Gregory Aist, Ph.D.

Current Affiliations

Assistant Research Professor
in Computer Science and Engineering
and Member of the Faculty
of the Applied Linguistics Program,
Arizona State University

Air Force Summer Faculty Fellow
at the Air Force Research Laboratory

language computation learning

natural language processing
computer-assisted learning
artificial intelligence
computational linguistics
applied linguistics
literacy and composition
astronaut and pilot training
human-computer interaction

Appointments

Assistant Research Professor, Computer Science and Engineering, Arizona State University, 2006-now
Research Associate, Computer Science Department, University of Rochester, 2003-2006
Research Scientist, Research Institute for Advanced Computer Science, NASA Ames, 2001-2003

Education

Postdoctoral work: Visiting Scientist, MIT Media Lab, 2001-2002, and
Postdoctoral Fellow, Carnegie Mellon University, 2001
Ph.D., Language and Information Technologies, 2000
Carnegie Mellon University, School of Computer Science, Language Technologies Institute
M.S., Computational Linguistics, 1997
Carnegie Mellon University, School of Humanities and Social Sciences, Department of Philosophy
B.A. summa cum laude, Computer Science and Mathematics, Biology minor, Messiah College, 1995

Publication Summary

full list pages 8 and following
Book Chapters: 4
Journal Articles: 6 (5 published, 1 in revision)
Conference Papers: 40
Workshop Papers: 30

Teaching Summary

details page 4
Natural Language Processing
Research Methods
Artificial Intelligence

Major Awards

full list page 6
Wakonse Fellowship, to nurture quality teaching, 2008
Air Force Summer Faculty Fellowship, 2007, 2008
Allen Newell Medal for Research Excellence, 2003
Fulbright Scholar Award (awarded, not taken), 2002
NSF Graduate Fellowship, 1996-2001

Current Funding

Learner-Centered Education
Course Redesign Initiative, ABOR
(for Computer Literacy; co-investigator)
COMPUGIRLS, Motorola Foundation
(summer camp to broaden participation
in computing; co-investigator)

Memberships

CogSci: Cognitive Science Society
ACL: Association for Computational Linguistics
ISCA: Int'l Speech Communication Association
AAAI: Association for the Advancement
of Artificial Intelligence
LASSO: Linguistic Association of the Southwest

Visits and Internships

Institute for Human and Machine Cognition
(IHMC), 5/2006-7/2006
Macquarie University, 8/1998-12/1998
Microsoft Research, 1/1998-2/1998
Cornell University, 6/1995-8/1995
NCR, 5/1990-8/1991

References available upon request

Gregory.Aist@asu.edu (M) 480.627.9147

Research

Contextual parsing - incremental parsing with integrated pragmatics, syntax, and semantics
So far: researched, designed and implemented natural language parser and initial lexicon.
Sole investigator; 2006-present

Rose - creativity support software for writers
So far: Chose initial genre (creative nonfiction) and identified thirteen initial writing microstrategies
Sole investigator; 2006-present

Training event review - automatic summarization of simulation-based training for fighter pilots
So far: Built taxonomy of relationships between events; designed and built working prototype software
With Wink Bennett, Air Force Research Laboratory; 2007-present

Previous Projects

Fruit Carts - research system to explore continuous spoken language understanding in TRIPS
Devised novel methods for incremental spoken language interpretation; designed and conducted human experiments showing preference for incremental system over non-incremental counterpart
With James Allen, Ellen Campana, Carlos Gomez Gallo, Edward Longhurst, Scott Stoness, Mike Tanenhaus, Joel Tetrault, Mary Swift; 2003-2007

PLOW - research system aimed at learning Web procedures from instruction
Assisted with evaluation procedures, technical documentation, and user manual
With James Allen, Phil Michalak, and the PLOW team at Rochester and IHMC; 2006

CALO - a cognitive assistant that learns and organizes
Designed, collected, and analyzed human-human dialogues in target domain of computer purchasing
With James Allen, George Ferguson, and Mary Swift at Rochester; Lucian Galescu and Nate Chambers at IHMC; Amanda Stent at Stony Brook; 2003-2006

TRIPS – Rochester's domain-independent dialogue systems framework
Applied TRIPS to the study of continuous understanding and in the CALO project
With James Allen and the TRIPS group at the University of Rochester and IHMC; 2003-2006

Clarissa - Voice-enabled procedure browser for astronauts; first dialogue system in space
Founded NASA's Clarissa project, built working prototypes, engaged astronauts in cooperative design
With John Dowding, Jim Hieronymus, Beth Ann Hockey, Barney Pell, Manny Rayner at NASA Ames; astronaut corps and engineering personnel at NASA Johnson Space Center in Houston

WITAS - a dialogue interface to a (simulated) robotic helicopter
Co-designed, implemented, and evaluated methods to add just-in-time help to task-oriented dialogue
With Liz Bratt, Oliver Lemon, Stanley Peters at Stanford University; Ellen Campana and Beth Ann Hockey at NASA Ames; 2002-2003

