

WILLIAM L. JARROLD

william.jarrold@alum.mit.edu
1805 Anderson Road Apt 20
Davis, CA 95616
512-567-0738

EDUCATION

Doctor of Philosophy August 2004
Dual Major: Learning and Cognition, Counseling
Department of Educational Psychology
University of Texas
Austin, Texas

Dissertation: *Towards an Affective Theory of Mind: Computationally Modeling the Generativity of Goal Appraisal*
Dissertation Supervisor: Diane Schallert, Ph.D. (Final Defense: March 2003)

Bachelor of Science June 1989
Major: Brain and Cognitive Science
Massachusetts Institute of Technology
Cambridge, Massachusetts

Senior Project: *Programming the Connection Machine to Find Staff Lines and Crescendo/Decrescendo Markers in Optically Scanned Sheet Music*

PROFESSIONAL EXPERIENCE

Kirschstein-NRSA Postdoctoral Fellow September 2009 – present
Social Attention Virtual Laboratory
MIND Institute
Department of Psychiatry
University of California at Davis
Sacramento, CA

Co-Principal Investigator: DARPA Seedling Screening for Depression and Suicide Risk
The aim of this research project is to develop computational algorithms that may assist health care providers with the identification of risk for depression and suicide by identifying acoustic and lexical patterns in patient speech. Efforts are focused on two different sets of archival audio recordings of patients with and without depression and high suicide risk will be analyzed using natural language processing, acoustic/prosodic feature extraction technologies and machine learning approaches.

Study Lead: Running a study being conducted the *UC Davis Center for Mind and Brain* to develop and validate virtual paradigms for the assessment and examination of social attention in higher functioning children with autism. In particular, to capitalize on the features of virtual reality to provided controlled measures of spontaneous initiation of social attention in children with autism. Involves running weekly meetings and software engineering to support VR paradigm.

Autism Research Training Program Fellow: participate in two-year training program that merges the behavioral and biological sciences in the context of an interdisciplinary, autism-focused research program administered under Kirschstein-NRSA guidelines. Acquire competencies through: individual mentorship, research in ongoing interdisciplinary projects, the didactic core curriculum, conferences, lecture series and other training opportunities.

Computer Scientist
Artificial Intelligence Laboratory
SRI International
Menlo Park, California

September 2005 – March 2009

Ontologist: Implementer and tester of various ontologies related to physics, communication, and information in various knowledge representation languages including KM, OWL, KIF, FLORA-2 and SILK. Ontology development occurred in two main contexts: first, as part of a government funded (DARPA) research initiative known as CALO (Cognitive Agent that Learns and Organizes) aimed at building an intelligent system which can learn to help users manage their email, calendars, contacts, documents and presentations; and second, as part of the AURA project aimed at building a system application that can understand and reason over a growing number of scientific disciplines, and explain its knowledge in a user and domain appropriate manner.

Computational Speech Analyst: Led an effort to uncover relationships between speech and clinical outcomes such as neurodegenerative disorders, depression, early diagnosis of Alzheimer's, cognitive impairment and post-traumatic stress disorder. Team consisted of neurologists at University of California, San Francisco as well as computer scientists with expertise in automatic speech recognition, machine learning and natural language processing. Patent application filed on April 3, 2009.

Research Fellow
Artificial Intelligence Laboratory of Bruce Porter, Ph.D.
Department of Computer Sciences
University of Texas
Austin, Texas

December 2004 – August 2005

Ontologist: Designed, implemented and tester of ontologies related to communication, discourse and information in various knowledge representation languages including KM, OWL and KIF. These ontologies support cognitive learning agents being developed for a government funded (DARPA) research initiative known as CALO (Cognitive Agent that Learns and Organizes). Applications involve diagram understanding, meeting understanding, multi-modal communication.

Research Assistant
Laboratory of James Pennebaker, Ph.D.
Department of Psychology
University of Texas
Austin, Texas

September 2002 – August 2004

Mapping Psychological Dimensions of the World Wide Web: Automated collection of daily news published on Internet. Applied Unix cron processes, perl scripts and linguistic style analysis software developed by Professor James Pennebaker to the analysis of a large random sample of pages on the World Wide Web.

