

*Curriculum Vitae*  
**KRISTINA LERMAN**

**CONTACT INFORMATION**

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**EDUCATION**

- Ph.D.** Physics, University of California at Santa Barbara, Santa Barbara, CA. Dec. 1995.  
Thesis advisors: Profs. Guenter Ahlers and David S. Cannell
- A.B.** Physics, Princeton University, Princeton, NJ. June 1989.

**PROFESSIONAL EXPERIENCE**

- 03/04 – Present *Assistant Research Professor*, Computer Science Department,  
University of Southern California, Los Angeles, CA.
- 07/03 – Present *Project Leader*, USC Information Sciences Institute, Marina del Rey, CA.
- 06/98 – 06/03 *Computer Scientist*, USC Information Sciences Institute, Marina del Rey, CA.
- 01/96 – 05/98 *Systems Programmer*, Quarterdeck Office Systems, Marina del Rey, CA.
- 01/90 – 08/95 *Research Assistant*, Physics Department, UCSB, Santa Barbara, CA.

**GRANTS AND CONTRACTS**

- NSF Grant for “Formal Framework for Analysis of Adaptation in Multi-Agent Systems,”  
Started in June 2006.
- NSF HSD Grant for “Modeling and relating individual and collective spatial Representations,”  
Maja Mataric (PI, USC), R. Sekuler (Co-PI, Brandeis). Started in September 2005.
- NSF Grant for “Intelligent Optimization of Parallel and Distributed Applications,” Mary Hall  
(PI, USC) and E. Deelman (Co-PI, USC), Y. Gil (Co-PI, USC), K. Lerman (Co-PI, USC),  
A. Nakano (Co-PI, USC), J. Salz (Co-PI, OHSU). Starting July 2005.
- NSF IIS Grant for “Automatic Synthesis of Controllers for Multi-Robot Coordination Tasks,”  
with Maja Mataric (Co-PI, USC), started in Nov 2004.
- NSF Professional Opportunities for Women in Science and Engineering (POWRE) Grant for  
“Mathematical Analysis of Two Multi-Agent Systems,” \$68,000 for 18 months from  
September 2000
- DARPA Contract for “Mathematical Modeling of Large Multi-Agent Systems”; (co-PI with  
Maja Mataric), \$735,415 starting July 2000. Contract extended to July 2005.

**HONORS AND AWARDS**

- 2003 ISI Intelligent Systems Division Research Award
- 1999 ISI Intelligent Systems Division Research Award
- 1989–1991 Patricia Roberts Harris Fellowship, UC Santa Barbara
- 1989 Dupont Nemurs Award, UC Santa Barbara
- 1985–1986 United Federation of Teachers Scholarship

## SERVICE

Organizer, 2008 AAAI Spring Symposium on Social Information Processing, March 26-28, 2008.

Publications Chair, 2005 IEEE Swarm Intelligence Symposium, Pasadena, CA, June 6-8, 2005.

Program committee, Annual Autonomous Agents and Multi-Agent Systems, AAMAS, 2004, 2005, 2006.

Co-organizer, *Communications Networks (CN02)* program and workshops, Institute for Pure and Applied Mathematics (UCLA), March 11, 2002–June 9, 2002

Search committee for Editor-In-Chief, *Computers in Science and Engineering*, Winter 2002

Committee, Large Scale Dynamic Heterogeneous Databases workshop, IJCAI, 2001.