Mobile Agents - a research project to study human-robot collaboration in planetary exploration
Assisted with spoken dialogue systems component of field test at Meteor Crater, Arizona
With William Clancy, John Dowding, Maarten Sierhuis, & the Mobile Agents team at NASA Ames; 2002

Affective Learning Companion - a software agent to monitor and respond to student emotions
Designed and ran studies testing human-supplied emotional scaffolding in computer-assisted learning
With Barry Kort, Rosalind Picard, and Rob Reilly at MIT; Jack Mostow at Carnegie Mellon; 2001-2002

Helping children learn vocabulary during computer-assisted oral reading (Ph.D. Dissertation)
Researched and implemented novel methods of automatically generating and supplying vocabulary help within Project LISTEN's Reading Tutor, based on comparisons of difficult words to other words; designed and ran human experiments showing effectiveness of vocabulary assistance. For 3rd graders, such help was better than classroom instruction, and comparable to one-on-one human tutoring
Committee: Jack Mostow (advisor), Albert Corbett, Alex Rudnicky, and Charles Perfetti (U. Pittsburgh)

Project LISTEN - a computer tutor that uses speech recognition to help children learn to read
The Reading Tutor displays text one sentence at a time, listens to the child read out load, and gives help when needed and praise when warranted. In five years as the principal graduate student on Project LISTEN, I worked on every aspect of developing, evaluating, and improving an intelligent tutoring system, such as: review of relevant educational and psychological literature, distillation of good tutoring practice into automated behaviors, software development, experiment design and analysis, and publication & presentation of research results.
With Jack Mostow and the Project LISTEN team at Carnegie Mellon; 1996-2001

Automatic speech recognition - Acoustic training for children's speech recognition
Wrote automatic heuristics to select speech with accurately recognized sections from ordinary Reading Tutor use; training recognizer on collected speech improved accuracy
With X.D. Huang and Li Xiang at Microsoft Research; Jack Mostow at Carnegie Mellon; 1998

Turn-taking in spoken dialogue systems (M.S. Project)
Designed novel turn-taking rules dividing turn-taking into distinct state variables for user and system; implemented in spoken tutorial dialogue system
Committee: Jack Mostow, Nancy Green, and Alex Rudnicky at Carnegie Mellon

Information retrieval and access
Prior to graduate school, I attended Gerard Salton's information retrieval group meetings at Cornell University, and worked briefly with Claire Cardie on optical character recognition for computer science technical reports; 1995
My undergraduate honors project, advised by Gene Chase, developed a software program (Termite) to help users specify better search terms by engaging in a clarification dialogue about the meaning of their search terms; 1994-1995
This opportunity to engage in research as an undergraduate was a gateway experience to graduate school and later research, and I plan to incorporate similar experiences for undergraduates into my own teaching

Teaching

Classroom Teaching

CSE 476 Introduction to Natural Language Processing, Arizona State University, Fall 2007
CSE 494E/598J Research Methods for Computer Science, Arizona State University, Fall 2007
CSE 494E/598J Research Methods for Computer Science, Arizona State University, Spring 2007
Empirical Methods for Dialogue Systems tutorial, Association for Computational Linguistics, 2005
Teaching assistant, 15-381 Artificial Intelligence (J. Carbonell, D. Cohn), Carnegie Mellon, 2000
    Supervised writing of midterm, graded homework and exams, supervised student projects
Computer skills training, Messiah College, 1993-1995
    Taught electronic mail, telnet, ftp, word processing, and spreadsheet classes
    for faculty, staff, and students; wrote and edited training materials and documentation

Guest Lecturing

Lecture in Cognitive Modeling course, Arizona State University, 2007
Lecture in Natural Language Processing course, University of Rochester, 2003
Lecture on speech understanding, Artificial Intelligence course, Carnegie Mellon, 2000
Lecture on rationalism and empiricism in linguistics, Minds, Machines and Knowledge course
Carnegie Mellon, 1996
Lecture on color models in Computer Graphics course, Messiah College

Mentoring

Co-supervised undergraduates including Micha Elsner, Michael Rotondo, and J. Ruskin
University of Rochester, 2003-2005
Mentored summer interns Vladimir Tkachenko (Foothill/DeAnza), Dan Bohus (Carnegie Mellon),
Brad Boven (Kalamazoo College), and Steven Phan (Santa Clara University)
NASA Ames, 2002-2003
Private tutoring in statistics and computer skills, 1993

