

Kshanti Auster Greene

2712 Candelaria NW, Albuquerque, NM 87107 | 206-419-4455 | kshanti@gmail.com

Research Interests

My primary research interests are in predictive modeling, distributed problem solving and social choice theory. I am interested in forming decision models from large, diverse populations, incorporating personal preferences and beliefs about uncertain events from many individuals. This research combines diverse areas such as Bayesian reasoning, social networking, game theory, decision theory, voting theory and the political and social sciences.

Education

Ph.D. Candidate in Computer Science (Expected completion, Spring 2010): *University of New Mexico*, Albuquerque, NM. Advisor: Professor George Luger. Thesis topic: Leveraging consensus and diversity in Bayesian belief aggregation.

Masters of Science in Computer Science (2001-2004): *University of New Mexico*, Albuquerque, NM. GPA- 3.58. Research in artificial intelligence, in particular probabilistic reasoning agents and machine learning.

Bachelors of Science in Computer Science (1994-1997): *University of Pittsburgh*, Pittsburgh, PA. Focus in Artificial Intelligence and Software Engineering. GPA- 3.6.

Bachelors of Fine Arts in Art (1988-1992): *Carnegie Mellon University*, Pittsburgh, PA. Focus in sculpture, film and multimedia. Graduated with Honors, GPA- 3.65.

Professional Experience

Highlights

- Principle Investigator on successful applied research projects. Specializing in practical applications for AI
- R&D in social intelligence, predictive modeling techniques, machine learning and adaptive agent architectures
- 14 years software development experience in small businesses and a corporate research lab
- Proposal writing and business development including involvement in winning DoD and DARPA contracts

Positions

January 2009 to present: Research Scientist: *Management Sciences, Inc.*, Albuquerque, NM (part-time).

- Researcher and developer on a Phase II Small Business Innovative Research (SBIR) grant through the Army. Apply Blackboard architectures and Bayesian methods to the problem of fusing signals intelligence (SIGINT) for threat detection.
- Research and development in applying artificial intelligence and advanced computing methods for health management, situation awareness, and energy management problems.
- Helped develop, market and promote an energy management tool called Gaia Energy Management Systems.
- Primary investigator on proposals to NSF and DARPA. Proposals were in the area of using social intelligence to form models for policy-making and solving complex problems.

May 2006 to January 2009: Artificial Intelligence Research Scientist: *Stottler Henke Associates, Inc.*, Seattle.

- Principle Investigator and Project Manager on a Phase II Air Force funded program involving the research and development of a collaborative predictive modeling environment. Research resulted in an online collaborative product at future-fusion.com. *FutureFusion* forms predictive models based on elicited natural language content and feedback from multiple users. I ran the entire lifecycle of the program including concept development, incorporating relevant research, designing software, developing algorithms and managing a small team of developers. (See Greene et al., 2008).
- Program Manager on Phase II subcontract through DARPA and the Air Force on a collaborative tool for rapid decision-making. I was also responsible for software and GUI design and development.
- Principle Investigator on Phase I Navy grant involving analyzing complex networks to learn behavior and reduce complexity. Developed an approach utilizing Markov logic networks for discovering patterns.
- Principle Investigator and proposal writer for DoD and NASA proposals in the areas of machine learning, probabilistic reasoning, information extraction and agents.

Kshanti Auster Greene

2712 Candelaria NW, Albuquerque, NM 87107 | 206-419-4455 | kshanti@gmail.com

September 2004 to May 2006: Senior Member of Engineering Staff: Lockheed Martin Advanced Technologies Lab (ATL), Member of the Artificial Intelligence Lab, Cherry Hill, NJ.

