Rudnicky [Combining Mixture Weight Pruning and Quantization for Small-Footprint Speech Recognition](#). *Proceedings of ICASSP-2009*, Taipei, Taiwan, April 2009.
65. Satanjeev Banerjee and Alexander Rudnicky [An Extractive-Summarization Baseline for the Automatic Detection of Noteworthy Utterances in Multi-Party Human-Human Dialog](#). In the *Proceedings of the 2008 IEEE Workshop on Spoken Language Technologies*. December 15 – 18, 2008, Goa, India.
66. Ananlada Chotimongkol and Alexander I. Rudnicky [Acquiring Domain-Specific Dialog Information from Task-Oriented Human-Human Interaction through an Unsupervised Learning](#). *Proceedings of the 2008 Conference on Empirical Methods in Natural Language Processing*, October 2008, Honolulu, HI.
67. David Huggins-Daines and Alexander I. Rudnicky [Mixture Pruning and Roughening for Scalable Acoustic Models](#). *Proceedings of ACL-08 Workshop on Mobile Language Processing*, Columbus, OH, USA, June 2008.
68. David Huggins-Daines and Alexander I. Rudnicky [Interactive ASR Error Correction for Touchscreen Devices](#). *Demo presented at ACL 2008*, Columbus, OH, USA, June 2008.
69. Mohit Kumar, Dipanjan Das and Alexander I. Rudnicky. [A System for Recommending Briefing Drafts from Non-textual Events](#). *Proceedings of the International Workshop on Recommendation and Collaboration (IUI 2008 Workshop)*. Jan 13, 2008. Canary Islands, Spain.
70. D. Das, M. Kumar and A. I. Rudnicky. [Automatic Extraction of Briefing Templates](#). *Proceedings of the Third International Joint Conference on Natural Language Processing (IJCNLP 2008)*. Jan 7-12, 2008. Hyderabad, India.
71. Yi Wu, Rong Zhang and Alexander Rudnicky [Data Selection for Speech Recognition](#). *Proceedings of ASRU*, Kyoto, Japan, December 2007.
72. Thomas K. Harris and Alexander I. Rudnicky. [TeamTalk: A platform for multi-human-robot dialog research in coherent real and virtual spaces](#). *Association for the Advancement of Artificial Intelligence*, Vancouver B.C., Canada, 2007.
73. D. Bohus and A. I. Rudnicky [Implicitly-supervised Learning in Spoken Language Interfaces: an Application to the Confidence Annotation Problem](#), *Proceedings of 8th SIGdial Workshop*, 2007, Antwerp, Belgium, pp. 256-264.
74. M. Kumar, D. Das, A. I. Rudnicky, [Summarizing Non-textual Events with a 'Briefing' Focus](#), *Recherche d'Information Assistée par Ordinateur (RIAO)*, May 30-Jun 1, 2007, Pittsburgh, USA.
75. M. Kumar, N. Garera, A. I. Rudnicky, [Learning from Report-writing Behavior of Individuals](#), *International Joint Conference on Artificial Intelligence (IJCAI)*, Jan 6-12, 2007, Hyderabad, India.
76. Banerjee, S. and Rudnicky, A. I. [Segmenting meetings into agenda items by extracting implicit supervision from human note-taking](#). In: *Proceedings of the 2007 International Conference on Intelligent User Interfaces 2007*. pp. 151-159.
77. David Huggins-Daines and Alexander I. Rudnicky, [Implicitly Supervised Language Model Adaptation for Meeting Transcription](#), *Proceedings of HLT-NAACL 2007*, Rochester, NY, USA, May 2007.