Academic Background

Graduate coursework in phonetics & phonemics, syntax, semantics & logic;
    natural language processing (such as computational morphology, parsing, discourse modeling);
    statistical natural language processing, machine learning; speech recognition;
    second language acquisition; robotic art studio; learning & instructional processes
Graduate instructors included Bob Carpenter, Chris Manning, Barbara DiEugenio, Nancy Green;
    Avrim Blum, Tom Mitchell, Alex Waibel; Alan Lesgold, Sally Thomason
Undergraduate-level coursework in artificial intelligence, computer graphics,
    natural language processing, programming languages, databases, computer architecture,
    operating systems, networking, data structures & algorithms, theory of computation;
    linear algebra, combinatorics, abstract algebra, geometry, differential equations,
    numerical analysis, real analysis, complex analysis, introductory statistics, mathematical modeling;
    ecology, ecological field techniques, horticulture, genetics;
    history, religion, culture, ethics, and the arts
Undergraduate instructors included Gene Chase, Marvin Brubaker, Barry DeRoos,
    Dwight Paine, and Joseph Sheldon
Technical proficiencies include software design, programming, statistical analysis, applications
    Design: Rapid prototyping, participatory design, object-oriented design
    Programming: C/C++ (17 years), Prolog (12 years), HTML (12 years), perl, Javascript, CSS, XML,
        Java, LISP, Pascal, SQL, batch and shell scripts
    Operating Systems: Windows, Unix, Cygwin, Macintosh OSX.
    Analysis: SPSS, Excel, Access, Mathematica
    Tools: Word, PowerPoint, emacs, Visual SourceSafe, CVS, Praat, VideoRedo, FRAPS
Languages studied include English (native speaker), German, Greek, and Latin

Service

Committees and Panels

National Science Foundation (NSF) Grant Proposal Review Panel, 2007
Program Committee, Conf. on Empirical Methods in NLP and Conf. on Computational Natural Language Learning (EMNLP-CoNLL), Discourse, Dialogue and Pragmatics, 2007
Program Committee, Special Track on Integrated Intelligence, AAAI 2007
Program Committee, ACL 2007
Advisory Committee, Young Researchers' Roundtable, 2005
Program Committee, HLT-NAACL workshop on educational applications using NLP, 2003
Organizing Committee, AAAI Spring Symposium on language generation in dialogue, 2003
Convener, Panel Discussion on Scientific Publications and Computer Science, NASA Ames, 2003
Panel member, ITS workshop on empirical methods, panel on coding dialogue, 2002
Working group co-chair, Multi-lingual systems and multi-lingual environments, Development by Design: Workshop on Collaborative Open Source Design of Appropriate Technologies, MIT, July 2001
Session chair, Spoken Language Models and Dialog 1, ICSLP/Interspeech, Sydney, Australia, 1998
Organizer, Sigma Zeta Colloquium, Research in Engineering, Natural Sciences & Math. Sciences, 1994

Reviewing

Cognitive Science Conference, 2008, 2007, 2006, 2005
Computational Linguistics Journal, 2007
AIED, the International Conference on Artificial Intelligence in Education, 2007
NAACL/HLT Conference, 2007
IEEE Transactions on Systems, Man, and Cybernetics - Part B Journal, 2006
Intelligent Tutoring Systems (ITS) workshop on dialogue systems and computer tutoring, 2004
IEEE Consumer Communications and Networking Conference, 2004
AI-ED workshop on tutorial dialogue systems: with a view toward the classroom, 2003
ITS workshop on empirical methods, 2002
Artificial Intelligence in Education (AI-ED) Conference, 2001
Harvey Fellowship application reviewer, 1998 and 1999

Professional and Community Involvement

Member, 12+ Working Group, Autism Initiative, Arizona State University, 2007
Member, Computer Science Advisory Board, Messiah College, 2006
Judge, Research in Engineering and Applied Sciences Symposium, Arizona State University, 2006
Prospective student host, Brain and Cognitive Sciences Department, University of Rochester, 2006
Participant, By the People; focus groups, WXXI public radio and MacNeil/Lehrer: education, 2005; election, 2004
Audiovisual student volunteer coordinator, North American ACL (NAACL) conference, June 2-7, 2001
Member, Board of Directors, Woodard's Educational Services, Pittsburgh, Pennsylvania, 2001
Student volunteer, AAAI 1997
Student volunteer, International Symposium on Spoken Dialog, Philadelphia, 1996
Faculty-Student Representative, Computational Linguistics Program, Carnegie Mellon, 1995-1996
Software development and user community technical support, Cornell University, June-August 1995
Founding member and President, Beta Lambda Chapter of Sigma Zeta Honor Society, 1994-1995
Undergraduate activities included: (a) Sunrayce Genesis Solar Car Team, 1995; (b) Software development to support administration and teaching, 1992-1995; (c) Programming Team, 1991-1992
Product evaluation software for point-of-sale printers, NCR, May 1990-August 1991
Personal assistant to the late Israel Berstein, Dept. of Mathematics, Cornell; Professor Berstein had advanced Parkinson's; helped maintain computer, including speech synthesizer and Morse code system, took dictation for personal and professional communications, April 1990 to August 1991

