CURRICULUM VITAE

Robert Frederking

April 2018

EDUCATION

- Carnegie Mellon University, PhD Computer Science (AI), 1986
  - Thesis advisor: Jaime Carbonell
- Carnegie Mellon University, MS equivalent Computer Science (AI), 1981
- Case Western Reserve University, BS Computer Engineering, 1977

LEADERSHIP ROLES

- Appointed Associate Dean for Doctoral Programs (SCS), April 2015.
- Served as informal interim Dean of SCS, July-August 2014.
- Appointed Associate Dean for Graduate Education (SCS), January 2011.
- Serving as chair of the LTI graduate programs (PhD and MS), which subsumes my earlier role as LTI graduate student curriculum advisor. This position includes meeting with students individually and collectively, tracking their individual academic progress, working with the SCS PhD and MS program chair to maintain consistency across SCS, working with other faculty to plan curriculum changes and prevent and resolve program inconsistencies, chairing monthly LTI faculty meetings, maintaining up-to-date program descriptions and course listings on LTI Web site, and anything else necessary to keep the program successful. In addition, provided similar but separate services for the Philosophy Department while there were still Computational Linguistics graduate students; they were formally integrated into the LTI in 1998.

EMPLOYMENT

- Principal Systems Scientist, Carnegie Mellon University, Language Technologies Institute: 6/2012-present
- Senior Systems Scientist, Carnegie Mellon University, Language Technologies Institute: 6/1997-6/2012
- Systems Scientist, Carnegie Mellon University, Center for Machine Translation/Language Technologies Institute: 12/1991-6/1997
- Project Scientist, Carnegie Mellon University, Robotics Institute, Center for Integrated Manufacturing Decision Systems (CIMDS): 8/1989-11/1991
- Research Engineer, Siemens AG, Corporate Research and Technology, Corporate Laboratories for Information Technology, Munich, Germany: 12/1986-6/1989
- Research assistant, Carnegie Mellon University, Computer Science Department: 9/1979-12/1986
- Design engineer, Case Western Reserve University, A.R. Jennings Computation Center, CWRUnet Project: 6/76-9/79

Birthdate: May 24, 1955; married, no children; U.S. citizenship.

PUBLICATION LIST

BOOKS

1. Frederking, R.E. **Integrated Natural Language Dialogue: A Computational Model.** Kluwer Academic Publishers, Boston, 1988. Originally published as PhD dissertation, December 1985.

CHAPTERS IN BOOKS

2. Ehsani, F., Frederking, R., Rayner, M., and Bouillon, P. "Spoken Language Translation." In **Speech Technology: Theory and Applications**. Fang Chen and Kristiina Jokinen (eds.), Springer, Berlin, 2008.
3. Lori Levin, Alison Alvarez, Jeff Good, and Robert Frederking. ''Automatic Learning of Grammatical Encoding.'' In **Architectures, Rules, and Preferences: Variations on Themes by Joan W. Bresnan**, A. Zaenen (ed.), CSLI Lecture Notes. 2008. Originally appeared as Lori Levin, Jeff Good, Alison Alvarez, and Robert Frederking. "Automatic Learning of Grammatical Encoding." In **Architectures, Rules, and Preferences: A Festschrift for Joan Bresnan**. Jane Grimshaw, Joan Maling, Chris Manning, Jane Simpson, and Annie Zaenen (eds.) CSLI Publications. 2005.

REFEREED JOURNAL PAPERS - PUBLISHED

4. Frederking, R., Rudnicky, A., Hogan, C., and Lenzo, K. Interactive Speech Translation in the Diplomat Project. *Machine Translation Journal*, Special issue on Spoken Language Translation. 2000.
5. Yang, Y., Carbonell, J.G., Brown, R.D., and Frederking, R.E. Translingual Information Retrieval: learning from bilingual corpora. *Artificial Intelligence*, 1998.
6. Yang, Y., Carbonell, J.G., Brown, R.D., and Frederking, R.E. Bilingual Corpus-Based Approaches to Translingual Information Retrieval. *Applied Artificial Intelligence Journal*, January 1999. Special Issue: Best of MULSAIC-97. Originally included in Proceedings of MULSAIC'97 as Yang, Y., Brown, R.D., Frederking, R.E., Carbonell, J.G., Geng, Y., and Lee, D. Bilingual-corpus Based Approaches to Translingual Information Retrieval. August 1997.
7. Yang, Y., J.G. Carbonell, R. Brown, and R.E. Frederking. Translingual information retrieval: learning from bilingual corpora. *Artificial Intelligence Journal*. Special issue: Best of IJCAI-97, vol. 103, 1998. Originally included in Proceedings of the Fifteenth International Joint Conference on Artificial Intelligence (IJCAI-97) as Carbonell, Jaime G., Yang, Yiming, Frederking, Robert E., Brown, Ralf D., Geng, Yibing, Lee, Danny. Translingual Information Retrieval: A Comparative Evaluation. Nagoya, Japan, 1997. Best paper award.

REFEREED CONFERENCE/WORKSHOP PAPERS

8. Ting-Yao Hu, Chirag Raman, Salvador Medina Maza, Liangke Gui, Tadas Baltrusaitis, Robert E. Frederking, Louis-Philippe Morency, Alan W. Black, Maxine Eskenazi. 2017. Integrating Verbal and Nonverbal Input into a Dynamic Response Spoken Dialogue System. (Demo.) **AAAI 2017**: 5091-5092.
9. Maya Tydykov, Mingzhi Zeng, Anatole Gershman, Robert Frederking. 2015. Interactive Learning with TREE: Teachable Relation and Event Extraction System. In **Natural Language Processing and Information Systems: 20th International Conference on Applications of Natural Language to Information Systems**, NLDB 2015, Passau, Germany, June 17-19, 2015.
10. Lori S. Levin, Teruko Mitamura, Brian MacWhinney, Davida Fromm, Jaime G. Carbonell, Weston Feely, Robert E. Frederking, Anatole Gershman, Carlos Ramírez: Resources for the Detection of Conventionalized Metaphors in Four Languages. **LREC 2014**: 498-501.
11. Weston Feely, Mehdi Manshadi, Robert E. Frederking, Lori S. Levin: The CMU METAL Farsi NLP Approach. (Poster.) **LREC 2014**: 4052-4055.
12. Luís Marujo, Anatole Gershman, Jaime G. Carbonell, Robert Frederking, João Paulo Neto: Supervised Topical Key Phrase Extraction of News Stories using Crowdsourcing, Light Filtering and Co-reference Normalization. **LREC 2012**: 399-403.