NSF ITR review panellist, May 2000

## PUBLICATIONS

### JOURNAL PUBLICATIONS

1. Valentino Crespi, Aram Galstyan and Kristina Lerman, “Comparative Analysis of Top-down and Bottom-up Methodologies for Multi-Agent Systems” to appear in *Autonomous Robots*, 2008.
2. Kristina Lerman, “Social Information Processing in Social News Aggregation” *IEEE Internet Computing* **11**:6, pp. 16–28, 2007.
3. Kristina Lerman, Anon Plangprasopchok and Craig Knoblock, “Semantic Labeling of Online Information Sources,” *International Journal on Semantic Web and Information Systems* **3**:3 36–56, 2007.
4. Kristina Lerman, Chris V. Jones, Aram Galstyan and Maja J. Matarić, “Analysis of Dynamic Task Allocation in Multi-Robot Systems” *Int. J. of Robotics Research* **25**:4, pp. 225–242, 2006.
5. Aram Galstyan, Karl Czajkowski and Kristina Lerman, “Resource Allocation in the Grid with Learning Agents,” *Journal of Grid Computing* **3**(1–2):91 –100, 2005.
6. Kristina Lerman, “A model of adaptation in collaborative multi-agent systems,” *Adaptive Behavior* **12**(3–4):187–198, 2004.
7. Kristina Lerman, Steven Minton and Craig Knoblock, “Wrapper Maintenance: A Machine Learning Approach,” *Journal of Artificial Intelligence Research* **18** 149–181, 2003.
8. Kristina Lerman and Aram Galstyan, “Mathematical Model of Foraging in a Group of Robots: Effect of Interference,” *Autonomous Robots* **13**(2):127–141, 2002.
9. Aram Galstyan and Kristina Lerman, “Adaptive Boolean Networks and Minority Games with Time-Dependent Capacities,” *Physical Review* **E66**, 015103, 2002.

10. Hans Chalupsky, Yolanda Gil, Craig A. Knoblock, Kristina Lerman, Jean Oh, David V. Pynadath, Thomas A. Russ, Milind Tambe, "Electric Elves: Applying Agent Technology to Support Human Organizations," *AI Magazine* **23**(2):11–24, 2002. Also appeared in the *Proceedings of Conference on Innovative Applications in Artificial Intelligence (IAAI-2001)*, Seattle, WA, 2001.
11. Kristina Lerman, Aram Galstyan, Alcherio Martinoli and Auke J. Ijspeert, "A Macroscopic Analytical Model of Collaboration in Distributed Robotic Systems," *Artificial Life Journal* **7**(4):375–393, 2001.
12. Craig A. Knoblock, Kristina Lerman, Steven Minton, and Ion Muslea, "Accurately and reliably extracting data from the web: A machine learning approach," *IEEE Data Engineering Bulletin* **23**(4):33-41, 2001.
13. Kristina Lerman, David S. Cannell and Guenter Ahlers, "Analysis of Transients for Binary Mixture Convection in Cylindrical Geometry," *Physical Review* **E59**, 2975, 1999.
14. Kristina Lerman, David S. Cannell and Guenter Ahlers, "Different Convection Dynamics in Mixtures with the Same Separation Ratio," *Physical Review* **E53**, R2041, 1996.
15. Kristina Lerman, Eberhard Bodenschatz, David S. Cannell and Guenter Ahlers, "Transient Localized States in 2d Binary Liquid Convection," *Physical Review Letters* **70**, 3572, 1993.
16. Eberhard Bodenschatz, David S. Cannell, John R. de Bruyn, Robert Ecke, Yu-Chou Hu, Kristina Lerman and Guenter Ahlers, "Experiments in three systems with non-variational aspects," *Physica* **D61**, 77, 1992.
17. K. C. Hasson, G. D. Gates, K. Lerman, P. Bogorad, and W. Happer, "Spin relaxation due to magnetic-field inhomogeneities: Quartic dependence and diffusion-constant measurements," *Physical Review A* **41**, 3672, 1990.

#### BOOK CHAPTERS

- Kristina Lerman and Steven Minton and Craig A. Knoblock, "Machine Learning Techniques for Web Wrapper Maintenance," in Goran D. Putnik and Maria Manuela Cunha (Eds.) *Virtual Enterprise Integration: Technological and Organizational Perspective*, Idea Group, Hershey, PA, 2005.
- Kristina Lerman, Alcherio Martinoli and Aram Galstyan, "A Review of Probabilistic Macroscopic Models for Swarm Robotic Systems." In E. Sahin and W. Spears (Eds.) *Swarm Robotics Workshop: State-of-the-art Survey*, LNCS 3342, pp. 143–152, Springer-Verlag, Berlin, 2005.
- Kristina Lerman and Aram Galstyan, "Two Paradigms for the Design of Artificial Collectives," In Kagan Tumer and David Wolpert (Eds.) *Collectives and Design of Complex Systems*, pp. 231–256 Springer-Verlag, New York, 2004.
- Craig A. Knoblock, Kristina Lerman, Steven Minton, and Ion Muslea, "Accurately and reliably extracting data from the web: A machine learning approach," In L. Zadeh (Ed.) *Intelligent exploration of the web*, pp.275–287, Physica-Verlag, Heidelberg, 2003.

