

Rebecca Bruce
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University of North Carolina at Asheville
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Asheville, NC 28804-8511

EDUCATION/CERTIFICATION

Ph.D. (Computer Science), New Mexico State University	1995
M.S. (Computer Science), New Mexico State University	1992
Professional Engineer, State of North Carolina	1989
M.S. (Mechanical Engineering), Stanford University	1985
B.S. with Honors (Civil Engineering), University of Texas at El Paso	1977

EXPERIENCE

Associate Professor DEPT. OF COMPUTER SCIENCE UNIVERSITY OF NORTH CAROLINA AT ASHEVILLE, ASHEVILLE, NC Courses Taught: Micro Software Packages, Introduction to Programming, Introduction to Data Structures, Analysis of Algorithms, Artificial Intelligence, Programming Languages, Robotics and the Internet, 3-D Modeling and the Web, Database Management Systems, Information Retrieval, and Introduction to Mechatronics. Interest Areas: Natural Language Processing, Data Mining, and Computer Science and Engineering Education.	1998–Present
Assistant Professor DEPT. OF COMPUTER SCIENCE AND ENGINEERING SOUTHERN METHODIST UNIVERSITY, DALLAS, TX Courses Taught: Introduction to Programming, and Artificial Intelligence. Research Area: Natural Language Processing, and Machine Learning.	1995–1997
Research Assistant DEPT. OF COMPUTER SCIENCE AND COMPUTING RESEARCH LAB. NEW MEXICO STATE UNIVERSITY, LAS CRUCES, NM Participated in ARPA, NSF and NSA funded projects for the design and implementation of: a large linguistic data base, a machine translation system, and a discourse processing system.	1989–1995
Engineer Level III ASHEVILLE INDUSTRIES, INC. (NEWPORT NEWS SHIPBUILDING), ARDEN, NC Responsible for the design and analysis of structures for carriers and submarines.	1987–1989
Senior Research Engineer LOCKHEED MISSILES AND SPACE CO., SUNNYVALE, CA. Responsible for missile systems development.	1985–1987

Product Development Engineer 1980–1985
BECKMAN INSTRUMENTS, SPINCO DIVISION, PALO ALTO, CA.
Responsible for analysis of centrifuge drive dynamics and rotor development.

Associate Design Engineer 1977–1979
MCDONNELL DOUGLAS ASTRONAUTICS CO. & LOCKHEED ELECTRONICS CO.
WHITE SANDS TEST FACILITY, LAS CRUCES, NM
Involved in Facilities buildup and Space Shuttle RCS engine test.