78. Bohus, D., Raux, A., Harris, T., Eskenazi, M., and Rudnicky, A. [Olympus: an open-source framework for conversational spoken language interface research](#), *Proceedings of HLT-NAACL 2007*, Rochester, NY, USA, May 2007.
79. Bohus, D., Grau, S., Huggins-Daines, D., Keri, V., Krishna, G., Kumar, R., Raux, A., and Tomko, S. [Conquest - an Open-Source Dialog System for Conferences](#). *Proceedings of HLT-NAACL 2007*, Rochester, NY, USA, May 2007.
80. M. Kumar, N. Garera, A. I. Rudnicky, [A Briefing Tool that Learns Report-writing Behavior](#), *IEEE International Conference on Tools with Artificial Intelligence (ICTAI)*, Nov 13-15, 2006, Washington D.C., USA.
81. S. Banerjee and A. I. Rudnicky, [A TextTiling Based Approach to Topic Boundary Detection in Meetings](#) In *Proceedings of the Interspeech – ICSLP 2006 Conference*. September 17 – 21, 2006, Pittsburgh, PA.
82. S. Banerjee and A. I. Rudnicky, [SmartNotes: Implicit Labeling of Meeting Data through User Note-Taking and Browsing](#), In *Proceedings of the Conference of the North American Association of Computational Linguistics – Human Languages Technology (NAACL-HLT) – Demonstration Track*. June 5th to 7th 2006, New York, NY.
83. S. Banerjee and A. I. Rudnicky, [You Are What You Say: Using Meeting Participants’ Speech to Detect their Roles and Expertise](#), In the *NAACL-HLT 2006 workshop on Analyzing Conversations in Text and Speech*, June 8th 2006, New York, NY.
84. Bohus, D., Langner, B., Raux, A., Black, A., Eskenazi, M. and Rudnicky A., [Online Supervised Learning of Non-understanding Recovery Policies](#), in *SLT-2006*, Palm Beach, Aruba.
85. Bohus, D., and Rudnicky, A., [A K Hypotheses + Other Belief Updating Model](#), in *AAAI Workshop on Statistical and Empirical Approaches to Spoken Dialogue Systems*, 2006, Boston, MA.
86. D. Huggins-Daines and A. I. Rudnicky, [A Constrained Baum-Welch Algorithm for Improved Phoneme Segmentation and Efficient Training](#), in *Proceedings of Interspeech 2006*, Pittsburgh, USA, September 2006.
87. D. Huggins-Daines, M. Kumar, A. Chan, A.W Black, M. Ravishankar, and A. I. Rudnicky, [PocketSphinx: A Free, Real-Time Continuous Speech Recognition System for Hand-Held Devices](#), in *Proceedings of ICASSP 2006*, Toulouse, France, May 2006.
88. R. Zhang and A. I. Rudnicky, [Investigations of Issues for Using Multiple Acoustic Models to Improve Continuous Speech Recognition](#), *Proceedings of ICSLP 2006*.
89. R. Zhang and A. I. Rudnicky, [A New Data Selection Principle for Semi-Supervised Incremental Learning](#), in *Proceedings of ICPR 2006*.
90. R. Zhang and A. I. Rudnicky, [A New Data Selection Approach for Semi-Supervised Acoustic Modeling](#), in *Proceedings of ICASSP 2006*.
91. A. I. Rudnicky, P. Rybski, S. Banerjee, and M. Veloso , [Intelligently Integrating Information from Speech and Vision Processing to Perform Light-weight Meeting Understanding](#) , in the *International Workshop on Multimodal Multiparty Meeting Processing*, 7 October 2005, Trento, Italy.
92. S. Banerjee, C. Rosé, and A. I. Rudnicky [The Necessity of a Meeting Recording and Playback System, and the Benefit of Topic-Level Annotations to Meeting Browsing](#), In

Proceedings of the 10th International Conference on Human-Computer Interaction, 12-16 September 2005, Rome, Italy.