#### REFEREED CONFERENCE PROCEEDINGS

- Kristina Lerman and Laurie Jones, “Social Browsing on Flickr,” *International Conference on Weblogs and Social Media (ICWSM-07)*, Boulder, Colorado, March, 2007.
- Kristina Lerman, Anon Plangrapsopchok and Craig Knoblock, “Automatically Labeling the Inputs and Outputs of Web Services,” *National Conference on Artificial Intelligence (AAA-06)*, 2006.
- Valentino Crespi, Aram Galstyan and Kristina Lerman, “Comparative Analysis of Top-down and Bottom-up Methodologies for Multi-Agent Systems,” *International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-2005)* (poster), Utrecht, Netherlands, 2005.
- Aram Galstyan, Tad Hogg and Kristina Lerman, “Modeling and mathematical analysis of swarms of microscopic robots,” *IEEE Swarm Intelligence Symposium (SIS-2005)*, Pasadena, CA, June, 2005.
- Aram Galstyan, Karl Czajkowski and Kristina Lerman, “Resource Allocation in the Grid Using Reinforcement Learning,” *International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-2004)* (poster), New York, NY, July, 2004.
- Kristina Lerman, Lise Getoor, Steven Minton and Craig A. Knoblock, “Using the Structure of Web Sites for Automatic Segmentation of Tables,” in *Proceedings of ACM SIG on Management of Data (SIGMOD-2004)*, Paris, France, June, 2004.
- Kristina Lerman and Aram Galstyan, “Macroscopic Analysis of Adaptive Task Allocation in Robots,” in *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS-2003)*, Las Vegas, NV, October, 2003.
- Kristina Lerman and Aram Galstyan, “Agent Memory and Adaptation in Multi-Agent Systems,” in *Proceedings of 3rd International Conference on Autonomous Agents and Multi-Agent Systems*, July 2003.
- Aram Galstyan, Shashikiran Kolar and Kristina Lerman “Resource Allocation Games with Changing Resource Capacities,” in *Proceedings of 3rd International Conference on Autonomous Agents and Multi-Agent Systems*, July 2003.
- Alejandro Bugacov, Aram Galstyan and Kristina Lerman, “Threshold behavior in a Boolean Network model for SAT,” *International Conference on Artificial Intelligence*, Las Vegas, NV, June, 2003.
- Kristina Lerman and Steven Minton, “Learning the common structure of data,” in *Proceedings of the 17th National Conference on Artificial Intelligence*, p. 609–614, 2000.
- Kristina Lerman and Onn Shehory, “Coalition Formation in Large-Scale Electronic Markets,” in *Proceedings International Conference on Multi-Agent Systems*, July 2000.

#### WORKSHOP PAPERS AND TECHNICAL REPORTS

- K. Lerman, “User Participation in Social Media: Digg Study,” *Proceedings of the International Workshop on Social Media Analysis (SMA07)*, *Conference on Web Intelligence and Intelligent Agent Technology*, November, 2007.