Ontologist and Programmer
Cycorp
Austin, Texas

January 1995 – March 2001

Senior Ontologist: Senior member of staff responsible for adding content to Cyc's knowledge base in the form of assertions in a special logic like computer language known as CycL. Lead Methodology Special Interest Group. Our task was to establish and codify a uniform set of best practices for knowledge representation. Served as mentor, course creator and teacher for our funders as well as new hires.

Software Programmer/Tester: Created a testing system and a framework for representing tests and test performance in the Cyc knowledge base. Led the Quality Assurance Group. Each night testing system automatically performed a regular battery of tests. These tests measured Cyc's performance along several different dimensions ranging from performance of inferencing and natural language interpretation, to integrity and well-formedness of knowledge base content. The aim was to catch and diagnose "bugs" introduced into the system as newly added knowledge representations interfered with prior knowledge.

Company Background: Cycorp is an artificial intelligence start up company with about 70 employees. The company's long term mission is to construct the Cyc, world's first multi-purpose truly synthetic intelligent computer system. Work is funded by government and corporate research and development initiatives aiming to develop enhanced text retrieval, geopolitical analyst tools, data mining, and other types of applications.

Assistant Instructor
Introduction to Psychology
Department of Psychology
University of Texas
Austin, Texas
Supervisor: Rich Lee, Ph.D.

January 1999 - May 1999

Taught two sections of Introduction to Psychology. One section involved a multicultural curriculum, the other involved a traditional introduction to psychology curriculum. Along with other assistant instructors, teaching techniques were discussed and critiqued as part of a colloquium associated with our instructional work. Students' reactions to the different courses were compiled as part of a grant funded study evaluating multicultural approaches to teaching psychology.

Ontologist
Cyc Project
Microelectronics and Computer Technology Corporation
Austin, Texas

July 1990 – December 1994

The Cyc Project was the precursor to Cycorp (see above). Housed within the Microelectronics and Computer Technology Corporation, this group of about 15 people created the nucleus of the Cyc system before the project "spun off" from MCC and became its own company, Cycorp. During this time, I worked as an ontologist (as described above). I taught some classes for clients and created representations of common sense knowledge.

REFEREED JOURNAL PUBLICATIONS

Jarrold, W., Javitz, H.S., Krasnow, R., Peintner, B., Yeh E., Swan, G.E. (2011) Depression and Self-Focused Language in Structured Interviews with Older Adults *Psychological Reports* Oct;109(2):686-700.

Mundy, P, Jarrold, W, (2010) Infant Joint Attention, Neural Networks and Social Cognition, *Neural Networks*. 23:985-997

Wilson S.M., Henry M.L., Besbris M., Ogar J.M., Dronkers N.F., Jarrold W., Miller B.L., Gorno-Tempini M.L. Connected speech production in three variants of primary progressive aphasia. *Brain*. 2010 Jul;133(Pt 7):2069-88. Epub 2010 Jun 11.

Rude, S., Covich, J., Jarrold, W., Hedlund, S. , & Zentner, M. (2001). Detecting depressive schemata in vulnerable individuals: Questionnaires versus laboratory tasks. *Cognitive Therapy and Research*.25(1), 103-116.

Rude, S., Hertel, Paula T, Jarrold, W., Covich, J., Hedlund, S. (1999). Depression-related impairments in prospective memory. *Cognition and Emotion*. 13(3), 267-276.

PUBLICATIONS SUBMITTED, IN PREPARATION or IN PRESS

Jarrold, W., Mundy, P., Gwaltney, M., Bailenson, J., Hatt, N., McIntyre, N., Kim, K., Solomon, M., Ozonof, S (under review) Complex Social Attention in Children with Higher Functioning Autism: A Virtual Reality Study.

Jarrold, W., Peintner, B., Javitz, H., Krasnow, R., Yeh, E., Swan, G. (in preparation). Low Idea Density in Spontaneous Language as an Early Indicator of Alzheimer's Disease.

Jarrold, W., Peintner B., Wilkins, D., Vergyri, D., Richey, C., Ogar, J., Gorno-Tempini, M. (in preparation). Aided diagnosis of dementia type through computer-based analysis of spontaneous speech.