13. Kevin Dela Rosa, Rushin Shah, Bo Lin, Anatole Gershman, Robert Frederking. Topical Clustering of Tweets. The **3rd Workshop on Social Web Search and Mining** (SWSM-2011) at SIGIR 2011. Beijing, 2011.

14. Rushin Shah, Bo Lin, Kevin Dela Rosa, Anatole Gershman, Robert Frederking. Improving Cross-Document Co-Reference with Semi-Supervised Information Extraction Models. In Proceedings of **Symposium on Machine Learning in Speech and Language Processing**. Bellevue, WA, June 2011.

15. Bo Lin, Rushin Shah, Robert Frederking and Anatole Gershman. CONE: Metrics for Automatic Evaluation of Named Entity Co-reference Resolution. In Proceedings of **Named Entities Workshop** (NEWS-2010) at ACL-2010. Uppsala, Sweden, 2010.

16. Rushin Shah, Bo Lin, Anatole Gershman and Robert Frederking. SYNERGY: A Named Entity Recognition System for Resource-scarce Languages such as Swahili using Online Machine Translation. In Proceedings of **The Second Workshop on African Language Technology** (AfLaT 2010) at LREC-2010. Malta, May 2010.

17. Bo Lin, Rushin Shah, Robert Frederking and Anatole Gershman. ENCORE: Experiments with a Synthetic Entity Co-reference Resolution Tool. In Proceedings of **The Workshop on Resources and Evaluation for Entity Resolution and Entity Management** at LREC-2010. Malta, May 2010. bb

18. Udhyakumar Nallasamy, Alan W Black, Tanja Schultz, Robert Frederking, Jerry Weltman. Speech Translation for Triage of Emergency Phonecalls in Minority Languages. In Proceedings of the **Workshop on Speech Processing for Safety Critical Translation and Pervasive Applications** at COLING-2008. Manchester, UK, 2008.

19. J. Clark, R. Frederking, L. Levin ''Inductive Detection of Language Features via Clustering Minimal Pairs: Toward Feature-Rich Grammars in Machine Translation'', **The Second Workshop on Syntax and Structure in Translation** (SSST) at the Association for Computational Linguistics (ACL-2008). Columbus, Ohio. 2008.

20. Udhyakumar Nallasamy, Alan W Black, Tanja Schultz and Robert Frederking. NineOneOne: Recognizing and Classifying Speech for Handling Minority Language Emergency Calls. In **Proceedings of the Sixth Conference on Language Resources and Evaluation** (LREC-2008). Marrakech, Morocco, 2008.

21. J. Clark, R. Frederking, L. Levin ''Toward Active Learning in Corpus Creation: Automatic Discovery of Language Features During Elicitation'', **The Sixth Language Resources and Evaluation Conference** (LREC-2008). Marrakech, Morocco. 2008.

22. E. Nyberg, E. Riebling, R.C.Wang, and R. Frederking. Integrating a Natural Language Message Pre-Processor with UIMA. **Proceedings of the Workshop ''Towards Enhanced Interoperability for Large HLT Systems: UIMA for NLP''** at the Sixth Conference on Language Resources and Evaluation (LREC-2008). Marrakech, Morocco. 2008.

23. Christian Monson, Ariadna Font Llitjos, Vamshi Ambati, Lori Levin, Alon Lavie, Alison Alvarez, Roberto Aranovich, Jaime Carbonell, Robert Frederking, Erik Peterson, and Katharina Probst. Linguistic Structure and Bilingual Informants Help Induce Machine Translation of Lesser-Resourced Languages. (Poster.) In **Proceedings of the Sixth International Conference on Language Resources and Evaluation** (LREC-2008). 2008.

24. Alvarez, Alison, Lori Levin, Robert Frederking and Jill Lehman. ''An Assessment of Language Elicitation without the Supervision of a Linguist''. (Poster) In the **Proceedings of the Eleventh International Conference on Theoretical and Methodological Issues in Machine Translation** (TMI-2007). Skoevde, Sweden. 2007.

25. Levin, L., Jeff Good, Alison Alvarez, Robert Frederking. ''Parallel Reverse Treebanks for the Discovery of Morpho-Syntactic Markings'', in the proceedings of **Treebanks and Linguistic Theory.** 2006.

26. Alison Alvarez, Lori Levin, Robert Frederking, Simon Fung, Donna Gates and Jeff Good. The MILE Corpus for Less Commonly Taught Languages. Proceedings of the **Human Language Technology Conference of the North American Chapter of the Association for Computational Linguistics** (HLT-NAACL-2006), New York, June 2006. (Poster.)

27. Alison Alvarez, Lori Levin, Robert Frederking, Erik Peterson, and Simon Fung. Tools for Elicitation Corpus Creation. Proceedings of the **2006 E-MELD Workshop on Digital Language Documentation: Tools and Standards: The State of the Art.** June 2006.

28. Alison Alvarez, Lori Levin, Robert Frederking, Jeff Good, and Erik Peterson. Semi-Automated Elicitation Corpus Generation. Proceedings of **MT Summit X**, Phuket, Thailand, September 2005. (Poster.)

29. Nyberg, E., T. Mitamura, R. Frederking, V. Pedro, M. Bilotti, A. Schlaikjer and K. Hannan (2005). ''Extending the JAVELIN QA System with Domain Semantics'', in Proceedings of AAAI-2005 (**Workshop on Question Answering in Restricted Domains**). 2005.

30. Shyamsundar Jayaraman, Alon Lavie, Robert Frederking, and Ralf Brown. Multi-Engine Machine Translation Guided by Explicit Word Matching. In **Proceedings of the 10th Annual Conference of the European Association for Machine Translation** (EAMT-2005). Budapest, Hungary. May 2005.

31. A. Waibel, A. Badran, A. Black, R. Frederking, D. Gates, A. Lavie, L. Levin, K. Lenzo, L. Mayfield Tomokiyo, J. Reichert, T. Schultz, D. Wallace, M. Woszczyna, and J. Zhang. Speechalator: two-way speech-to-speech translation on a consumer PDA. In **Proceedings of the European Conference on Speech Communication and Technology**, 2003.