- D. Shell, S. Viswanathan, J. Huang, R. Ghosh, J. Huang, M. Matarić, K. Lerman and R. Sekuler, “Spatial Behavior of Individuals and Groups: Preliminary Findings from a Museum Scenario”, in *Proc. of IROS workshop on Spatial Behavior Modeling*, Oct. 2007.
- K. Lerman, “Dynamics of Collaborative Rating of Information,” *KDD workshop on Social Network Analysis (KDD-SNA07)*, 2007.
- A. Plangprasopchok and K. Lerman, “Exploiting Social Annotation for Resource Discovery,” in *AAAI workshop on Information Integration on the Web (IIWeb07)*, 2007.
- K. Lerman, A. Plangprasopchok and C. Wong, “Personalizing Results of Image Search on Flickr,” in *AAAI workshop on Intelligent Techniques for Web Personalization*, 2007.
- J. Blythe, D. Kapoor, C.A. Knoblock, S. Minton and K. Lerman, “Information Intergation for the Masses,” in *AAAI workshop on Information Integration on the Web (IIWeb07)*, 2007.
- Kristina Lerman, “Automatically Modeling Group Behavior of Simple Agents,” Workshop on Agent Modeling Methods at AAMAS-2004.
- Aram Galstyan and Kristina Lerman, “Analysis of a Stochastic Model of Adaptive Task Allocation in Robots,” Workshop on Engineering Self-Organizing Systems at AAMAS-2004.
- Kristina Lerman, Cenk Gazen, Steven Minton and Craig Knoblock, “Populating the Semantic Web,” in *AAAI-04 Workshop on Automatic Text Extraction and Mining*, San Jose, CA, July, 2004.
- Aram Galstyan, Bhaskar Krishnamachari and Kristina Lerman, “Resource Allocation and Emergent Coordination in Wireless Sensor Networks,” in *AAAI-04 Workshop on Wireless Sensor Networks*, San Jose, CA, July, 2004.
- Kristina Lerman, Alcherio Martinoli and Aram Galstyan, “A Review of Probabilistic Macroscopic Models for Swarm Robotic Systems.” in *Proc. of the SAB-04 Swarm Robotics Workshop at the Eight Int. Conference on the Simulation of Adaptive Behavior*, Santa Monica, CA, July, 2004.
- Kristina Lerman and Aram Galstyan, “Automatically Modeling Group Behavior of Simple Agents,” in *AAMAS-04 Workshop on Modeling Other Agents from Observations*, New York, NY, July, 2004.
- Aram Galstyan and Kristina Lerman, “Analysis of a Stochastic Model of Adaptive Task Allocation in Robots,” in *AAMAS-04 Workshop on Engineering Self-Organizing Agent Systems*, July, 2004.
- Aram Galstyan, Bhaskar Krishnamachari, Sundeep Patten and Kristina Lerman, “Distributed Online Localization in Sensor Networks Using a Moving Target,” in *Information Processing in Sensor Networks (IPSN-2004)*, Berkeley, CA, 2004.
- Kristina Lerman, “A model of adaptation in collaborative multi-agent systems,” workshop on *Workshop on the Mathematics and Algorithms of Social Insects (MASI-2003)*, December, 2003, Atlanta, GA.

- Kristina Lerman and Aram Galstyan, “Two Paradigms for the Design of Artificial Collectives,” workshop on *Collectives and Design of Complex Systems*, NASA/Ames, August 2002. Published in *Collectives and Design of Complex Systems*, Kagan Tumer and David Wolpert (Eds.) LNCS, Sringer-Verlag, Berlin.
- Kristina Lerman, Craig Knoblock and Steven Minton, “Automatic Data Extraction from Lists and Tables in Web Sources,” Automatic Text Extraction and Mining workshop (ATEM-01), IJCAI-01, Seattle, WA, August 2001.
- Aram Galstyan and Kristina Lerman, “Minority Games and Distributed Coordination in Non-Stationary Environments,” *Proc. of the International Joint Conference on Neural Networks*, May 2002.
- Kristina Lerman, “Design and Mathematical Analysis of Agent-based Systems,” *Lecture Notes in Artificial Intelligence (LNAI)* 1871, p. 222 ff., Springer-Verlag, Berlin Heidelberg, 2001.
- Kristina Lerman and Aram Galstyan, “A General Methodology for Mathematical Analysis of Multi-Agent Systems,” USC-ISI Technical Report No. 529, 2001.

#### INVITED TALKS

*The Social Web* given at Google, University of Maryland and UCLA in 2007.

*Analyzing Swarms: Stochastic Systems Approach*, seminar presented at USC Civil Engineering Department, February 6, 2006.

*Analyzing Swarms: Stochastic Systems Approach to Studying Robot Swarms*, tutorial presented at the IEEE Swarm Intelligence Symposium, June 25, 2005, with Tad Hogg.

*Modeling Adaptive Robot Swarms*, presented at the IPAM workshop on the Algorithmics of Swarms, UCLA, December 4–5, 2003.

*Two Agents are Better than One: Distributed Control in Multi-Agent Systems*, presented at the *Collective Cognition: Mathematical Foundations of Distributed Intelligence workshop*, Santa Fe Institute, January 22–26, 2002.

*Swarms as Stochastic Dynamic Systems*, Naval Research Laboratory, Washington DC, April 23, 2001.

*Mathematical Model of Coalition Formation in a Multi-Agent System*, University of Southern California, September, 1999.

#### PATENTS

“Hierarchical Rule Induction and Re-induction for Extracting Data from Semistructured Documents.” Inventors: Kristina Lerman and Steven Minton, filed July 2000.

#### PERSONAL

US citizen, Security clearance