PUBLISHED PROCEEDINGS OF REFEREED CONFERENCES AND WORKSHOPS

Hewlett-Sanchez, M., Vergyri, D., Ferrer, L., Richey, C., Garcia, P., Knoth, B., Jarrold, W. Using, (2011) Prosodic and Spectral Features in Detecting Depression in Elderly Males Interspeech 2011, to appear in *12th Annual Conference of the International Speech Communication Association*, Florence, Italy.

Galitsky, B., Jarrold, W. (2011) *Discovering Patterns of Autistic Planning*. American Association of Artificial Intelligence: Workshop on Plan, Activity, and Intent Recognition, August 2011, San Francisco CA.

Jarrold, W.L., Peintner, B., Yeh E., Krasnow, R., Javitz, H.S., Swan, G.E. (2010) Language Analytics for Assessing Brain Health: Cognitive Impairment, Depression and Pre-Symptomatic Alzheimers Disease, in Yao, Y., Sun, R., Poggio, T., Lui, J., Zhong, N., Huang, J. (Eds) *Brain Informatics, Proceedings BI 2010, Lecture Notes in Artificial Intelligence*, Vol 6334, pp. 299-307. New York: Springer-Verlag.

Judah, K. Dieterich, T, Fern, A., Irvine, J., Slater, M.,Tadepalli, P., Gervasio, M., Ellwood, C., Jarrold, B.,Brdiczka, O., and Blythe, J. User Initiated Learning for Adaptive Interfaces (2009) em

Workshop on Intelligence and Interaction 21st International Joint Conference on Artificial Intelligence (IJCAI-09) Pasadena, CA, USA

M. Schroeder and I. Wilson and W. Jarrold and D. Evans and C. Pelachaud and E. Zovato and K. Karpouzis. What is most important for an Emotion Markup Language? (2008). *Proc. Third Workshop Emotion and Computing*, KI 2008, Kaiserslautern, Germany.

Peintner, B., Jarrold, W., Vergyri, D., Richey, C., Gorno Tempini, M., & Ogar, J. Learning Diagnostic Models Using Speech and Language Measures. (2008). *30th Annual International IEEE EMBS Conference*, Vancouver, British Columbia.

Jarrold, W. A Computational Model of Goal Appraisal, in *Affective Computing and Intelligent Interaction* (2007). Springer, vol. LNCS 4738, pp. 768-769.

Vinay K. Chaudhri, Adam Cheyer, Richard Guili, Bill Jarrold, Karen L. Myers, John Niekrasz. (2006). A Case Study in Engineering a Knowledge Base for a Personal Assistant, in *Semantic Desktop and Social Semantic Collaboration Workshop at the International Semantic Web Conference*, 6 November 2006, Athens, GA, USA.

Jarrold, W.L. (2007). Treating Autism with the Help of Artificial Intelligence: A Value Proposition. *Proceedings of Agent-Based Systems for Human Learning and Entertainment (ABSHLE) Workshop at AAMAS*.

Peintner, B. & Jarrold, W. (2007). The Need for Assistants that Monitor Cognitive Abilities, in *Proceedings of AAAI Spring Symposium on Interaction Challenges for Artificial Assistants*, Stanford, CA.

Chaudhri, V.K., Jarrold B., Pacheco, J. (2006) *Exporting Knowledge Bases into OWL*, in *Proceedings of the Workshop on OWL: Experiences and Directions*.

Jarrold, W. (2003). Using an Ontology to Evaluate a Large Rule Based Ontology: Theory and Practice. *Performance Metrics for Intelligent Systems PerMIS '03* (NIST Special Publication 1014).

Jarrold, W. (2001a). Modeling the Logic of Emotion with Knowledge Engineering. *Emotional and Intelligent II: The Tangled Knot of Social Cognition. Paper from the 2001 American Association of Artificial Intelligence (AAAI) Fall Symposium* (AAAI Technical Report FS-01-02).

Jarrold, W. (2001b). Validation of Intelligence in Large Rule-Based Systems with Common Sense. *Model-Based Validation of Intelligence: Papers from the 2001 AAAI Symposium* (AAAI Technical Report SS-01-04).

Jarrold, W. (2000). Towards the Essentials of Cyberlogical Testing: Methodologies for Inculcating Knowledge Based Systems with Social Intelligence. *Socially Intelligent Agents: The Human in the Loop: Papers from the 2000 AAAI Fall Symposium*(AAAI Technical Report FS-00-04).