- Program Manager on an Internal Research and Development (IR&D) project entitled Machine Learning for C2 Systems (MALECS). Responsibilities included design and development of adaptive agents that coordinate their behavior to suit the environment. Research in data mining, associative memory and agent coordination. (See Greene et al., 2005; Buczac et al., 2006).
- Program Manager on an Internal Research and Development (IR&D) project entitled ClustSTAR. ClustSTAR was a tool for re-assigning tasks to busy agents. It utilized clustering and agent auction techniques to determine the best arrangement of task assignments. (See Greene and Hoffman, 2006).
- Applied research and development of defense applications using machine learning, reasoning, and other advanced computer science techniques.
- Knowledge engineer using Blaze Advisor for rule based systems.
- Proposal planning, writing and business development for DARPA and armed forces research contracts. Was a member of a proposal team that won LM ATL and university sub-contractors a \$5 million/year DARPA contract for the Integrated Learning program.
- Involved in a Software Technology Initiative at Lockheed Martin to study advanced tools for software integration and development. Co-founder of collaboration assistant research project. Developed a tool to aid in collaborative software design.

August 2001 to August 2004: Research Assistant: University of New Mexico and NASA, Albuquerque, NM.

- Project manager of a group of graduate students implementing a first-order stochastic modeling language called *Loopy Logic* in Java. The language is used to develop graphical models. Also extended the language with learning components and distributed the inference algorithm.
- Implemented an autonomous classifier system to analyze and predict space and solar phenomena for NASA. Used Java to develop a system combining fuzzy-reasoning, probabilistic reasoning, genetic algorithms and other machine learning techniques. Developed a meta-learning technique for improved classification. (see Greene, Siregar and Luger, 2003).

December 1998 to August 2004: Software Engineer and Consultant: BASIS International, Albuquerque, NM.

- Developed a Business Basic programming language and application development system. The language is a multi-platform, high-level language based on Basic. Over a million people use released versions of product, worldwide. All development on the product was done in Java.
- Personal responsibilities included designing and developing most of the graphical user interface (GUI) language elements that allow a Business Basic programmer to create graphical applications. Other responsibilities included C++ programming and maintenance of previously released products.

1999: Instructor: University of New Mexico Continuing Education, Albuquerque NM.

- Taught Java and Javascript programming for web development.
- Updated the computing department's curriculum to more accurately represent new focuses in web and application development

1997 to 1998: Software Developer: Tamsco Systems, Albuquerque, NM.

- Involved in the design and development of a GIS (Geographic Information System) based client-server application for use in school transportation administration.
- Involved in the design of a large-scale administration system for public schools. The system design was structured around the use of ObjectStore, an object-oriented database developed by Object Design Inc.

1996 to 1997: Computer Science Tutor: University of Pittsburgh, PA.

- Tutored undergraduate students in programming and computer science concepts.

1995 to 1996: Software Engineer: Digital Alchemy, Inc., Pittsburgh, PA.

- Lead programmer for the *GeoBee*, a CD-ROM game for the National Geographic Society.