93. S. Banerjee and A. I. Rudnicky [Aspects of the Virtuality Continuum and Multi-Participant Interaction Modeling in the Artificial Agent-Assisted Meeting Scenario](#), In *Workshop on the Virtuality Continuum Revisited*, April 2-7, 2005, Portland, OR.
94. T. Harris, S. Banerjee, and A. I. Rudnicky [Heterogeneous Multi-Robot Dialogues for Search Tasks](#), (a modified version of "A Research Platform for Multi-Agent Dialogue Dynamics"). *AAAI Spring Symposium: Dialogical Robots: Verbal Interaction with Embodied Agents and Situated Devices*, March 21-23, 2005, Stanford, CA.
95. A. Chan , R. Mosur and A. I. Rudnicky, [On Improvements of CI-based GMM Selection](#), in *Proceedings of Interspeech 2005*, Lisbon, Portugal.
96. R. Zhang, Z. Al Bawab, A. Chan, A. Chotimongkol, D. Huggins-Daines, A. I. Rudnicky, [Investigations on Ensemble Based Semi-Supervised Acoustic Model Training](#), in *Proceedings of Interspeech 2005*, Lisbon, Portugal.
97. Bohus, D., and Rudnicky, A., [Constructing Accurate Beliefs in Spoken Dialog Systems](#), in *Proceedings of ASRU-2005*, San Juan, Puerto Rico.
98. Bohus, D., and Rudnicky, A., [Error Handling in the RavenClaw dialog management architecture](#), in *Proceedings of HLT-EMNLP-2005*, Vancouver, CA.
99. Bohus, D., and Rudnicky, A., [Sorry, I Didn't Catch That! - An Investigation of Non-understanding Errors and Recovery Strategies](#), in *Proceedings of SIGdial-2005*, Lisbon, Portugal.
100. Bohus, D., and Rudnicky, A., [A Principled Approach for Rejection Threshold Optimization in Spoken Dialog Systems](#), in *Proceedings of Interspeech-2005*, Lisbon, Portugal.
101. A. Chan , J. Sherwani, R. Mosur and A. I. Rudnicky, [Four-Level Categorization Scheme of Fast GMM Computation Techniques in Large Vocabulary Continuous Speech Recognition Systems](#), *International Conference of Speech and Language Processing 2004*, Jeju, Korea.
102. S. Banerjee, J. Cohen, T. Quisel, A. Chan , Y. Patodia, Z. Al Bawab, R. Zhang, A. Black, R. Stern, R. Rosenfeld, A. I. Rudnicky, [Creating Multi-Modal, User-Centric Records of Meetings with the Carnegie Mellon Meeting Recorder Architecture](#), *NIST Meeting Recognition Workshop at ICASSP 2004*, Montréal, Québec.
103. P. E. Rybski, S. Banerjee, F. de la Torre, C. Vallespi, A. I. Rudnicky, and M. Veloso, [Segmentation and Classification of Meetings using Multiple Information Streams](#). In the *Proceedings of the Sixth International Conference on Multimodal Interfaces*, October 14th-15th, 2004, State College, Pennsylvania.
104. T. Harris, S. Banerjee, A. I. Rudnicky, J. Sison, K. Bodine and A. W Black [A Research Platform for Multi-Agent Dialogue Dynamics](#), In the *13th International Workshop on Robot and Human Interactive Communication (RO-MAN)*, September 20-22, 2004, Kurashiki, Japan.
105. S. Banerjee and A. I. Rudnicky [Using Simple Speech-Based Features to Detect the State of a Meeting and the Roles of the Meeting Participants](#) , In *Proceedings of the 8th International Conference on Spoken Language Processing (Interspeech 2004 - ICSLP)*, October 4-8, 2004, Jeju Island, Korea.

106. Rong Zhang and Alexander I. Rudnicky, [Comparative Study of Boosting and Non-Boosting Training for Constructing Ensembles of Acoustic Models](#), *Proceedings of Eurospeech*, 2003 (Geneva, Switzerland), pages 1885-1888.
107. Rong Zhang and Alexander I. Rudnicky, [Apply N-Best List Re-Ranking to Acoustic Model Combinations of Boosting Training](#), in *Proceedings of ICSLP*, 2004.
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110. Bohus, D. and Rudnicky, A.I. [RavenClaw: Dialog Management Using Hierarchical Task Decomposition and an Expectation Agenda](#), in *Proceedings of Eurospeech*, 2003 (Geneva, Switzerland), pages 597-600.
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112. Bohus, D. and Rudnicky, A.I. [LARRI: A Language-Based Maintenance and Repair Assistant](#) *Proceedings of the ISCA Tutorial and Research Workshop on Multi-Modal Dialogue in Mobile Environments [IDS-2002]* (Kloster Irsee, Germany)
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131. Xu, W. and Rudnicky, A. [Language modeling for dialog system?](#) *Proceedings of ICSLP 2000* (Beijing, China). Paper B1-06.
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150. Rudnicky, A.I. [System response delay and user strategy selection](#). Invited poster, *CHI Conference*, 1990.
151. Rudnicky, A.I., Sakamoto, M.H. and Polifroni, J.H. [Spoken language interaction in a spreadsheet task](#). In D. Diaper et al., *Human-Computer Interaction -- INTERACT'90*, New York: Elsevier, 1990, 767-772.
152. A.G. Hauptmann and A.I. Rudnicky, Speaking, Typing and Gesturing. In *CHI-90 Workshop on Multimedia and Multimodal Interfaces, International Conference on Human Factors in Computing Systems*, Seattle WA, April 1990.
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155. Hauptmann, A.G. and Rudnicky, A.I. [A comparison of speech versus typed input](#). *Proceedings of the Third DARPA Speech and Natural Language Workshop*, San Mateo: Morgan-Kaufmann, 1990, p. 219-224.