Honors and Awards

Wakonse Fellowship
to attend a retreat focused on university teaching, 2008

Air Force Summer Faculty Fellowship
to perform research at the Air Force Research Laboratory in Mesa, Arizona, 2007
Renewed for summer 2008

Big Bang Award, Speech Technology Magazine
to NASA/Nuance for Clarissa astronaut assistant, 2005

Allen Newell Medal for Research Excellence, Carnegie Mellon School of Computer Science
to Jack Mostow and Gregory Aist for Project LISTEN's Reading Tutor, 2003

Fulbright Scholar Award
to teach and do research at Makerere University, Uganda, 2002 (awarded but not taken)

Distinguished Finalist for Outstanding Dissertation Award
International Reading Association, 2002

National Science Foundation (NSF) Graduate Fellowship, 1996-2001

Harvey Fellowship, a graduate fellowship from a private foundation, 1995-2000

Computational Linguistics Research Fellowship, Philosophy Department, Carnegie Mellon, 1995-1998

Honorable Mentions
(a) IBM Research Fellowship (finalist, 1999)
(b) NSF Graduate Fellowship (1995)
(c) National Defense Science and Engineering Graduate Fellowship (1995)

College Awards included
(a) Who's Who Among Students in American Universities and Colleges, 1995
(b) Alumni Award, to one graduate per year, 1995
(c) Senior Merit Award, to one senior per year, 1994

American Legion Boys State, New York, 1990

Invited Talks

Aist, G., Incremental natural language processing for dialog systems
Arizona State University, May 31, 2006

Aist, G., Intelligent and interactive systems for conversation and learning
Florida State University, April 24, 2006
Rochester Institute of Technology, April 13, 2006
Texas A&M University, April 3, 2006
University of Memphis, March 13, 2006
Clemson University, March 10, 2006
University of Arkansas, Little Rock, March 6, 2006
University of California, Merced, February 2006
University of Rochester, Spring 2006
Cornell University, January 2006

Aist, G., Continuous understanding and dialogue systems (topic)
Carnegie Mellon University, Fall 2005
University of York, Summer 2004
University of Edinburgh, Summer 2004

Allen, J., and **Aist, G.**, Spoken dialogue systems (topic of presentation at Prospectives Weekend)
University of Rochester, 2004

Hieronymus, J., and **Aist, G.**, Space Station procedure assistant (topic)
NASA Workshop on Human-Centered Computing, Pittsburgh, Pennsylvania, 2003

Aist, G., Spoken dialogue systems at NASA Ames (topic)
University of Rochester, March 4, 2003

Aist, G., Research and development opportunities for spoken dialogue systems
and computer-assisted learning, in astronaut training and other space applications
Internal presentation at NASA Ames Research Center, December 2001

Mostow, J., and **Aist, G.**, Invited address
Workshop on Bridging the Digital Divide for Work and Play, Toronto, Ontario, November 2001

Aist, G., Learning vocabulary during computer-assisted oral reading
Cambridge University, 2001
University of Edinburgh, 2001

Aist, G., Helping children learning vocabulary during computer-assisted oral reading
and potential applications to spoken dialog systems for NASA (topic)
NASA Ames Research Center, 2001

Aist, G., Factoids: Automatically constructing and administering
vocabulary assistance and assessment
University of Texas at Austin, May 25, 2001

Aist, G., Computer-assisted oral reading (SALS-SIG Seminar)
Macquarie University, Sydney, Australia, November 17, 1998

Aist, G., Improving elementary students' reading abilities with skill-specific spoken dialogs
in a Reading Tutor that listens (Ph.D. thesis proposal), August 27, 1998

Aist, G., Evaluating a Reading Tutor that listens
University of Maryland, Logic and AI Seminar talk, April 7, 1998

Mostow, J., and **Aist, G.**, Evaluating tutors that listen
University of Pittsburgh, LRDC, CIRCLE Seminar talk, April 6, 1998

Aist, G., Learning morphological features and word order
for unknown word part of speech tagging using an oblique classifier
Carnegie Mellon, Computational Linguistics Student Seminar, April 24, 1996

Publications

Book Chapters

1. **Aist, G.S.** and Mostow, J. 2007. Faster, Better Task Choice in a Reading Tutor that Listens. In Melissa Holland and F. Pete Fisher (Editors), The Path of Speech Technologies in Computer Assisted Language Learning: From Research Toward Practice. Routledge.

2. Mostow, J., **Aist, G.S.**, Huang, C., Junker, B., Kennedy, R., Lan, H., Latimer,D., O'Connor, R., Tassone, R., Tobin, B., and Wierman, A. 2007. 4-Month Evaluation of a Learner-controlled Reading Tutor that Listens. In Melissa Holland and F. Pete Fisher (Editors), The Path of Speech Technologies in Computer Assisted Language Learning: From Research Toward Practice. Routledge.