32. Alex Waibel, Ahmed Badran, Alan W. Black, Robert E. Frederking, Donna Gates, Alon Lavie, Lori S. Levin, Kevin Lenzo, Laura Mayfield Tomokiyo, Juergen Reichert, Tanja Schultz, Dorcas Wallace, Monika Woszczyna, Jing Zhang. Speechalator: Two-Way Speech-to-Speech Translation in Your Hand. In **Proceedings of HLT-NAACL 2003**. (Demo.)

33. Eric Nyberg, Robert E. Frederking: JAVELIN: A Flexible, Planner-Based Architecture for Question Answering. In **Proceedings of HLT-NAACL 2003**. (Demo.)

34. Teruko Mitamura, Eric Nyberg, and Robert Frederking. Teaching Machine Translation in Graduate Language Technologies Program. Machine Translation Summit IX, **Workshop on Teaching Translation Technologies and Tools**. New Orleans, September 2003.

35. Black, A., Brown, R., Frederking, R, Lenzo, K. Moody, J, Rudnicky, A., Singh, R., and Steinbrecher, E. Rapid Development of Speech-to-Speech Translation Systems. In **Proceedings of ICSLP-2002**, Denver, 2002.

36. Alan W Black, Ralf D. Brown, Robert Frederking, Rita Singh, John Moody, and Eric Steinbrecher. Tongues: Rapid Development Of A Speech-To-Speech Translation System. **Proceedings of HLT-2002**. San Diego, 2002. (Poster.)

37. Robert E Frederking, Alan W Black, Ralf D Brown, Alexander Rudnicky, John Moody, and Eric Steinbrecher. Speech Translation on a Tight Budget Without Enough Data. ACL2002 **Workshop on Speech-to-Speech Translation**. Philadelphia, July 2002.

38. Robert Frederking, Eric H Nyberg, Teruko Mitamura, and Jaime G Carbonell. Design and Evolution of a Language Technologies Curriculum. ACL02 **Workshop on Effective Tools and Methodologies for Teaching NLP and CL**. Philadelphia, July 2002.

39. Alon Lavie, Lori S. Levin, Robert E. Frederking, Fabio Pianesi. The NESPOLE! Speech-to-Speech Translation System. **AMTA-2002**. (System description.)

40. Frederking, R.E., Black, A.W., Brown, R.D., Moody, J., and Steinbrecher, E. Field Testing the Tongues Speech-to-Speech Machine Translation System. In Proceedings of the **Third International Conference on Language Resources and Evaluation** (LREC-2002). Las Palmas, Gran Canaria, Spain. pp. 160-164. May 2002.

41. Hogan, C. and Frederking, R. WebDIPLOMAT: A Web-Based Interactive Machine Translation System. **Proceedings of COLING-2000**, Saarbruecken, Germany, August 2000.

42. Frederking, R., Hogan, C., and Rudnicky, A. A New Approach to the Translating Telephone. In Proceedings of **MT Summit VII**, Singapore, September 1999. (Poster.)

43. Hogan, C. and Frederking, R.E. An Evaluation of the Multi-engine MT Architecture. In Proceedings of the **Third Conference of the Association for Machine Translation in the Americas** (AMTA '98). October 1998.

44. Carbonell, J., Brown, R., and Frederking, R. Generalized Example-Based MT in A Multi-Engine Framework. Proceedings of **JSPS-HITACHI Workshop on New Challenges in Natural Language Processing and its Application**, Tokyo, May 1998.

45. Frederking, R. Two Key Issues for Translingual Information Management. **Workshop on Multi-Lingual Information Management** at the first Language Resources and Evaluation Conference (LREC-98), Granada, Spain, May 1998.

46. Eskenazi, M., Hogan, C., Allen, J., and Frederking, R. Issues in Database Design: Recording and Processing Speech from New Populations. In Proceedings of the **First International Conference on Language Resources and Evaluation** (LREC-98). Granada, Spain. May 1998.

47. Frederking, R.E., Brown, R.D., and Hogan, C. The DIPLOMAT Rapid-Deployment Speech MT System. In Proceedings of **MT Summit VI**, San Diego. October 1997. System presentation.

