

# **James L. Carroll**

[jicarroll@gmail.com](mailto:jicarroll@gmail.com), office: (505) 606-2008, cell: (505) 412-0519  
1126 Cheyenne St. Los Alamos NM, 87544

## **Government Security Clearance: Q**

### **Education:**

- Postdoc, LANL, 2010-2012
- Ph.D in Computer Science, Brigham Young University, 2010
- M.S. in Computer Science, Brigham Young University, 2005
- B.S. in Computer Science, Brigham Young University, Minor in ancient Near Eastern studies, 2002

### **Research Interests:**

- Machine Learning
- The Mathematics of Generalization
- Bayesian Learning Theory
- Evolutionary Optimization
- Active Learning
- Natural Language Processing
- Ancient Corpus Linguistics
- Radiography
- Computer Vision
- Reinforcement Learning

### **Work Experience:**

- 2010-present: Post-doc, LANL.
  - ML research and publication, BIE Radiographic analysis, and algorithm development
- 2000-2010: Research assistant and teacher's assistant, BYU CS Department
  - Developed new machine learning algorithms, evaluated performance and published results, wrote funding proposals, and participated in team research projects
- 2006-2010: Part-time instructor, BYU Department of Ancient Scripture
  - Taught classes, graded papers, evaluated student performance, and wrote tests
- 1997-2000: Neutron detection research and development, (Photogenics Inc.)
  - Developed material formulation methods, designed and performed experiments, and served as a team leader in software design
- 1995-1997: Two year LDS Mission to Florida, Ft. Lauderdale
  - Developed communication skills and supervised others
- 1992-1993: Physics volunteer research assistant
- Family history software development

### **Programming Languages:**

- Proficiency:
  - Python, C/C++, Java, Pascal, Html/CSS
- Familiarity:
  - Basic, PHP, MySQL, Scheme, Smalltalk, Javascript, Lisp

### **Teaching Experience:**

- Instructor CS470 (Artificial Intelligence), BYU Computer Science Department, 2006
- Part-time instructor in the BYU Ancient Scripture Department 2006-present
- BYU Education Week presentations (2006-2007) on:
  - "Computer Security for the LDS Family"
  - "Temples of the Ancient World"

### **Other Interests:**

- Interests: Family history, computer assisted ancient linguistics, and aquariums
- Languages: Middle Egyptian, Biblical Hebrew, Ancient Syriac

### **Submitted, Accepted, In Preparation:**

Kristine Monteith, James L. Carroll, Kevin Seppi, and Tony Martinez, "Turning Bayesian Model Averaging Into Bayesian Model Combination," a journal version, in preparation.

James L. Carroll, Christopher D. Tomkins, "Physics-based Constraints in the Forward Modeling Analysis of Time-Correlated Image Data," accepted, LA-UR-12-21205.

James L. Carroll, "Epiphenomenalism, the Problem with Property Dualism," accepted, in final editing.

James L. Carroll and Brent Allsop, "Amplifying the Wisdom of the Crowd, Building and Measuring for Expert and Moral Consensus," in submission, LA-UR-12-21202.

### **Published Peer-reviewed Technical Publications:**

Google Scholar Citation Count: 193; h-index: 8

(see <http://scholar.google.com/citations?hl=en&user=PuX7HyIAAAAJ>).

For full abstracts and links to the papers, visit <http://james.jlcarroll.net/publications/>.

Kristine Monteith, James L. Carroll, Kevin Seppi, and Tony Martinez, "Turning Bayesian Model Averaging Into Bayesian Model Combination," in The Proceedings of the 2011 International Joint Conference on Neural Networks (IJCNN 2011), San Jose, California July 31 - August 5, 2011.

James L. Carroll, Neil Toronto, Robbie Haertel, and Kevin D. Seppi "Explicit Utility in Supervised Learning," in Proceedings of the NIPS 2008 Workshop on Cost-Sensitive Machine Learning, Whistler, British Columbia, Canada.

Robbie Haertel, Kevin Seppi, Eric Ringger, James Carroll, "Return on Investment for Active Learning," in Proceedings of the NIPS 2008 Workshop on Cost-Sensitive Machine Learning, Whistler, British Columbia, Canada.

Robbie Haertel, Eric Ringger, Kevin Seppi, James Carroll, Peter McClanahan. "Assessing the Costs of Sampling Methods in Active Learning for Annotation," in Proceedings of the Conference of the Association of Computational Linguistics (ACL-NAACL: HLT 2008), Columbus, Ohio.

Eric Ringger, Marc Carmen, Robbie Haertel, Noel Ellison, Kevin Seppi, Deryle Lonsdale, Peter McClanahan, James Carroll, "Assessing the Costs of Machine-Assisted Corpus Annotation through a User Study," in Proceedings of the Language Resources and Evaluation Conference (LREC), May 2008.

James L. Carroll, Robbie Haertel, Peter McClanahan, Eric Ringger, and Kevin Seppi, "Modeling the Annotation Process for Ancient Corpus Creation," in Chatressar 2007, Proceedings of the International Conference of Electronic Corpora of Ancient Languages (ECAL), Prague, November 2007.