PUBLICATIONS

Refereed Conference and Workshop Papers

- Brock, J., Bruce, R., & Reiser, S., (Forthcoming). Using Arduino for Introductory Programming Courses. *A Tutorial in the Proceedings of the Twenty-Third Annual Southeastern Conference of the Consortium for Computing Sciences in Colleges (CCSC 2009)*, Salem, VA, Nov 13-14, 2009.
- Reiser, S. & Bruce, R. (2009). Fabrication: A Tangible Link Between Computer Science and Creativity in *Proceedings of the 40th ACM Technical Symposium on Computer Science Education (SIGCSE 2009)*, Chattanooga, TN, March 4-7, 2009.
- Reiser, S. & Bruce, R. (2008). Making Computer Science Relevant: A Yearlong Service Learning Project Spanning Three Courses in the Computer Science Curriculum. A poster presentation in *Proceedings of the 39th ACM Technical Symposium on Computer Science Education (SIGCSE 2008)*, Portland, Oregon, March 12-15, 2008.
- Reiser, S. & Bruce, R. (2008). Service Learning Meets Mobile Computing. In *Proceedings of the 46th annual ACM Southeastern Conference (ACMSE 2008)*, Auburn, AL., March 28-29, 2008.
- Bruce, R. & Fahmy, Y. (2007). Is Engineering a Liberal Arts, *Science and the Humanities Conference*, UNC-Asheville, October 17-19, 2007.
- Bruce, R. & Reiser, S. (2006). Aligning Learning Objectives with Service-Learning Outcomes in a Mobile Computing Application. In *Proceeding of the 44th annual ACM Southeastern Conference (ACMSE 2006)*, Melbourne, Florida, March 10-12, 2006.
- Bruce, R., & Reiser, S. (2005). Introduction to Technology for General Education. In *Proceeding of the 43rd annual ACM Southeastern Conference (ACMSE 2005)*, Kennesaw State University Kennesaw, Georgia, March 18-20, 2005.
- Bruce, R. & Reiser, S. (2005). Robots in the Middle School: A Service Learning Project. A poster presentation in *Proceedings of the Conference on K-12 Outreach from University Science Departments: 2005*. Sponsored by the Burroughs Wellcome Fund, Research Triangle Park, NC, April 19-21, 2005.
- O'Hara, T., Donner, J., Wiebe, J. & Bruce, R. (2004). Class-based Collocations for Word-Sense Disambiguation. In *Proceedings of SENSEVAL-3, The Third International Workshop on the Evaluation of Systems for the Semantic Analysis of Text*, Barcelona, Spain July, 2004.

- Bruce, R., Brock, J. D., & Bogert, K. (2004). X-Lab: XML-Based Laboratory Exercises for CS1. *Proceeding of the 42nd annual ACM Southeastern Conference (ACMSE 2004)*, Huntsville, AL, April 2-3, 2004.
- Reiser, S., Bruce, R. & Brock, J. D., (2004) CS0: Another Approach. A poster presentation in *Proceedings of ACM Special Interest Group on Computer Science Education (SIGCSE 2004)*, Norfolk, VA, March 3-7, 2004.
- Bruce, R. (2001). A Bayesian Approach to Semi-Supervised Learning. *Proceedings of the 6th Natural Language Processing Pacific Rim Symposium, (NLPRS-2001)*. Tokyo, Japan, November 2001.
- Bruce, R. (2001). Semi-Supervised Learning Using Prior Probabilities and EM. *Proceedings of the 2001 IJCAI Workshop on Text Learning: Beyond Supervision*. Seattle, Washington, August 2001.
- Wiebe, J., Bell, M., Wilson, T., & Bruce, R. (2001). A Corpus Study of Evaluative and Speculative Language. *Proceedings of the 2nd SIGdial Workshop on Discourse and Dialogue*. Aalborg, Denmark, September 2001.
- Wiebe, J., Bruce, R., & O'Hara, T. (1999). Development and use of a gold standard data set for Subjectivity classifications. *Proceedings of the 37th Annual Meeting of the Assoc. for Computational Linguistics (ACL-99)*. University of Maryland, August 1999.
- Bruce, R., & Wiebe, J. (1998). Word-sense distinguishability and inter-coder agreement. *Proceedings of the Third Conference on Empirical Methods in Natural Language Processing (EMNLP-98)*. Granada, Spain, June 1998.
- Wiebe, J., McKeever, K. & Bruce, R. (1998). Mapping Collocational Properties into Machine Learning Features. *Proceedings of the Sixth Workshop on Very Large Corpora, (WVLC-98)*. Montreal, Quebec, Canada, August 1998.
- Wiebe, J., O'Hara, T., & Bruce R. (1998). Constructing Bayesian Networks from WordNet for Word-Sense Disambiguation: Representational and Processing Issues. *Coling-ACL '98 Workshop on Usage of WordNet in Natural Language Processing Systems*. Montreal, Quebec, Canada, August 1998.
- Pedersen, T., & Bruce, R. (1998). Knowledge Lean Word-Sense Disambiguation. *Proceedings of the 15th National Conference on Artificial Intelligence (AAAI-98)*. Madison, Wisconsin, July 1998.
- Wiebe, J., Bruce, R. & Duan, L. (1997). Probabilistic Event Categorization. *Proceedings of the Second International Conference on Recent Advances in NLP (RANLP-97)*. Tsigov Chark, Bulgaria, September 1997.
- Kayaalp, M., Pedersen, T. & Bruce, R. (1997). A Statistical Decision Making Method: A Case Study on Prepositional Phrase Attachment. *Proceedings of Computational Natural Language Learning 1997 (CoNLL-97)*. Madrid, Spain, July 1997.
- Pedersen, T. & Bruce, R. (1997). Distinguishing Word Senses in Untagged Text. *Proceedings of the Second Conference on Empirical Methods in Natural Language Processing (EMNLP-97)*. Providence, RI, August 1997.