48. Eskenazi, M., Hogan, C., Allen, J., Frederking, R. Issues in database creation: Recording new populations, faster and better labelling, In Proceedings of **Eurospeech'97**, Rhodes, Greece, 1997.
49. Frederking, R., Rudnicky, A., and Hogan, C. Interactive Speech Translation in the DIPLOMAT Project. Presented at the **Spoken Language Translation workshop** at the 35th Meeting of the Association for Computational Linguistics, ACL-97. Madrid, Spain. 1997.
50. Frederking, R., Mitamura, T., Nyberg, E., Carbonell, J. Translingual Information Access. Presented at the **Cross-Language Text and Speech Retrieval workshop** at the AAAI-97 Spring Symposium Series, Stanford, 1997.
51. Frederking, Robert and Brown, Ralf. The Pangloss-Lite Machine Translation System. In Proceedings of the **Conference of the Association for Machine Translation in the Americas** (AMTA-96). System Demonstration. Montreal. 1996.
52. Frederking, R.E. Grice's Maxims: ''Do the Right Thing''. Presented at the **Computational Implicature workshop** at the AAAI-96 Spring Symposium Series, Stanford, 1996.
53. Brown, R., and Frederking, R. Applying Statistical English Language Modeling to Symbolic Machine Translation. In Proceedings of the **Sixth International Conference on Theoretical and Methodological Issues in Machine Translation** (TMI-95), Leuven, Belgium, 1995.
54. Frederking, R. and Nirenburg, S. Three Heads are Better than One. In Proceedings of the **fourth Conference on Applied Natural Language Processing**, ANLP-94, Stuttgart, Germany, 1994.
55. Frederking, R.E. Statistical Language Models for Symbolic MT. Presented at the **Language Engineering on the Information Highway workshop**, Santorini, Greece, September 1994.
56. Frederking, R., Nirenburg, S., Farwell, D., Helmreich, S., Hovy, E., Knight, K., Beale, S., Domashnev, C., Attardo, D., Grannes, D., Brown, R. Integrating Translations from Multiple Sources within the Pangloss Mark III Machine Translation. In Proceedings of the **first conference of the Association for Machine Translation in the Americas**, AMTA-94, Columbia, MD, 1994.
57. Nirenburg, S. and Frederking, R. Toward Multi-Engine Machine Translation. In Proceedings of the **DARPA Human Language Technology Workshop**, Princeton, NJ, 1994.
58. Frederking, R., A. Cohen, P. Cousseau, D. Grannes and S. Nirenburg. The Pangloss Mark I MAT System. Proceedings of **EACL-93**, Utrecht, The Netherlands, April, 1993. (Poster.)
59. Frederking, R., Grannes, D., Cousseau, P., and Nirenburg, S. The Integration of MT and MAT. In Proceedings of the **first Conference of the Pacific Association for Computational Linguistics** (PACLING). Vancouver, Canada, April 1993.
60. Frederking, R., Grannes, D., Cousseau, P., and Nirenburg, S. An MAT Tool and Its Effectiveness. In Proceedings of the **DARPA Human Language Technology Workshop**, Princeton, NJ, 1993.
61. Frederking, R.E. and Muscettola, N. Temporal Planning for Transportation Planning and Scheduling. Proceedings of 1992 **IEEE International Conference on Robotics and Automation**, Nice, France, May 1992.
62. Frederking, R.E. Interactive Experiment Planning to Control Knowledge-Based Simulation. Proceedings of the **Winter Simulation Conference**, December, 1991.
63. Frederking, R.E., and Chase, L.L. Planning in a CIM Environment: Research Towards a Constraint-Directed Planner. Proceedings of the **Fourth International Conference on Expert Systems in Production and Operations Management**, May, 1990.
64. Frederking, R., and Gehrke, M. Resolving Anaphoric References in a DRT-based Dialogue System. Proceedings of **Wiener Workshop Wissensbasierte Sprachverarbeitung** (Vienna Workshop on Knowledge-based Language Processing), Informatik-Fachberichte 176, Springer-Verlag, August 1988.
65. Frederking, R.E. An Approach to Natural Language Understanding in Rule-based Systems. Proceedings of the **First Annual Workshop on Theoretical Issues in Conceptual Information Processing**, TICIP-1, March 1984.
66. Frederking, R.E. A Rule-based Conversation Participant. Proceedings of the **19th Meeting of the Association for Computational Linguistics**, ACL-81, 1981.

UNREFEREED CONFERENCE/WORKSHOP PAPERS

67. Pangloss Spanish System Description and Applying Statistical English Language Modelling to Symbolic MT presentations for PANGLOSS project at **November 1994 ARPA MT Workshop**, Vienna, Virginia.

68. Chart Manager and Lessons Learned presentations for PANGLOSS project at **March 1994 ARPA MT Workshop**, Vienna, Virginia.
69. System Integration, Glossary-Based Machine Translation, and Lessons Learned presentations for PANGLOSS project at **1993 ARPA MT Workshop**, Carnegie Mellon University.
70. Proposed System Integration presentation for PANGLOSS project at **February 1992 ARPA MT Workshop**, IBM Thomas J. Watson Research Center.

TECHNICAL REPORTS

71. Nirenburg, S., (ed.). 1995. The Pangloss Mark III Machine Translation System. Joint Technical Report, Computing Research Laboratory (New Mexico State University), Center for Machine Translation (Carnegie Mellon University), Information Sciences Institute (University of Southern California). Issued as CMU technical report CMU-CMT-95-145.
72. Frederking, R.E. Understanding Dialogue Ellipsis. Technical Report CMU-CMT-93-142, Carnegie Mellon University, 1993.
73. Frederking, R., and Gehrke, M. Resolving Anaphoric References in a DRT-based Dialogue System: Part 2: Focus and Taxonomic Inference. WISBER technical report B17. University of Saarbruecken, FRG. December 1987.
74. Frederking, R.E. Syntax and Semantics. Technical Report CMU-CS-85-133, Carnegie Mellon University, 1985.

OTHER PUBLICATIONS

75. Cohen, A., Cousseau, P., Frederking, R., Grannes, D., Khanna, S., McNeilly, C., Nirenburg, S., Shell, P., Waeltermann, D. Translator's WorkStation User Document, Center for Machine Translation, Carnegie Mellon University, 1993.
76. Frederking, R.E. (ed.), Guide to Living in Pittsburgh, fourth edition. Carnegie Mellon University Computer Science Department, 1982.

SOFTWARE ARTIFACTS

77. Contributed to METAL Metaphor project's 5k metaphors contributed to IARPA Metaphor Repository, 2013.
78. Built, programmed, field-tested prototype portable underwater Dolphin Communication System, 2004.
79. DIPLOMAT user interface design (with Alex Rudnicky), 1996.
80. System integration of PANGLOSS machine translation system, 1991-1994.
81. CORTES graphical planner, 1989-1991.
82. German natural language generator (NLG), 1988-1989.
83. Major components of WISBER German natural language interface (NLI), 1987-1988.
84. Psli3 production system NLI, 1983-1986. (Dissertation research.)
85. KnowledgeCraft/LanguageCraft system integration, 1986. (Carnegie Group Inc.)
86. LanguageCraft NLG and ellipsis resolution mechanism, 1984-1985. (Carnegie Group Inc.)

EVIDENCE OF EXTERNAL REPUTATION

CITATIONS AND AWARDS

Distinguished (Alumni) Achievement Award, Euclid High School, Euclid, Ohio, 2016.

Distinguished Service Award for Computer Science core course in Pennsylvania Governor's School for the Sciences, 2008. Awarded for improving course content to better engage students.

The Allen Newell Award for Research Excellence, awarded by the School of Computer Science at Carnegie Mellon, for work in Speech-Speech Machine Translation. 2002.

Semi-finalist in 1999 Discover Magazine Awards for Technological Innovation, for work on Diplomat speech translation system.

IJCAI-97 Distinguished Paper Award, Nagoya, Japan, August 1997, for: Carbonell, Jaime G., Yang, Yiming, Frederking, Robert E., Brown, Ralf D., Geng, Yibing, Lee, Danny. Translingual Information Retrieval: A Comparative Evaluation. In Proceedings of the Fifteenth International Joint Conference on Artificial Intelligence (IJCAI-97). Nagoya, Japan, 1997.