Eric Ringger, Peter McClanahan, Robbie Haertel, George Busby, Marc Carmen, James Carroll, Kevin Seppi, Deryle Lonsdale, "Active Learning for Part-of-Speech Tagging: Accelerating Corpus Annotation" in Proceedings of the Linguistic Annotation Workshop (LAW 2007), p. 101-108, Prague, Czech Republic: Association for Computational Linguistics.

James L. Carroll and Kevin D. Seppi, "No-Free-Lunch and Bayesian Optimality," in Meta-Learning IJCNN Workshop 2007.

James L. Carroll, Christopher K. Monson, and Kevin D. Seppi, "A Bayesian CMAC for High Assurance Supervised Learning, in Applications of Neural Networks in High-Assurance Systems, IJCNN Workshop 2007.

Christopher K. Monson, Kevin D. Seppi, James L. Carroll, "A Utile Function Optimizer," in The 2007 IEEE Congress of Evolutionary Computation (CEC 2007).

James L. Carroll, Kevin Seppi "Task Similarity Measures for Transfer in Reinforcement Learning Task Libraries," in Proceedings of the 2005 International Joint Conference on Neural Networks, (IJCNN 2005), 2005.

James L. Carroll, Kevin Seppi "A Bayesian Technique for Task Localization in Multiple Goal Markov Decision Processes," in Proceedings of the 2004 International Conference on Machine Learning and Applications, (ICMLA 2004).

James L. Carroll, Todd Peterson, Kevin Seppi "Reinforcement Learning Task Clustering (RLTC)," in Proceedings of the 2003 International Conference on Machine Learning and Applications, (ICMLA 2003).

James L. Carroll, Todd S. Peterson "Fixed vs. Dynamic Sub-transfer in Reinforcement Learning," in Proceedings of the 2002 International Conference on Machine Learning and Applications, (ICMLA 2002).

Dr. J. Bart Czirr, David B. Merrill, David Buehler, Thomas K. McKnight, James L. Carroll, Thomas Abbott, Eva Wilcox, "Capture-gated Neutron Spectrometry," in Nuclear Instruments and Methods A, Vol. 476, pp. 309-312, June 2002.

James L. Carroll, Todd S. Peterson, Nancy E. Owens, "Memory-guided Exploration in Reinforcement Learning," in Proceedings of the 2001 International Joint Conference on Neural Networks, (IJCNN 2001).

Todd S. Peterson, Nancy E. Owens, and James L. Carroll, "Towards Automatic Shaping in Robot Navigation," in Proceedings of the 2001 IEEE International Conference on Robotics and Automation (ICRA, 2001).

Additional papers in submission, 3, in preparation, 2.

### **Thesis / Dissertation:**

James L. Carroll, "A Bayesian Decision Theoretical Approach to Supervised Learning, Selective Sampling, and Empirical Function Optimization," PHD Dissertation, Brigham Young University, March 2010.

James L. Carroll "Task Localization, Similarity, and Transfer; Towards a Reinforcement Learning Task Library System," BYU Masters Thesis, 2005.

## **Invited Talks, Seminars, and Selected Presentations:**

For full abstracts and links to the power points and to videos of some of the presentations, visit <http://james.jlcarroll.net/publications/presentations.html>

James L. Carroll, "Amplifying the Wisdom of the Crowd, Building and Measuring Expert Consensus for Nonproliferation Issues," presentation given at the INMM Taos Technical Meeting, May 31, 2012, (LA-UR-12-21784).

James L. Carroll, "Epiphenomenalism, the Problem with Property Dualism," (talk on consciousness and AI) presented at The 2012 Conference of the Mormon Transhumanist Association, Salt Lake City, Utah, 6 April 2012.

James L. Carroll, "Physics-Based Constraints in the Forward Modeling Analysis of Time-Correlated Image Data," invited Talk, The 1080th American Mathematical Society (AMS) Meeting, Washington DC, March 17-18th, 2012.

James L. Carroll, "The Bayesian Inference Engine, an Outsider, Computer Scientist's Perspective," given at The BIE Users Group Meeting, Los Alamos NM., October 11-14th, 2011.

James L. Carroll, "Turning Bayesian Model Averaging Into Bayesian Model Combination," Post Doctorate Lecture Series, The Los Alamos Center for Nonlinear Studies (CNLS), Los Alamos NM. October 6, 2011.

James L. Carroll, "Turning Bayesian Model Averaging Into Bayesian Model Combination," Invited Talk, The 1075th American Mathematical Society (AMS) Meeting, Salt Lake City UT., October 22-23, 2011.

James L. Carroll, "Nuclear Stockpile Stewardship," invited Talk, Brigham Young University, 2010. LA-UR 11-00201.

Heal, K., Griffin, C., Ringger, E., McClanahan, P., Carroll, J., Heaton, J., et al., "A Computational Perspective on Syriac Corpus Development and Annotation," presentation given at The XIXth Congress of the IOSOT, the International Organization for the Study of the Old Testament, and ISLP, the International Syriac Language Project, July 2007.

James L. Carroll, "Computer Security for the LDS Family," weeklong seminar given at Brigham Young University Education Week, 2007.

James L. Carroll, "Computer Security for the LDS Family," weeklong seminar given at Brigham Young University Education Week, 2006.