- Pedersen, T. & Bruce, R. (1997). A New Supervised Learning Algorithm for Word Sense Disambiguation. *Proceedings of the 14th National Conference on Artificial Intelligence (AAAI-97)*. Providence, RI, July 1997.
- Pedersen, T., Bruce, R. & Wiebe, J. (1997). Sequential Model Selection for Word Sense Disambiguation. *Proceedings of the Fifth Conference on Applied Natural Language Processing (ANLP-97)*. Washington, D.C., April 1997.
- Wiebe, J., Maples, J., Duan, L. & Bruce, R. (1997). Experience in WordNet sense tagging in the Wall Street Journal. In *Proceedings of the ANLP-97 Workshop, Tagging Text with Lexical Semantics: Why, What, and How?* Association for Computational Linguistics Special Interest Group on the Lexicon. Washington, D.C., April 1997.
- Pedersen, T., Kayaalp, M. & Bruce, R. (1996). Significant Lexical Relationships. *Proceedings of the Thirteenth National Conference on Artificial Intelligence (AAAI-96)*. Portland, Oregon, August 1996.
- Bruce, R., Wiebe, J. & Pedersen, T. (1996). The Measure of a Model. *Proceedings of the Conference on Empirical Methods in Natural Language Processing, (EMNLP-96)*. University of Pennsylvania, May 1996.
- Bruce, R. & Wiebe, J. (1995). Towards the Acquisition and Representation of a Broad-Coverage Lexicon. *Symposium on Representation and Acquisition of Lexical Knowledge: Polysemy, Ambiguity, and Generativity, AAAI 1995 Spring Symposium Series*. Stanford University, March 1995.
- Wiebe, J. & Bruce, R. (1995). Probabilistic Classifiers for Tracking Point of View. *Symposium on Empirical Methods in Discourse Interpretation and Generation, AAAI 1995 Spring Symposium Series*. Stanford University, March 1995.
- Bruce, R. & Wiebe, J. (1994). Word-sense disambiguation using decomposable models. *Proceedings of the 32nd Annual Meeting of the Assoc. for Computational Linguistics (ACL-94)*. Las Cruces, NM, June 1994, pp. 139-146.
- Bruce, R. & Wiebe, J. (1994). A new approach to word sense disambiguation. *Proceedings of the 1994 ARPA Human Language Technology Workshop*. Princeton, New Jersey, March 1994, pp. 236-241.
- Bruce, R. & Guthrie, L. (1992). Genus Disambiguation: A Study in Weighted Preference. *Proceedings of the 17th International Conference on Computational Linguistics (COLING-92)*. Nantes, France, July 1992.
- Guthrie, L., Slator, B., Wilks, Y. & Bruce, R. (1990). Is There Content in Empty Heads? *Proceedings of the 15th International Conference on Computational Linguistics (COLING-90)*. Helsinki, Finland, August 1990.

Journal Articles

- Wiebe, J., Wilson, T., Bruce, R., Bell, M., & Martin, M. (2004). Learning Subjective Language. *Computational Linguistics* 30 (3): 277-308.