INVITED TALKS

''Language Technologies: Speech Recognition, Information Retrieval, Machine Translation, and Voice Synthesis'', Lockheed Martin, Owego, NY. October 2000.

''The DIPLOMAT, Lingwear, and Tongues projects'', DoD Language Working Group, Sylvia Morales (chair), at the Office of Special Technology, Ft. Washington, MD. December 1999.

''DIPLOMAT: Rapid-Deployment Speech Translation'' George C. Marshall European Center for Security Studies, Garmisch, Germany. April 1998.

''DIPLOMAT: Rapid-Deployment Speech Translation'' NATO Supreme Headquarters Allied Powers Europe (SHAPE), Mons, Belgium. April 1998.

''Translingual Information Access'' and ''Machine Translation Projects at CMU/LTI'', Systems Engineering Research Institute (SERI), Daejon, South Korea, August 1997.

''Translingual Information Access'', German Research Center for AI (DFKI), Saarbruecken, Germany, July 1997.

INVITED WORKSHOPS AND PANELS

Workshop: Presented "How CMU/SCS PhD supervision succeeds" at COINS Norway workshop on PhD supervision, Tromsø, Norway, October 2014.

Panel: Is MT in Crisis? At the International Conference on Theoretical and Methodological Issues in Machine Translation (TMI-2007), Skoevde, Sweden, 2007.

Panel: MT methodologies: what works, what doesn't, and what's the right mix? At the Conference of the Association for Machine Translation in the Americas (AMTA-2002). Tiburon, CA. Steve Richardson, moderator. 2002.

Workshop: Presented ''The Future of Machine Translation to 2010'' at Federal Broadcast Information Service (FBIS) ''Global Futures Project''. September 2000.

Workshop: Presented ''Current Research in Translating Minority Languages'' at National Institutes of Health (NIH) workshop on ''Inclusion of Language Minority Populations in National Studies: Challenges, Opportunities and Best Practices''. July 2000.

Workshop: Presented ''Who are our users?'' at Workshop on Interactive Searching in Foreign-Language Collections (Douglas Oard, chair), as part of 17th Annual Human-Computer Interaction Laboratory Symposium & Open House, University of Maryland College Park. June 2000.

Workshop: Presented ''Text and Speech Translation'' at the RAND Invitational Conference on ''The Global Course of the Information Revolution: Technical Trends,'' RAND/National Intelligence Council, Pittsburgh, May 2000.

Panel: Presented language technologies point of view for panel on ''Global Networks'' (of collaboration) at the ''Global Intersections'' art/technology symposium, The Kitchen, New York. ''The Kitchen'' is an important avant-garde performing arts center. May 2000.

Panel: Presented overview of speech translation research and LTI's Janus and Diplomat/Tongues projects for panel on ''Translation'' at SpeechTEK-99, New York. Also gave Manny Rayner's (NASA) presentation for him. Roger Matus (Dragon), moderator. Other panelists: Mark Bautil (L&H), Tim Hildreth (Transparent Language). November 1999.

Panel: Chaired session and moderated panel on ''Handling Multilingual Speech, Document Images, and Video OCR'' at joint ACM Digital Libraries/ACM SIGIR Workshop on Multilingual Information Discovery and AccesS (MIDAS). Panelists: Alexander Hauptmann (CMU), Henry Baird (Xerox PARC), George Doddington (SRI and NIST), Peter Schaeuble (Eurospider). Douglas Oard, chair. August 1999.

Workshop: Presented a ''strawman'' position on the overall design of the TIDES funding program, DARPA TIDES Planning Workshop, Leesburg, VA. Gary Strong, chair. July 1999.

Panel: Presented ''MT for the Web'' at the panel called ''Language on Trial'', at Eighth International World Wide Web Conference (WWW8), Toronto, Canada. Antonio Sanfilippo (EC), moderator. Other panelists: Gary Strong (NSF), Hans Uszkoreit (DFKI), Olivero Stock (IRST), Giovanni Varile (EC), David Israel (SRI), Rose Lockwood (Equipe). May 1999. Also published in Computer Networks: The International Journal of Computer and Telecommunications Networking Volume 31 , Issue 11-16 (May 1999). Publisher: Elsevier North-Holland, Inc.

Workshop: Gave presentation on my NSF-sponsored workshop in Granada, Spain, to session on ''Translingual Information Management'' (Gary Strong, chair) at the Conference on New Vistas in Transatlantic Science and Technology Cooperation, National Academy of Sciences, Washington, DC. This was organized by the National Research Council (NRC) to begin implementing the treaty ''U.S.-European Union Science and Technology Agreement'', signed in December 1997, which led to the NSF/EU joint research program sponsoring LTI's MuchMore and Nespole projects. June 1998.

Workshop: Gave presentations on ''Cross-Lingual and Cross-Modal Information Retrieval'' and ''Speech Translation'' at NSF-sponsored Workshop on Multi-Lingual Information Management at the first Language Resources and Evaluation Conference (LREC-98), Granada, Spain, May 1998.

Workshop: Frederking, R., Carbonell, J., Yang, Y., Brown, R. Translingual Information Access on the World Wide Web. Presented at the Future of AI and the Internet workshop at the Fifteenth International Joint Conference on Artificial Intelligence (IJCAI-97). Alex Franz, chair. Nagoya, Japan, August 1997.

Panel: Frederking, R., Mitamura, T., Nyberg, E., Carbonell, J. Translingual Information Management. Presented at the October 1996 DARPA ITO Principal Investigators meeting. Invited to be one of three panel members for Working Group Session 12 on Translingual Information Management. Ron Larsen, chair. Dallas, October 1996.

Panel: Next Steps in MT Research, at the Conference of the Association for Machine Translation in the Americas (AMTA-96). Montreal, Canada. Lynn Carlson, moderator. Other panelists: David Farwell, John O'Hara, Dekai Wu, Jackie Murgida, Pierre Isabelle. 1996.

OTHER

Member of external review committee for Department of Computer Science and Information Systems, Youngstown State University. June 2011.