3. Mostow, J. and **Aist, G.** 2001. Evaluating tutors that listen: An overview of Project LISTEN. In K.D. Forbus & P.J. Feltovich (Eds.), Smart machines in education: The coming revolution in educational technology. Cambridge: MIT Press.

4. **Aist, G.** 1999. Speech recognition in computer assisted language learning. In K. C. Cameron (ed.), Computer Assisted Language Learning (CALL): Media, Design, and Applications. Lisse: Swets & Zeitlinger.

Journal Articles

5. **Aist, G.** In revision. System-user-expert dialogs to help engineer new capabilities for an existing spoken dialog system. Submitted to *Natural Language Engineering*.

6. **Aist, G.S.**, Bohus, D., Boven, B., Campana, E., Early, S., and Phan, S. 2004. Initial development of a voice-activated astronaut assistant for procedural tasks: From need to concept to prototype. *Journal of Interactive Instruction Development* 16(3): 32-36.

7. Mostow, J., **Aist, G.**, Burkhead, P., Corbett, A., Cuneo, A., Eitelman, S., Huang, C., Junker, B., Sklar, M. B., & Tobin, B. 2003. Evaluation of an automated Reading Tutor that listens: Comparison to human tutoring and classroom instruction. *Journal of Educational Computing Research*, 29(1):61-117.

8. **Aist, G.** 2002. Helping Children Learn Vocabulary during Computer-Assisted Oral Reading. *Educational Technology and Society* 5(2).

9. **Aist, G.** 2001. Towards automatic glossarization: automatically constructing and administering vocabulary assistance factoids and multiple-choice assessment. *International Journal of Artificial Intelligence in Education* 12: 212-231.

10. Mostow, J. and **Aist, G.** 1999. Giving help and praise in a Reading Tutor with imperfect listening: Because automated speech recognition means never being able to say you're certain. *CALICO Journal* 16(3): 407-424. Special issue (M. Holland, Ed.), Tutors that Listen: Speech recognition for Language Learning.

Conference Proceedings

11. **Aist, G.** Identifying cognitive and linguistic strategies in successful nonfiction writing. Proceedings of the 30th Annual Conference of the Cognitive Science Society. Member Abstract, to appear in 2008.

12. **Aist, G.** An intelligent environment for constructive writing support. 36th Annual Meeting of the Linguistic Association of the Southwest. Denver, Colorado. September 21-23, 2007.

13. **Aist, G.** Enhancing team learning during simulation-based training. Proceedings of the Washington Interactive Technologies Conference, Society for Applied Learning Technology. 2007.

14. **Aist, G.**, Allen, J., Campana, E., Gomez Gallo, C.A., Stoness, S., Swift, M., and Tanenhaus, M.K. Incremental dialogue system faster than and preferred to its nonincremental counterpart. Proceedings of the 29th Annual Conference of the Cognitive Science Society. Paper PP-779. 2007.

15. **Aist, G.** Incremental constraint-based equitable and efficient natural language parsing. Proceedings of the 29th Annual Conference of the Cognitive Science Society. Member Abstract MA-388. 2007.

16. **Aist, G.S.**, Allen, J., Campana, E., Galescu, L., Gomez Gallo, C.A., Stoness, S., Swift, M., and Tanenhaus, M. 2006. Software architectures for incremental understanding of human speech. Proceedings of the International Conference on Spoken Language Processing (ICSLP). Pittsburgh, September 17-21.

17. Hieronymus, J., **Aist, G.S.**, and Dowding, J. 2006. Open microphone speech understanding: Correct discrimination of in-domain speech. Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP). Toulouse, France, May 14-19.

18. **Aist, G.S.**, Campana, E., Allen, J., Rotondo, M., Swift, M., and Tanenhaus, M. 2005. Variations along the contextual continuum in task-oriented speech. Proceedings of the 27th Annual Conference of the Cognitive Science Society, Stresa, Italy, July. Paper number 769.

19. Allen, J., Ferguson, G., Stent, A., Stoness, S., Swift, M., Galescu, L., Chambers, N., Campana, E., and **Aist, G.S.** 2005. Two diverse systems built using generic components for spoken dialogue (Recent Progress on TRIPS). Interactive Demonstration track, Association for Computational Linguistics Annual Meeting, Ann Arbor, Michigan, June.

20. **Aist, G.S.** 2004. Three-way system-user-expert interactions help you expand the capabilities of an existing spoken dialogue system. 8th International Conference on Spoken Language Processing, Jeju Island, Korea, Oct. 4-8.

21. **Aist, G.S.**, Allen, J., and Galescu, L. 2004. Expanding the linguistic coverage of a spoken dialogue system by mining human-human dialogue for new sentences with familiar meanings. Member Abstract, 26th Annual Meeting of the Cognitive Science Society, Chicago, Aug. 5-7.