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158. Rudnicky, A.I., Li, Z., Polifroni, J.H., Thayer, E.H, and Gale, J. [An unanchored matching algorithm for lexical access](#). *Proceedings of the Intl. Conf. on Acoustics, Speech, and Signal Processing*, 1988, 1, 469-472.
159. Murveit, H., Weintraub, M., Cohen, M., Bernstein, J., and Rudnicky, A.I. Three approaches for the design of a lexical access module for the DARPA Angel speech recognition system. *Proceedings of the Intl. Conf. on Acoustics, Speech, and Signal Processing*, 1987, 837-840.
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d. Other Refereed Publications

161. Lee, K-F, Hauptmann, A.G. and Rudnicky, A.I. The spoken word. *Byte*, 1990, **15**(7), 225-232.
162. Rudnicky, A.I. and Hauptmann, A.G. Errors, Repetition, and Contrastive Emphasis in Speech Recognition. *AAAI Symposium on Spoken Language Systems*, March 1989.
163. Rudnicky, A.I. and Stern, R.M. Spoken language research at Carnegie Mellon. *Speech Technology*, 1989, **4**(4), 38-43.
164. Rudnicky, A.I. [Goal-directed speech in a spoken language system](#), *Journal of the Acoustical Society of America*, 1989, **86**, S76(A).
165. Polifroni, J.H. and Rudnicky, A. I. [Modeling lexical stress in read and spontaneous speech](#). *Journal of the Acoustical Society of America*, *Journal of the Acoustical Society of America*, 1989, **86**, S77(A).
166. Rudnicky, A.I., Brennan, R.A, Polifroni, J.H., Thayer, E.H. Interactive problem solving with speech. *Journal of the Acoustical Society of America*, 1988, **84**, S213(A).
167. Rudnicky, A.I. and Li, Z. Prosodic information in lexical access. Paper presented at the DARPA Speech Workshop, June 1988.
168. Rudnicky, A.I. Using features to empirically generate pronunciation networks. *Journal of the Acoustical Society of America*, 1987, **82**, (A).
169. Rudnicky, A.I. Speaker-independent recognition of vocalic segments. *Journal of the Acoustical Society of America*, 1984, **61**, S46(A).
170. Rudnicky, A.I., Waibel, A.H., and Krishnan, N.V. Using zero crossing counts to provide discriminative information in isolated word recognition. *Journal of the Acoustical Society of America*, 1981, **70**, S60(A).
171. Rudnicky, A.I. Units of perception in phoneme monitoring. Paper presented at the 21st meeting of the Psychonomic Society, St. Louis, November, 1980.

172. Rudnicky, A.I. The role of structure in speech perception: Evidence from phoneme monitoring. Paper presented at the Spring Meeting of the Midwestern Psychological Association, St. Louis, May, 1980.
173. Rudnicky, A.I. The perception of speech in an unfamiliar language. In *Speech Communications papers presented at the 97th meeting of the Acoustical Society of America*, J. Wolf and D. Klatt (Eds.) New York: Acoustical Society of America, 1979.
174. Rudnicky, A.I. and Cole, R.A. Vowel identification and subsequent context. *Journal of the Acoustical Society of America*, 1977, **61**, S39(A).
175. Rudnicky, A.I. and Cole, R.A. Selective adaptation produced by ongoing speech. *Journal of the Acoustical Society of America*, 1976, **59**, S26(A).

e. UnRefereed Conference/Workshop Papers

176. Rudnicky, A. I. and Oh, A. H. [Dialog Annotation for Stochastic Generation](#). *Proceedings of the ISLE Workshop on Dialogue Tagging for Human Computer Interaction*, Edinburgh, U.K., December 15-17th, 2002. [invited paper]
177. Lunati, J-M and Rudnicky, A.I. Human factors in the design of a spoken language system. *Proceedings of Speech Tech'91*, April 1991.