Lecturer, Joint EAMT-SUSU Intensive School in Machine Translation, Chelyabinsk, Russia. http://www.mtschool-susu.info/ . Other three Lecturers were Andy Way (DCU), Harold Somers (Manchester), and Svetlana Sheremetyeva (Copenhagen Business School and SUSU). May 2011.

International project reviewer. Invited to participate in European Commission FP7 research project annual reviews. March 2010, April 2011, April 2013.

International project reviewer. Invited to review European Commission FP7 research project proposals in Language Technologies. May 2009.

Visiting Researcher at the Center for Scientific and Technological Research (ITC-irst) in Trento, Italy, July 2001.

Visiting Researcher at German Research Center for AI (DFKI), Saarbruecken, Germany, July 1997.

EXTERNAL PROFESSIONAL ACTIVITIES

CONFERENCE AND WORKSHOP COMMITTEES

- Program Committee for EventStory2018 workshop at COLING-2018.
- Program Committee for EventStory2017 workshop at ACL-2017.
- In charge of producing presentation trophy for AMTA "Award of Honor", 2012.
- Chair of Nominating Committee for International Association for Machine Translation (IAMT) ''Award of Honor'', 2009.
- Program Committee for the First Workshop on African Language Technology (AfLaT 2009) at EACL-2009.
- Social Arrangements Chair for the Conference of the Association for Machine Translation in the Americas (AMTA-2008), Honolulu, Hawaii, 2008. Also arranged invited talk on the Hawaiian Language by Keao NeSmith.
- Co-Chair of workshop on Speech Processing for Safety Critical Translation and Pervasive Applications at COLING-2008, Manchester, UK, 2008.
- Member of Nominating Committee for North American Chapter of the Association for Computational Linguistics (NAACL), 2006.
- Member of Nominating Committee for president of the Association for Machine Translation in the Americas (AMTA), 2006.
- Member of Organizing Committee for the Ninth International Conference on Spoken Language Processing (Interspeech 2006 -- ICSLP). Pittsburgh, 2006. Responsible for Registration and Webmaster.
- Co-Chair of First International Medical Speech Translation workshop at the Human Language Technology Conference of the North American Chapter of the Association for Computational Linguistics (HLT-NAACL-2006), New York, June 2006.
- AMTA-2004, Co-editor of proceedings: Robert E. Frederking, Kathryn Taylor (eds.). Machine Translation: From Real Users to Research. Proceedings of 6th Conference of the Association for Machine Translation in the Americas (AMTA-2004), Washington DC, September 2004. Publisher: Springer-Verlag Heidelberg, 2004.
- Program Co-Chair for the Conference of the Association for Machine Translation in the Americas (AMTA-2004). Washington, D.C., 2004.
- Demo co-chair for Human Language Technology Conference of the North American Chapter of the Association for Computational Linguistics (HLT-NAACL-2003), Edmonton, Canada, 2003.
- Tutorial/Workshop chair for the Conference of the Association for Machine Translation in the Americas (AMTA-2002). Tiburon, CA, 2002. Served also as webmaster for conference.
- Local organizing committee for the Second Meeting of the North American Chapter of the Association for Computational Linguistics (NAACL-2001), Pittsburgh, 2000-2001. Served also as webmaster for conference.
- COLING-98 MLIM Workshop and LREC-98 MLIM Workshop, Co-Editor of proceedings: Hovy, E., N. Ide, R. Frederking (eds.). Proceedings of the Workshop on Multilingual Information Management at the 17th Intl. Conference on Computational Linguistics, Montreal, Canada, August 1998. (A more recent version appears on the WWW as: Hovy, E., N. Ide, R. Frederking, J. Mariani, A. Zampolli (eds.). 1998. Multilingual Information Management: Current Levels and Future Abilities. Study commissioned by NSF, result of workshops in Granada, Spain, and Montreal, Canada. http://www.cs.cmu.edu/~ref/mlim/ .)
- Steering committee of NSF-sponsored Workshop on Multi-Lingual Information Management at COLING-98, Montreal, Canada, 1998.
- Steering committee of NSF-sponsored Workshop on Multi-Lingual Information Management at the first Language Resources and Evaluation Conference (LREC-98), Granada, Spain, 1998.

CONSULTING

- Consulted for **Psilos Group Partners** (venture capitalists), 10/99: expert evaluation of the technical capabilities of an MT start-up that they were considering investing in. Two days total.
- Consulted for **Carnegie Group Inc.**, 3/84-9/86: LanguageCraft English natural language generator and ellipsis resolution mechanism, Tess porting and demo development, and KnowledgeCraft/LanguageCraft integration, porting, and demo development, and as instructor in commercial AI course.

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

- Elected Vice-President of Association for Machine Translation in the Americas (AMTA), Sept. 2004. Re-elected August 2006. Term-limited from running in 2008.
- Appointed to Executive Board of North American Chapter of the Association for Computational Linguistics (NAACL), 2004.
- Elected to board of Association for Machine Translation in the Americas (AMTA), 2000-2001 term. Previously nominated to AMTA board, 1998.
- Member of Sigma Xi, Tau Beta Pi, Theta Tau professional engineering fraternity (undergraduate chapter president).
- Member of Computer Professionals for Social Responsibility (CPSR). Charter member of former Pittsburgh chapter.

EDITORIAL BOARD MEMBERSHIPS

- Co-Editor of special issue: Robert Frederking, Eduard Hovy, and Nancy Ide (eds.). Special Issue on Multilingual Information Management. *Computers and the Humanities*, vol.35, no. 4. Kluwer Academic Publishers. November 2001. Later also appeared as Eduard Hovy, Nancy Ide, Robert Frederking, Joseph Mariani, and Antonio Zampolli (eds.). Multilingual Information Management: Current Levels and Future Abilities. *Linguistica Computazionale*, Volume XIV-XV, 1999. Publisher: Insituti Editoriali e Poligrafici Internazionali, Pisa, Italy, 2001.