22. Rayner, M., Hockey, B.A., Hieronymus, J., Dowding, J., **Aist, G.**, Early, S. 2003. An intelligent procedure assistant built using Regulus 2 and Alterf. In Proceedings of the Association for Computational Linguistics (ACL), Demo Session: Sapporo, Japan, July 2003.

23. Hockey, B.A., Lemon, O., Campana, E., Hiatt, L., **Aist, G.**, Hieronymus, J., and Dowding, J. Targeted Help. 2003. European Association for Computational Linguistics (EACL) Conference, Budapest, Hungary, April.

24. **Aist, G.**, Dowding, J., Hockey, B.A., Rayner, M., Hieronymus, J., Bohus, D., Boven, B., Blaylock, N., Campana, E., Early, S., Gorrell, G., and Phan, S. Talking through procedures: An intelligent Space Station procedure assistant. 2003. European Association for Computational Linguistics (EACL) Conference, Software Demonstration, Budapest, Hungary, April.

25. Hockey, B.A., Dowding, J., **Aist, G.**, and Hieronymus, J. 2002. Association for Computational Linguistics (ACL) Conference, Demo Session. Philadelphia, July 7-12.

26. **Aist, G.**, Dowding, J., Hockey, B.A., and Hieronymus, J. 2002. A demonstration of a spoken dialogue interface to an intelligent procedure assistant for astronaut training and support. Association for Computational Linguistics (ACL) 2002 meeting, Demo Session. Philadelphia, July 7-12.

27. Mostow, J., **Aist, G.**, Bey, J., Burkhead, P., Cuneo, A., Junker, B., Rossbach, S., Tobin, B., Valeri, J., & Wilson, S. 2002. Independent practice versus computer-guided oral reading: Equal-time comparison of sustained silent reading to an automated reading tutor that listens. Ninth Annual Meeting of the Society for the Scientific Study of Reading, Chicago, Illinois. June 27-30.

28. **Aist, G.**, Kort, B., Reilly, R., Mostow, J., and Picard, R. 2002. Adding human-provided emotional scaffolding to an automated Reading Tutor that listens increases student persistence. Poster presented at Intelligent Tutoring Systems (ITS) Conference, Biarritz, France, June 5-7.

29. Mostow, J., **Aist, G.**, Beck, J., Chalasani, R., Cuneo, A., Jia, P., and Kadaru, K. 2002. A La Recherche du Temps Perdu, or As Time Goes By: Where does the time go in a Reading Tutor that listens? Sixth International Conference on Intelligent Tutoring Systems (ITS) 2002, Biarritz, France.

30. **Aist, G.** Helping children learn vocabulary during computer-assisted oral reading: A dissertation summary. 2002. (Poster given as Distinguished Finalist for the Outstanding Dissertation of the Year Award). 47th Annual Convention of the International Reading Association, San Francisco, CA, April 29.

31. Dowding, J., Frank, J., Hockey, B.A., Jonsson, A., and **Aist, G.** 2002. Demonstration of a spoken dialogue interface for planning activities of a semi-autonomous robot. Human Language Technologies (HLT). San Diego, California.

32. Mostow, J., **Aist, G.**, Bey, J., Burkhead, P., Cuneo, A., Rossbach, S., Tobin, B., Valeri, J., and Wilson, S. 2001. A hands-on demonstration of Project LISTEN's Reading Tutor and its embedded experiments. Demonstration at the Second Meeting of the North American Chapter of the Association for Computational Linguistics. Pittsburgh, Pennsylvania, June 2-7.

33. **Aist, G.** 2001. Factoids: Automatically constructing and administering vocabulary assistance and assessment. Proceedings of the 10th International Conference on Artificial Intelligence in Education. San Antonio, Texas, May 19-23.

34. **Aist, G.**, Mostow, J., Tobin, B., Burkhead, P., Corbett, A., Cuneo, A., Junker, B., and Sklar, M. B. 2001. Computer-assisted oral reading helps children learn vocabulary better than a classroom control - and even just as well as one-on-one human-assisted oral reading. Proceedings of the 10th International Conference on Artificial Intelligence in Education. San Antonio, Texas, May 19-23.

35. Mostow, J., Corbett, A., **Aist, G.**, and others. 2001. Taking lessons from human tutoring in order to improve computer-assisted oral reading. Poster in the proceedings of the 10th International Conference on Artificial Intelligence in Education. San Antonio, Texas, May 19-23.

36. **Aist, G.** 2000. Helping children learn vocabulary during computer assisted oral reading. Doctoral Consortium, AAAI 2000. Austin, Texas, Jul. 30-Aug. 3.

37. **Aist, G.** 2000. Identifying words to explain to a reader: A preliminary study. Student Abstract, American Association for Artificial Intelligence (AAAI) Conference. Austin, Texas, Jul. 30-Aug. 3.

38. **Aist, G.** and Mostow, J. 2000. Improving story choice in a reading tutor that listens. Poster presented at Fifth International Conference on Intelligent Tutoring Systems. Montreal, June 19-23.