f. Technical Reports

178. Bohus, D. and Rudnicky, A. [Integrating multiple knowledge sources for utterance-level confidence annotation in the CMU Communicator spoken dialog system](#). Carnegie Mellon University School of Computer Science Technical Report CMU-CS-02-190, November 2002.
179. Miller, B.W, Hwang C.H, Lee Y., Roberts J., Rudnicky A.I, "The I3S Project: A Mixed, Behavioral and Semantic Approach to Discourse/Dialogue Systems." MCC Technical Report I3S-107-00, January 2000.
180. Rudnicky, A.I The design of spoken language interfaces. Carnegie Mellon University School of Computer Science Technical Report CMU-CS-90-118, March 1990.
181. Rudnicky, A. I. and Hauptmann, A. G. Conversational interaction with speech systems. Carnegie Mellon University School of Computer Science. Technical Report CMU-CS-89-203, December 1989.
182. Rudnicky, A.I. and Sakamoto, M.H. Transcription conventions for spoken language research. Carnegie Mellon University School of Computer Science Technical Report CMU-CS-89-194, November 1989.
183. Rudnicky, A.I. Waibel, A.H., and Krishnan, N. Adding a zero-crossing count to spectral information in template-based speech recognition. Carnegie-Mellon Computer Science Department, Technical Report CMU-CS-82-140, October, 1982.

g. Unpublished Papers

184. Ayoob, E., Bodine, K., Bohus, D., Rudnicky, A. I. & Siegel, J. [Users' Performance and Preferences for Online Graphic, Text and Auditory Presentation of Instructions](#). Carnegie Mellon University, 2004.
185. Damiba, B. A. & Rudnicky, A. I. [Internationalizing Speech Technology through Language Independent Lexical Acquisition](#). Carnegie Mellon University, 1998.

186. Damiba, B. A. & Rudnicky, A. I. [Language-Independent Lexical Acquisition](#). Carnegie Mellon University, 1997.
187. Rudnicky, A.I. [Speech Interface Guidelines](#). Carnegie Mellon University, May, 1996.

h. Software Artifacts

188. TeamTalk, 2005-2009. A spoken dialog system supporting multiple participants (with Harris, Pappu, Li, Frisch and others).
189. Logios, 2007-2009. A set of tools for creating speech system knowledge bases (with Harris)
190. LMTTool, 1996-2009. A set of web-based tools for creating language models and pronunciation dictionaries for the Sphinx ASR system.
191. Carnegie Mellon Communicator, 1998-2002. A telephone-based spoken language travel planning system. (with Xu, Oh, Constantinides, Thayer and others).
192. Speech Workbench, 1997-98. A suite of modules and tools that simplify the creation of speech applications. (with Scott Hansma.)
193. Scheduler, 1997 A dialog system for interacting with a personal calendar. Used to develop ideas in stack-based dialog control. (with Paul Constantinides and Scott Hansma).
194. Cruiser, 1996 [a dialog system for access to auto registration information. Developed in conjunction with CGI, tested with the Pittsburgh Police Department.]
195. SpeechWear, 1995 [a PC-based wearable speech system, incorporating a speech hypertext browser.]
196. OM (Office Manager), 1990 [An environment supporting speech interaction with basic office applications, also an early example of a distributed multi-application client-server speech system. System was used for interface experiments.]
197. Voice Spreadsheet, 1989 [A spreadsheet system incorporating the Sphinx recognition system, used to conduct experiments on speech interfaces.]

i. Video Productions

198. [Carnegie Mellon Team Talk](#) (2009) TeamTalk is a platform for multi-participant dialog between humans and robots.
199. [Communicator](#) (March 2002) A telephone-based spoken dialog system for air travel reservations.
200. [Symphony](#) (July 2001) A voice-enabled mobile maintenance system.
201. [Information access through speech](#) (1997) An early example of a mobile, browser-based system. It was the first system to incorporate ASR into the browser (Mosaic) and to implement html tags for speech.
202. [The SpeechWear system](#) (June 1995)
203. [Spoken Language Interfaces: The OM System](#) (1990) The CMU Office Manager, a multi-application speech interface. [refereed, appears in CHI'91 video program]
204. [Examples of Voice Interfaces](#) (1989) A voice spreadsheet and an early version of the OM PID system