OTHER

- One of three instructors in Endangered Language Seminar, Shaler Area High School, February 17, 2011.
- Language resource creation and sharing. In response to humanitarian crisis, released our Haitian Creole speech and translation databases (from Diplomat project) on the WWW. Previously took care to archive/maintain data for over ten years. Our data used by Google, Microsoft, and others to provide translation resources. Also used as part of international workshop shared task in Haitian Creole: WMT-2011 at EMNLP-2011. January-February 2010.
- Taught ''FaithTech'' computer literacy classes to senior citizens, 2003.
- Interview: BBC News World Service, ''Go Digital'' radio program, August 26, 2002. Also as an article on the BBC website dated August 28, 2002.
- Interview: New York Times. ''What's Next: Roaming the World With a Translator in Your Pocket'', Anne Eisenberg. June 14, 2001.
- Interview: Wired magazine. May 2000 cover story, ''Talking to Strangers'', Steve Silberman. Featured along with other LTI faculty.
- Interview: IEEE Intelligent Systems, July/August 1998, ''Focus: Global communication through online translation'', Crystal Chweh.
- Interview: National Public Radio (NPR), 12 February 1998, ''Online Translation'', Robert Siegel.

- Public lecture: The Origins of the Computer Professionals for Social Responsibility (CPSR). The Unitarian Universalist Church of the North Hills, 5/17/92
- Public lecture: The Origins of the Computer Professionals for Social Responsibility (CPSR). The Unitarian Universalist Church of the South Hills, 4/14/91
- Tutor for East End Cooperative Ministries in junior-high science and mathematics (1990-1991).
- Co-wrote and co-produced (with Gregg Podnar) educational film on computers, funded by ACM, entitled ''Computers in Your Life'', shown to 500,000 people by the ACM. 1980.
- Program Committee member for numerous conferences, including: ICSLP-98, Workshop on Embedded MT Systems at NAACL/ANLP-2000, IJCAI-2001, AMTA-2002, MT Summit IX (2003), AMTA-2004, LREC-2004, ICSLP-2006, AMTA-2006, HLT-NAACL-2007, TMI-2007, Interspeech-2008, LREC-2008, LREC-2010.
- Reviewer for Irish Science Foundation Ireland (SFI), 2015.
- Reviewer for French Agence Nationale de la Recherche (ANR), 2013.
- Reviewer for Swiss National Science Foundation, 2003-2006, 2012.
- Reviewer for IEEE Computer journal, August 2000-2002.
- Reviewer for book proposal for MIT Press (1999).
- Reviewer for Computers and the Humanities Journal, special issue on multilingual information access and management (1999).
- Reviewer for National Science Foundation Proposal Review Panel (1999).
- Reviewer for Computational Linguistics journal (1996).
- Reviewer for the special issue of International Journal of Computational Intelligence on ''Context in Natural Language Processing'' (May 1996).
- Reviewer of National Science Foundation research proposals in Knowledge and Database Systems (1988-1989).
- Book reviewer for Computers and Translation journal (1989).

CONTRIBUTIONS TO EDUCATION

LEADERSHIP ROLES

- Appointed Associate Dean for Doctoral Programs (SCS), April 2015.
- Served as informal interim Dean of SCS, July-August 2014.
- Appointed Associate Dean for Graduate Education (SCS), January 2011.
- Serving as chair of the LTI graduate programs (PhD and MS), which subsumes my earlier role as LTI graduate student curriculum advisor. This position includes meeting with students individually and collectively, tracking their individual academic progress, working with the SCS PhD and MS program chair to maintain consistency across SCS, working with other faculty to plan curriculum changes and prevent and resolve program inconsistencies, chairing monthly LTI faculty meetings, maintaining up-to-date program descriptions and course listings on LTI Web site, and anything else necessary to keep the program successful. In addition, provided similar but separate services for the Philosophy Department while there were still Computational Linguistics graduate students; they were formally integrated into the LTI in 1998.

CURRICULUM DESIGN

- Oversight of entire LTI graduate curriculum. Advising undergraduate curriculum design. Ongoing, since Fall 1997.
- Co-taught 11-411/11-611 in Spring 2016.
- Led 11-712 lab course in Spring 2016.
- Co-organized 11-736 Graduate Seminar on Endangered Languages, with Alan W Black, Lori Levin, and Laura Tomokiyo, Fall 2010. Taught annually through Fall 2017, planned to be every second year in future.
- Developed Machine Translation section of undergraduate survey course, 11-682/15-482 ''Human Language Technologies'', Fall 2001.
- Developed survey mini-course (with Alan W Black) for eCommerce program, 20-865 ''Language Technologies in eCommerce'', Spring 2001.
- Developed five lectures for the new LTI graduate course in Machine Translation (11-731), on several specific MT techniques, Domain Analysis and System Specification, and Workflow and Human Factors, Spring 1997.
- Developed five lectures for the new LTI graduate course in Algorithms for Natural Language Processing (11-711), on Search, Lexical Analysis, Ambiguity Resolution, Semantics, Fall 1996. Taught annually since then.

LECTURE NOTES AND COURSE MATERIALS

- Developed and presented Machine Translation section of undergraduate survey course in Fall 2001, 11-682/15-482 ''Human Language Technologies''.
- Developed and presented survey mini-course (with Alan W Black) for eCommerce program in Spring 2001, 20-865 ''Language Technologies in eCommerce''.
- Developed and presented five lectures for the new LTI graduate course in Machine Translation (11-731), on several specific MT techniques, Domain Analysis and System Specification, and Workflow and Human Factors, Spring 1997. Later took over responsibility for one lecture on Commercial MT systems.
- Developed and presented five lectures for the new LTI graduate course in Algorithms for Natural Language Processing (11-711), on Search, Lexical Analysis, and Ambiguity Resolution, Fall 1996.
- Developed and presented lecture for SCS course: Machine Translation, Manuela Veloso course instructor, Carnegie Mellon University, November 1995.
- Developed and presented lecture for SCS course: System Integration, Jaime Carbonell course instructor, Carnegie Mellon University, April 1993.

- Developed and presented lecture for SCS course: Pangloss as a Real Knowledge-Based System, Jaime Carbonell course instructor, Carnegie Mellon University, April 1992.