Jarrold, W. (1999). Evaluating Top-Down versus Bottom-Up Knowledge Acquisition Strategies for use in Rule Based Models of Emotional Common Sense. *Emotion Based Agent Architectures Workshop at Agents '99 Conference in Seattle, Washington*.

NON-REFEREED PUBLICATIONS AND WORKSHOP PUBLICATIONS

Jarrold, W., & Davis T. (1996, November). The Cyc System as an aid for Geographic Information Systems. Paper presented at *National Center for Geographic Information and Analysis (NCGIA) Initiative 21: Formal Models of Common Sense Geographic Worlds*, San Marcos, Texas.

Gray, R., & Jarrold, W. (1994, October). *The Diagnosis of Learning Disability: Signal Detection theory and the Discrepancy Formula*. Presentation given to the Learning Disabilities Association of Texas, Houston, Texas.

FUNDING OBTAINED

- Sep 2010 - Sep 2011, Defense Advanced Research Projects Agency (DARPA) Seeding: SRI International (prime) and UC Davis (sub-contractor) Proposal Title: *Screening for Depression and Suicide Risk*; Role: Co-Principal Investigator (Pablo Garcia PI); Amount: \$500K (UC Davis subcontract \$50K.)

The following funding sources were obtained by participating in competitions open to SRI Employees.

- Jun - Dec 2008, SRI Center for Research on Independent Aging (CRIA). Proposal Title: *Linguistic Profiling, Neurodegenerative Disease and WCGS [Western Collaborative Group Study]*; Role: Co-Principal Investigator (with Dr Peintner); Amount: \$10000.
- Apr - Sept 2007, SRI Artificial Intelligence Center; Title *Speech Processing and Artificial Intelligence as Tools for Behavioral Science* Role: Principal Investigator; Amount: \$26,600.
- Jan - Mar 2008, SRI Artificial Intelligence Center; Title: *Speech Processing and Artificial Intelligence as Tools for Behavioral Science*; Role: Co-Principal Investigator (with Dr Peintner); Amount: \$13500.
- May - Dec 2006 SRI Center for Research on Independent Aging (CRIA); Title: *How Knowledge Based Systems Can Help the Emotional Well Being of the Elderly*; Role: Principal Investigator; Amount: \$2000.
- May - Dec 2006 SRI Center for Research on Independent Aging (CRIA). Title: *Continuous In-home Cognitive Assessment” Center for Research on Independent Aging*; Role: Co-Investigator (with Dr Peintner); Amount: \$4,980.

CLINICAL EXPERIENCE

Pre-Doctoral Internship

Austin Consortium in Professional Psychology

Austin Neurological Clinic and

Bridge Point Elementary School

Austin, Texas

Supervisors: Nancy Nussbaum, Ph.D. and Anne Nelson, Ph.D.

August 2003 - August 2004

Autism Tutor

Employed by Family with 5 year boy with Autism

November 2002 - July 2003

Austin, Texas

Mental Health Clinic
Veterans Administration Hospital
Temple, Texas
Supervisor: John Cooney, Ph.D.

June 2002 - March 2003

Counseling Skills Supervisor
Introduction to Counseling
Department of Educational Psychology
University of Texas
Austin, Texas
Supervisor: Aaron Rochlen, Ph.D.

September 2002 - December 2002

Brown Schools Treatment Center
Austin & San Marcos, Texas
Supervisors: John Gould, Ph.D., Walter Harrell, Ph.D.

September 2001 - May 2002

Psychological Assessment Writer
Austin Neuropsychiatric Clinic
Austin, Texas
Supervisor: John D. King, Ed.D.

November 2001 - February 2002

Dream Interpretation Study Collaborator
Counseling Area, Department of Educational Psychology
University of Texas
Austin, Texas.
Supervisor: Aaron Rochlen, Ph.D.

September 2001

Counseling and Mental Health Center
University of Texas
Austin, Texas
Supervisor: Kathy Scherer, Ph.D.

September 1995 - May 1996

PROFESSIONAL AFFILIATIONS

- American Association of Artificial Intelligence (AAAI)