O'Hara, T., Wiebe, J., & Bruce, R. (2000). Selecting decomposable models for word-sense Disambiguation. *Computing in the Humanities* 34 (1-2): 159-164.

Bruce, R. & Wiebe, J. (1999). Recognizing subjectivity: a case study in manual tagging. *Natural Language Engineering* 5 (2): 187-205.

Bruce, R. & Wiebe, J. (1999). Decomposable modeling in natural language processing. *Computational Linguistics* 25 (2): 195-207.

Guthrie, L., Guthrie, J., Wilks, Y., Cowie, J., Farwell, D., Slator, B., and Bruce, R. (1993). A Research Program on Machine-Tractable Dictionaries and Their Application to Text Analysis. In Ostler & Zampolli (eds.) *Literary and Linguistic Computing*, Vol. 8.4.

Book Chapters

Wiebe, J. & Bruce, R. (2001). Probabilistic Classifiers for Tracking Point of View. In Mark West (ed.) *Theory, Method and Practice in Computer Content Analysis*. ABLIX Books: New York.

Wiebe, J. & Bruce, R. (1999). Probabilistics event categorization. In Nicolas Nicolov & Ruslan Mitkov (eds.) *Recent Advances in Natural Language Processing*. John Benjamins: Amsterdam and Philadelphia. Revised version of Wiebe, Bruce, & Duan 1997.

Bruce, R., Guthrie, L. & Wilks, Y. (1993). Automatic Lexical Extraction: Theories and Applications. In Beckmann, F. and Heyer, G. (eds.) *Theorie und Praxis des Lexicons: A Festschrift for Helmut Schnelle*. Berlin: De Gruyter.

Invited Talks

Fahmy, Y. & Bruce, R. (2008). Engineering as a Liberal Arts, *Integrating Engineering and Humanities in Higher Education: The Bologna Process and Beyond*, TU Darmstadt, March 6-7, 2008.

Bruce, R., Invited Panelist (2005). Panel discussion on Computer Science Education: CS0 in the Undergraduate Curriculum. In *Proceeding of the 43rd annual ACM Southeastern Conference (ACMSE 2005)*, Kennesaw State University Kennesaw, Georgia, March 18-20, 2005.

Bruce, R. & Wiebe, J. (2000). Considerations for Large Corpus Annotation: Intercoder Reliability. Workshop on Large Corpus Annotation and Software Standards held in conjunction with ANLP/NAACL'00. May, 2000.

Wiebe, J., O'Hara, T., & Bruce, R. (1999). Constructing bayesian networks from WordNet for word sense disambiguation: representation and processing issues. In *Proc. U.S. Army Conference on Applied Statistics (ACAS)*, Army Research Laboratory. Reprint of Constructing Bayesian Networks from WordNet for Word-Sense Disambiguation: Representational and Processing Issues. *Coling-ACL '98 Workshop on Usage of WordNet in Natural Language Processing Systems*.

Book Reviews

Review of *Corpus-Based Methods in Language and Speech Processing*, Steve Young & Gerrit Bloothoof (editors) written for the Journal of *Computational Linguistics*, 24(2).

CONTRACTS AWARDED

Bruce, R. & Horne, J. Performer Activated Mist and Light. Funded by UNCA Summer Student/Faculty Partnership Research Grant, Award: \$3900. 2008.

Subcontract from Asheville-Buncombe Technical Community College to UNCA for the HUB project. Award: \$23,000. January, 2006.

“SIMVaC: Scientific Innovations in Numerical Modeling, Digital Visualization, and High Speed Connectivity in Western North Carolina,” Funded by the University of North Carolina Initiative for Computational Science, Computer Science, High Performance Computing and Information Systems for \$600,000 over 2 years starting in 2004. PI: J. Stevens, co-PIs: R. Bruce, K. Moorhead, L. Dohse, A. Huang, D. Brock, J. Brownsmith, S. Reiser, G. Voos, M. Roden, P. Silvers, B. Etherton, L. Hodges, & D. Young.