205. [Early CMU Speech Systems](#) (1988) Voice Calculator and Voice PID

VII. INFORMATION REFLECTING EXTERNAL REPUTATION

Invited Lectures:

Invited Talk, SLT, Goa, India, December 2008
Keynote Address, Catalog'04 (SemDial), July 2004.
Speech Technology Status, Trends and Best Practices, Speech Tech, March 2004
Invited talk, Boeing, 14 February 2003
Invited talk, Microsoft Research, 13 February 2003
Invited talk, Microsoft Research, 26 March 2001
Keynote Address, SIGdial Workshop, 2 September 2001
Invited talk, AT&T Research, 14 November 2000
Invited presentations at ASAT, 1997, 1998
"Speech Recognition Technology", AVIOS, 11 September 1995
"Current research in speech recognition", ASAT, 14 June 1994
"The spoken language interface", IBM Thornwood, 23 July 1990
"Spoken language systems" National Communications Forum, 3 October 1989
"Spoken language systems" Chicago Human Factors Society, 4 October 1989
"Building interactive speech systems", National Technical University, 19 April 1989

Workshops:

NSF Panel on Spoken Dialog Corpus Composition and Annotation for Research, 2007 (co-chair)
Speech in Mobile and Pervasive Environments (SiMPE), 2006-2009 (co-chair)
Interspeech 2006 (organizing committee)
SIGdial Workshop, Sapporo, Japan, July 5-7, 2003 (co-chair)
NSF Workshop on Research Directions in Dialogue Processing, Edmonton, Canada, May 31 – June 1, 2003 (co-chair).

VIII. PROFESSIONAL ACTIVITIES outside the University

Organizational Activities:

Board of Directors, AVIOS, 1999-
Board of Directors, SIGdial, 2001-

Committees:

- DARPA Speech and Natural Language Program
 - o Coordinating [steering] Committee, February 1991 - 1995
- DARPA Speech and Natural Language Program
 - o Multi-site ATIS Data Collection Working Group (MADCOW), Fall 1990 - 1995
- ARPA Speech Technology Program
 - o Broadcast Business News (H4) Evaluation Committee, 1995-1996. (chair)
 - o ARPA Speech Recognition Workshop, 1996 (program committee)
 - o Advisory Committee, DARPA Communicator Program, 1999-2002; chair, 2000-2002.

Review Panels:

- NSF Human-Computer Interactions Review Panel, Fall 2007
- NSF Interactive Systems Group Review Panel, Spring 1995, 1997.

Program Committees

- IEEE Spoken Language Technology Workshop (Goa), 2008 (program)
- IEEE Spoken Language Technology Workshop (Aruba), 2006 (program)
- Tutorial and Research Workshop, Perception and Interactive Technologies (2006) (program)
- AAAI Workshop on Statistical and Empirical Approaches for Spoken Dialogue Systems, July 2006 (program)
- AAAI Workshop on Spoken Language Understanding, July 2005 (program)
- Automatic Speech Recognition and Understanding Workshop (Puerto Rico), 2005 (program)
- FLAIRS (Miami), May 2004. (program)
- Tutorial and Research Workshop on Affective Dialogue Systems (2004) (program)
- SIGdial 2003, 2004, 2006, 2007 (program)
- International Conference on Multimodal Interfaces (ICMI), 2006 (program)
- International Conference on Multimodal Interfaces (ICMI-PUI'03), 2003 (program)
- ISCA Tutorial and Research Workshop on Error Handling in Spoken Dialogue Systems. August 28-31, 2003 (program)
- HLT/EMNLP 2005 (program)
- HLT/NAACL 2003, 2004, 2006 (program)
- Workshop on Natural, Intelligent and Effective Interaction in Multimodal Dialogue Systems, 2002 (program)
- Autonomous Agents & Multiagent Systems (Bologna), July 2002 (program)
- North American Association for Computational Linguistics (NAACL) 2000 (program)

Editor

- ETRI (Electronic and Telecommunications Research Institute) Journal, 2006-

Ad Hoc Reviewing [recent]

- CHI, 2006.
- ICSLP/Interspeech, 2004-2009.
- ICASSP, 2004.
- NAACL/HLT 2004, 2008.
- SIGdial, 2004-2007.
- ADS'04 Affective Dialogue Systems, 2004.
- Eurospeech, 2003.
- Innovation and Technology Commission, Hong Kong Special Administrative Region, 2002.
- ICSLP, 2002