OTHER

- Taught Computer Science core course in Pennsylvania Governor's School for the Sciences (PGSS), each July, 2003-2008 (final year program was held). This was a state-wide program hosted by Carnegie Mellon for ''especially talented Pennsylvania high school students''.
- Presented talks to recruit local high school students for the first North American Computational Linguistics Oympiad, 2007. http://www.naclo.cs.cmu.edu/

STUDENT ADVISING

COMPLETED PHD STUDENTS
Richard Wang, LTI PhD
- Language-Independent Set Expansion of Named Entities using the Web, November 2009.
- Google New York
- William Cohen, co-advisor, Chair of thesis committee

M.S. OR PH.D. THESIS COMMITTEE SERVICE
Shekar Sivasubramanian, LTI PhD
- Ongoing as of April 2018.
Pedro Mota, LTI PhD
- Ongoing as of April 2018.
Rui Correia, LTI PhD
- Expected completion May 2018.
Vasco Pedro, LTI PhD
- *Federated Ontology Search*. August 2009.
Christopher Hogan, LTI PhD
- *Discovering Morphology from Bilingual Corpora*. Not completed.
Stephen Beale, LTI PhD
- *HUNTER-GATHERER: Applying Constraint Satisfaction, Branch-and-Bound and Solution Synthesis to Computational Semantics*, May 1997.

Scott Judy, MS Thesis
- 2004.
Curtis Huttenhower, MS Thesis
- 2003.
Ananlada Chotimongkol, MS Thesis
- 2003.

PHD STUDENTS SUPPORTED
- **Justin Chiu**, LTI PhD, provided InMind project work, 2015

MASTERS STUDENTS SUPERVISED
- **Vaibhav Vaibhav**, LTI MS, 2019 planned
- **Salvador Medina**, LTI MS 2017
- **Maya Tydykov**, LTI MS 2015 (with Anatole Gershman)
- **Weston Feely**, LTI MS 2014 (with Lori Levin)
- **Sushant Kumar**, LTI MS 2013 (with Anatole Gershman)
- **Rushin Shah**, LTI MS, 2011
- **Jose Gonzalez**, LTI MS, 2009

- **Jonathan Clark**, LTI MS, 2009
- **Allison Alvarez**, LTI MS, 2007
- **Udhyakumar Nallasamy**, LTI MS, 2006
- **James Sanders,** LTI MS, not completed
- **Richard Wang**, LTI MS, 2003
- **Ulas Bardak**, LTI MS, 2003
- **Ying (Joy) Zhang**, LTI MS, 2002
- **Alice Oh**, LTI MS, 2000
- **Paul Kennedy**, LTI MS, 1999
- **Photina Jang**, LTI MS, 1998
- **Daniela Lonsdale**, LTI MS, not completed
- **Naomi Waibel**, LTI MS, 1997

UNDERGRADUATE SENIOR THESES AND RESEARCH PROJECTS

Jen Solyanik
- Undergraduate Independent Study, *Study of Statistical Phrase-Based Chinese-English Machine Translation*, 2011

Wuttipong Lertaneksin
- Senior thesis, *Thai/English machine translation*, 1998

Robert Igo
- Undergraduate Independent Study, *Incorporating German morphological analysis into the Translator's WorkStation (TWS)*, 1993-1994

UNIVERSITY SERVICE

UNIVERSITY SERVICE AND COMMITTEE WORK

- CMU representative to the NSF-funded FLIP Alliance for promoting diversity in CS faculty, Dec 2017-present.
- Appointed Associate Dean for Doctoral Programs (SCS), April 2015.
- Served as informal interim Dean of SCS, July-August 2014.
- Judge for 3 Minute Thesis competition, 2014.
- Appointed Associate Dean for Graduate Education (SCS), January 2011.
- Member of University Libraries Reappointments and Promotions Committee, 2012-2014.
- Member of University Libraries Faculty Senate advisory committee, 2002-2012.
- Member of Special Faculty Review Committee, 2007-2011.
- Search committee for new faculty member in Linguistics, Philosophy Department, 1997/1998.
- CPSR representative on panel on ''Technologies for communication and information'', Pugwash Technologies of Peace conference, September 1997.

SCHOOL AND DEPARTMENT SERVICE AND COMMITTEE WORK

- Shepherd for Promotion case for Ralf Brown, 2014-2015.
- Preserved historic LTI VHS tapes by converting them to digital format, 2014.
- Organizer (General Chair) of JGC60 Festschrift for Jaime Carbonell, April 2014.
- Member of Siebel Scholarship selection committee, 2013-2015.
- Represented LTI at Human Language Technology (HLT) Showcase, Pentagon Conference Center, DC, with McNeil/AECOM, December 2, 2010.
- International programs work. Helped produce proposal for CMU-Portugal Dual PhD Degree in Language Technologies. Visited Portugal numerous times, made presentations to External Review Boards in Portugal. 2006-present.
- International programs work. Visited Education City CMU-Q campus, Doha, Qatar, in May 2004. In Pittsburgh, demonstrated Arabic-English speech translation for Her Highness Sheikha Mozah during her visit to the Pittsburgh campus, June 2006. Co-organized and attended Arabic Search Engine (ASE) Workshop in Doha, Qatar, June 2007.
- Editor of 2005 LTI Advisory Board Briefing Book (major internal document).
- Participated in CMU visit (organized by Raj Reddy) to United Nations Food and Agriculture Organization (UN FAO), Rome, Italy, February 2005.
- International programs work. Visited Systems Engineering Research Institute (SERI), Daejon, South Korea. SERI agreed to fund joint research work, until crash of S. Korean currency made this impossible. August 1997.
- SCS College Council member, 2004-present. College Council advises the Dean on school governance.
- LTI Representative to Faculty Senate, 2001-2003.
- Publicity co-chair (Webmaster) for NAACL-2001 conference held at Carnegie Mellon June 2001.
- Chair of LTI graduate programs, 1998-present. Earlier, LTI graduate student advisor.
- SCS Patent Disclosure Committee, 1996-2000.
- Various other ad hoc duties and committees, e.g., writing LTI Departmental Handbook, Microsoft Graduate Fellowship evaluation committee (1998-present), SCS professional programs issues, CMT/LTI 10th anniversary symposium, 1998 Commencement Marshal, 2005 LTI curriculum committee, ''exec officer'' to prepare for 1/2006 LTI Advisory Board, ad hoc committee for NSH/Gates Center atrium bridge 2007-2009, etc.
- Vice-President of the SCS ''DecFive'' social organization.
- As graduate student, first Coke Machine Czar for DecFive.
- As graduate student, first editor of ''Guide to Living in Pittsburgh'' after Brian Reid (4th edition, 1982).