Kshanti Auster Greene

2712 Candelaria NW, Albuquerque, NM 87107 | 206-419-4455 | kshanti@gmail.com

Publications and Presentations

- K. Greene, J. Kniss, G. Luger and C. Stern (2009). Satisficing the masses: Applying game theory to large-scale, democratic decision problems. In *Proceedings of the IEEE Conference on Social Computing (SocialCom-2009)*. Presented in the Social Intelligence and Applied Gaming workshop, July 2009.
- K. Greene and G. Luger (2009). Agreeing to disagree: leveraging consensus and diversity in Bayesian belief aggregation. In *Proceedings of the AAI 2009 Spring Symposium*. Presented in the Techno-Social Predictive Analytics workshop, March 2009.
- K. Greene (2009). Leveraging Consensus and Divergence in Bayesian Belief Aggregation. In *IJCAI '09*, presented at the 2009 AAI/SIGART Doctoral Consortium.
- K. Greene, T. Goan and E. Creswick (2008). A collaborative eye to the future. In *SPIE 2008*, Defense and Security Conference. Orlando, FL.
- K. Greene and M. Hoffman (2006) Coordinating busy agents using a hybrid clustering-auction approach. Presented at AAI '06, Workshop on Auction Mechanisms for Robot Coordination. Boston, MA.
- K. Greene, D. Cooper, A. Buczak, M. Czajkowski, J. Vagle, M. Hofmann. (2006) Cognitive agents for sense and respond logistics. In *Defence Applications, Multi-Agent Systems*. Simon G. Thompson and Robert Ghanea-Hercock, eds. Springer Verlag, 2006. This article was also presented at Autonomous and Multiagent Systems (AAMAS '05), Utrecht, Netherlands.
- A. Buczak, K. Greene, D. Cooper, M. Czajkowski, M. Hofmann. (2005) A Cognitive architecture optimized for adaptation. In *Proceedings of Artificial Neural Networks in Engineering (ANNIE)*, 2005.
- K. Greene, E. Siregar and G.F. Luger. (2003) *Model-Combining by Conditioning Rule Sets: Improving on a Signal Classifier for NASA*, University of New Mexico, department of Computer Science Tech Report: TR-CS-2003-17.
- R. Rommohan, C. Chakrabarti, D. Pless, K. Greene and G. Luger. (2003) *Logic-Based First-Order Stochastic Language that Learns*, University of New Mexico, department of Computer Science Tech Report: TR-CS-2003-13.

Fellowships and Grants

Air Force SBIR: Primary Investigator on a winning Air Force Small Business Innovation Research (SBIR) proposal related to collaboration and expert discovery from text-based communication, Stottler Henke Associates, Inc (Awarded in 2009).

Kraft Fellowship: *University of New Mexico, School of Engineering*. Awarded a three-year fellowship to do research in intelligent interfaces for information gathering at the University of New Mexico. 2001-2004.

NASA Space Grant: *University of New Mexico, Institute for Space and Nuclear Power Studies*. Awarded consecutive annual grants from August 2001 to December 2003 to pursue research for NASA.

Seminars and Workshops

LoopyGroup: readings and research in probabilistic logic and Bayesian reasoning: University of New Mexico, led by Prof. George Luger, 2002-2004 and January 2009 – present.

Kshanti Auster Greene

2712 Candelaria NW, Albuquerque, NM 87107 | 206-419-4455 | kshanti@gmail.com

Social Intelligence in Applied Gaming Workshop: IEEE Social Computing Conference (SocialCon '09), Vancouver, BC, July 2009.

Technosocial Predictive Analytics Workshop: Association for the Advancement of AI (AAAI) Spring Symposium, Stanford, CA, March 2009.

Teaching, the Basic Course: Seminar in teaching at a university level, University of New Mexico, Spring 2009.

Signal Processing, Sensor Fusion, and Target Recognition XVII Workshop: SPIE '08, Orlando, FL, April 2008.

Defence Applications of Multi-Agent Systems (DAMAS) Workshop: Autonomous and Multiagent Systems (AAMAS '05), Utrecht, Netherlands, July 2005.

AI in Space Workshop: Innovative Applications of Artificial Intelligence (IAAI '02), July 2002, Edmonton, Canada.

Believable Agents Seminar: Carnegie Mellon University department of Computer Science, Pittsburgh, PA, led by Prof. Joseph Bates.

Service

- Big Sister for *Big Brothers, Big Sisters of America*, 1999-2003.
- Cultural demonstrations and exchanges in Chinese Martial Arts in Albuquerque and Wudan, China, 1998-present.
- Student Volunteer, American Association of Artificial Intelligence (AAAI '02), Edmonton, Canada.

References

Professor George Luger

University of New Mexico
Department of Computer Science
luger@cs.unm.edu
(505) 277-3112

Assistant Professor Joseph Kniss

University of New Mexico
Department of Computer Science
jmk@cs.unm.edu
(505) 277-2967

Assistant Professor Melanie Moses

University of New Mexico
Department of Computer Science
melaniem@cs.unm.edu
(505) 277-9140