“Development of online Labs for a Java programming course,” Funded by University of North Carolina E-Learning initiative for \$34,268 over one year (co-PI with Dean Brock) starting in 2002.

Microsoft Academic Cooperative grant for software worth \$36,685 in 2000 (jointly with Dean Brock and Charles Massey).

“Decomposable Modeling in Natural Language Processing” Funded by Office of Naval Research for \$300,000 over 3 years starting Jan 1999. (co-PI with Janyce Wiebe).

“Methods For Category Classification Applied to Word-Sense Disambiguation and Discourse Analysis,” Funded by Office of Naval Research: for \$515,000 over 3 years starting May 1995. (co-PI with Janyce Wiebe).

SERVICE

Member NSF Panel, Washington, DC, 2008.

Member NSF Panel, Washington, DC, 2007.

Member NSF Panel, Washington, DC, 2005.

A member of the program committee for the following conferences:

Program committee for the 45th ACM Southeast Conference (ACMSE 2007); Winston-Salem, North Carolina, March 23-24, 2007.

Session Chair for the Nineteenth Annual Consortium for Computing Sciences in Colleges: Southeastern. Lenoir-Rhyne College, Hickory, NC; 11-12 November 2005.

Session Chair for the Eighteenth Annual Consortium for Computing Sciences in Colleges: Southeastern. Wofford College, Spartanburg, SC; 5-6 November 2004.

SENSEVAL-3, The Third International Workshop on the Evaluation of Systems for the Semantic Analysis of Text in Barcelona, Spain July, 2004.

Word Sense Disambiguation: Recent Successes and Future Directions: A SIGLEX/SENSEVAL Workshop at ACL 2002, Pennsylvania, July 2002.

Workshop Chair for the 39th Annual Meeting of the ACL (ACL'01), joint with EACL'01 in Toulouse, France July 6-11, 2001.

ACM-SIGART/AAAI Doctoral Consortium 2001.

Corpora and NLP thematic session of the International Conference on Artificial and Computational Intelligence for Control, Automation and Decision in Engineering and Industrial Systems (ACIDCA'2000)

1st Conference of the North American Chapter of the Association for Computational Linguistics (NAACL'2000), subcommittee on XCDiscourse, Dialogue, and Pragmatics.

ACL-99 Workshop on Unsupervised Learning in Natural Language Processing.

Joint SIGDAT Conference on Empirical Methods in Natural Language Processing and Very Large Corpora (EMNLP/VLC-99)

ACL/COLING-98 SIGDAT Workshop on Very Large Corpora (WVLC-98)

Second SIGDAT Conference on Empirical Methods in Natural Language Processing (EMNLP-97)

Reviewer for the following journals and conferences:

Nineteenth Annual Consortium for Computing Sciences in Colleges: Southeastern. Lenoir-Rhyne College, Hickory, NC; 11-12 November 2005.

17th Annual Southeastern Conference of the Consortium for Computer Science in Colleges, Dunwoody, GA, 2003.

The journal of Computer Speech and Language, Special Issue on Word Sense Disambiguation, 2003

The 19th International Conference on Computational Linguistics (COLING 2002) Taiwan, 2002.

The 39th Annual Meeting of the Assoc. for Computational Linguistics (ACL-01) joint with EACL'01

The journal of *Computation Linguistics*

Lexical Statistical NLP in the general session of the 37th Annual Meeting of the Assoc. for Computational Linguistics (ACL-99)

The SENSEVAL special issue of the journal of *Computers and the Humanities*

Student papers submitted to the Fifteenth National Conference on Artificial Intelligence (AAAI-98)

The International Joint Conference on Artificial Intelligence (IJCAI-95)

International Conference on Computational Linguistics 1994 (COLING-94)

Applied Natural Language Processing Conference 1994 (ANLP-94)