39. **Aist, G.** An informal model of vocabulary acquisition during assisted oral reading and some implications for computerized instruction. 2000. Fifth International Conference on Intelligent Tutoring Systems (ITS) - Young Researchers Track. Montreal, June 19-23. [Word online].

40. Mostow, J. and **Aist, G.** 1999. Authoring new material in a Reading Tutor that listens. Proceedings of the Sixteenth National Conference on Artificial Intelligence (AAAI), Orlando, FL, July, pp. 918-919. In the refereed Intelligent Systems Demonstration track. Also presented at 37th Annual Meeting of the Association for Computational Linguistics (ACL), College Park, MD, June 1999.

41. **Aist, G.** 1999. Skill-specific spoken dialogs in a reading tutor that listens. Doctoral Consortium paper. Proceedings of the Conference on Human Factors in Computing Systems (CHI), Pittsburgh, PA, May 15-20.

42. Mostow, J., and **Aist, G.** 1999. Project LISTEN: A Reading Tutor that listens. CHIkids Technology Workout. Proceedings of the Conference on Human Factors in Computing Systems (CHI), Pittsburgh, PA, May 15-20.

43. **Aist, G.** 1998. Expanding a time-sensitive conversational architecture for turn-taking to handle content-driven interruption. International Conference on Spoken Language Processing (ICSLP), Sydney, Australia, Nov. 30-Dec. 4. Paper 928.

44. **Aist, G.**, Chan, P., Huang, X.D., Jiang, L., Kennedy, R., Latimer, D., Mostow, J., and Yeung, C. 1998. How effective is unsupervised data collection for children's speech recognition? International Conference on Spoken Language Processing (ICSLP), Sydney, Australia, Nov. 30-Dec. 4. Paper 929.

45. **Aist, G.**, and Mostow, J. 1997. Adapting human tutorial interventions for a Reading Tutor that listens: Using continuous speech recognition in interactive educational multimedia. In CALL Conference on Multimedia. Exeter, England. Sept.

46. Mostow, J., and **Aist, G.**. 1997. The sounds of silence: Towards automated evaluation of student learning in a Reading Tutor that listens. In Proceedings of the Fourteenth National Conference on Artificial Intelligence (AAAI). Providence, RI, July. Pages 355-361.

47. Mostow, J., and **Aist, G.** 1997. Project LISTEN: A Reading Tutor that listens. In World Conference on Educational Multimedia and Hypermedia. Calgary, Canada, June. Live demonstration.

48. Gavalda, M., Zechner, K., and **Aist, G.** 1997. High performance segmentation of spontaneous speech using part of speech and trigger word information. In Proceedings of the 5th Conference on Applied Natural Language Processing (ANLP), Washington, D.C., U.S.A., April.

49. **Aist, G.**, Finch, C., and Heffelfinger, A. 1995. Intersections of a single helix with a plane. Sigma Zeta National Conference. Campbellsville College, Campbellsville KY. March.

50. **Aist, G.** 1995. Labeling strategies for directed acyclic graphs. Moravian College Student Mathematics Conference. Moravian College, Bethlehem PA. February.

51. **Aist, G.** 1994. Optimal forest management: A spreadsheet stage-class model. Moravian College Student Mathematics Conference. Moravian College, Bethlehem PA. February 1994. Also presented at Sigma Zeta National Conference. Hillsdale College, Hillsdale MI. March.

Workshops, Symposia, and Colloquia

52. **Aist, G.** 2007. Automated generation of a concise contextual summary of key training events. Distributed Missions Operation (DMO) Workshop, Mesa, Arizona. September 5-7.

53. **Aist, G.**, Allen, J., Campana, E., Gomez Gallo, C., Stoness, S., Swift, M., and Tanenhaus, M.K. 2007. Incremental understanding in human-computer dialogue and experimental evidence for advantages over nonincremental methods. In Proceedings of DECALOG - The 2007 Workshop on the Semantics and Pragmatics of Dialogue, Trento, Italy, May 30-June 1.

54. Gomez Gallo, C., **Aist, G.**, Allen, J., de Beaumont, W., Coria, S., Gegg-Harrison, W., Pardal, J., and Swift, M. 2007. Annotating continuous understanding in a multimodal dialogue corpus. In Proceedings of DECALOG - The 2007 Workshop on the Semantics and Pragmatics of Dialogue, Trento, Italy, May 30-June 1.

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57. **Aist, G.** 2006. Research description and biography. Young Researchers' Roundtable on Spoken Dialogue Systems.

58. **Aist, G.** 2006. Incrementally segmenting incoming speech into pragmatic fragments. The Third Midwest Computational Linguistics Colloquium (MCLC-2006). Urbana-Champaign, Illinois. May 20-21, 2006.