Professional memberships [current]

- AVIOS, Applied Voice Input/Output Society
- IEEE, Signal Processing Society
- ISCA – International Speech Communication Association
- ACL – Association for Computational Linguistics
- SIGdial – Special Interest Group in Dialogue (ACL/ISCA)

Other activities:

- Between September 1996 and June 1999 I shared my time between Carnegie Mellon and the Microelectronics and Computer Technology Corporation (MCC) in Austin, Texas, where I was the Technical Director of the Intuitive Interfaces to Information Systems (I3S) project. The I3S project was focused on the development of a discourse-based technology for dialog control. Recently the scope of the project has been expanded to the area of language-based personal information agents and the area of ubiquitous (language-based) device interfaces.
- Consultant in speech technologies.

Advisory Board

- Cepstral, LLC (Pittsburgh, PA).

XIII. Evidence of Teaching Performance

15-800(a) “Speech Understanding by Machine” Spring 1994.

- Designed a curriculum for a graduate course on speech understanding
- Developed a sequence of 4 labs to acquaint students with speech technologies (speech characteristics, acoustic modeling, language modeling, and application design).

11-754 “Dialog Systems Laboratory”, Spring, annually, 1998-2010 (ongoing).

- Developed a laboratory course centered on hands-on development of speech applications embedded in a lecture and discussion format. Students learn to build working systems, either individually or in teams.

11-716 “Seminar in Dialog Processing”. Fall, annually 1999-2010 (ongoing).

- Developed a lecture and readings-based graduate course on automatic dialog processing, surveying major ideas in the field.

XV. STUDENT SUPERVISION

Current PhD Students:

- Satanjeev Banerjee [primary advisor]
- David Huggins-Daines [primary advisor]
- Mohit Kumar [primary advisor]
- Matthew Marge [primary advisor]
- Long Qin [primary advisor]

Current Masters Students:

- Aasish Pappu [primary advisor]

Graduated PhD Students:

- Ananlada Chotimongkol, “Learning the Structure of Task-Oriented Conversations from the Corpus of In-Domain Dialogs”, Language Technologies Institute, May, 2008 [primary advisor]
- Rong Zhang, “Making an Effective Use of Speech Data for Acoustic Modeling”, Language Technologies Institute, December, 2007 [primary advisor]
- Dan Bohus, Computer Science Department, May 2007 “Error Awareness and Recovery in Task-Oriented Spoken Dialog Systems” [primary advisor]
- Jahanzeb Sherwani, “Speech Interfaces for Information Access by Low-Literate Users in the Developing World” [co-advisor]
- Ronald Rosenfeld, School of Computer Science, April, 1994. "Adaptive statistical language modeling: A maximum entropy approach" [co-advisor]
- Alexander G. Hauptmann, School of Computer Science, July 1991. "Meaning from structure in natural language processing" [co-advisor]
- Brian Langner, Language Technologies Institute, 2009. [Committee member]
- Gregory Aist, Language Technologies Institute, 2002. [Committee member]
- Stephanie Tomko, Language Technologies Institute, 2006. [Committee member]
- Steven L. Teal, Graduate School of Industrial Administration, was expected Fall 1995 (but LOA). "A performance model of system delay and user strategy" [primary advisor]
-

Graduated Masters' Students:

- Aasish Pappu [expected 2010]
- Dipanjan Das [2008]
- Mohit Kumar [2007]
- David Huggins-Daines [2006]
- Satanjeev Banerjee [2005]
- Nikesh Garera [2005]
- Ananlada Chotimongkol [2001]
- Alice Oh [2000]
- Steven Reed [1995]

External:

- Opponent in PhD defense, Royal Institute of Technology (KTH), Sweden, 2007
- Opponent in PhD defense, Linköping University, Sweden, 2006
- External Reader for PhD, Tampere University, Finland, 2003.

XVI. SERVICE AND COMMITTEE WORK

- Language Technologies Institute Student Research Symposium, Fall 2003. (faculty co-advisor)
- Language Technologies Institute Faculty Retreat, Fall 2001. (chair)
- School of Computer Science Facilities Committee, 2002-
- Carnegie Mellon University Faculty Senate, 2001-2002. (CSD representative)