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62. **Aist, G.** 2004. Speech, gaze, and mouse data from choosing, placing, painting, rotating, and filling (virtual) vending carts. International Committee for Co-ordination and Standardisation of Speech Databases (COCOSDA) Workshop, Jeju Island, Korea, Oct. 4.

63. **Aist, G.**, Rayner, M., Dowding, J., Hockey, B. A., Early, S., and Hieronymus, J. 2003. A procedure assistant for astronauts in a functional programming architecture, with step previewing and spoken correction of dialogue moves. SIGDial workshop, Japan, July.

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66. Hockey, B. A., **Aist, G.**, Hieronymus, J., Lemon, O., and Dowding, J. 2002. Targeted Help: Embedded training and methods for evaluation. Proceedings of the ITS 2002 Workshop on Empirical Methods for Tutorial Dialogue Systems. San Sebastian, Spain, June 4. pp. 70-74.

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69. **Aist, G.** Towards worldwide literacy: Technological affordances, economic challenges, affordable technology. 2001. Development by Design: Workshop on Collaborative Open Source Design of Appropriate Technologies. MIT Media Lab, Cambridge, Massachusetts, July 22.

70. **Aist, G.** 2000. Taking turns talking about text in a Reading Tutor that listens. Third International Workshop on Human-Computer Conversation. Bellagio, Italy, July 3-5.

71. **Aist, G.** 2000. Human tutor and computer tutor story choice in listening to children read aloud. Workshop on Modeling Human Teaching, Fifth International Conference on Intelligent Tutoring Systems. Montreal, June 19.

72. **Aist, G.** and Mostow, J. 2000. Using automated within-subject invisible experiments to test the effectiveness of automated vocabulary assistance. Workshop on Applying Machine Learning to ITS Design/Construction. Montreal, June 19.

73. **Aist, G.** and Mostow, J. 1999. Measuring the effects of backchanneling in computerized oral reading tutoring. Proceedings of the ESCA Workshop on Prosody and Dialog. Eindhoven, The Netherlands, September.

74. **Aist, G.** and Mostow, J. 1998. Estimating the effectiveness of conversational behaviors in a Reading Tutor that listens. AAAI Spring Symposium on Applying Machine Learning to Discourse Processing, Stanford, CA, March.

75. Kominek, J., **Aist, G.**, and Mostow, J. 1998. When listening Is not enough: Potential uses of vision for a Reading Tutor that listens. AAAI Spring Symposium on Intelligent Environments, Stanford, CA, March.

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78. **Aist, G.** 1997. Challenges for a mixed initiative spoken dialog system for oral reading tutoring. In Computational Models for Mixed Initiative Interaction: Working Notes of the AAAI 1997 Spring Symposium. March.

79. **Aist, G.** 1994. A historical account of natural language processing. Sigma Zeta Colloquim on Research in Engineering, the Natural Sciences, and the Mathematical Sciences. Grantham, Pennsylvania. December.

80. **Aist, G.**, Bert, C., and Learn, P.J. 1994. Automatic temperature data acquisition: Newton's law of cooling. Mathematical Modeling Workshop. Grantham, Pennsylvania. July.

81. **Aist, G.**, Bert, C., and Learn, P.J. 1994. Scheduling graph for a round robin tournament. Mathematical Modeling Workshop. Grantham, Pennsylvania. July.

Dissertations and Projects

82. Ph.D. dissertation - **Aist, G.** 2000. Helping children learn vocabulary during computer-assisted oral reading. Language Technologies Institute, School of Computer Science, Carnegie Mellon. Committee: Jack Mostow (advisor), Albert Corbett, Alex Rudnicky, Charles Perfetti (University of Pittsburgh).

83. M.S. project - **Aist, G.** 1997. A general architecture for a real-time discourse agent and a case study in oral reading tutoring. Computational Linguistics, Philosophy Department, School of Humanities & Social Sciences, Carnegie Mellon. Committee: Jack Mostow (advisor), Nancy Green, Alex Rudnicky.

84. B.A. - (a) **Aist, G.** 1995. Thesaurus-based interactive search term clarification using Termite. Major Honors Project. Advisor: Gene Chase. (b) **Aist, G.** 1995. On the road and under the hood on the information superhighway. Senior Seminar term project. (c) **Aist, G.** 1994. Syntactic and semantic strategies for natural language processing. Major Honors Preliminary Paper.

Additional Publications

85. **Aist, G.** et al. 2006. PLOW User Manual.

86. Allen, J., and **Aist, G.** 2006. PLOW Evaluation Specification.

87. Mostow, J. and **Aist, G.** 1999. Reading and Pronunciation Tutor. U.S. Patent No. 5,920,838. Filed June 2, 1997; issued July 6, 1999. U.S. Patent and Trademark Office. Summarized in Patents: A Computer Tutor for Children Learning to Read, Teresa Riordan. New York Times, Sept. 27, 1999, Vol. CXLIX, No. 51,658, p. C8.