

Aaron Clauset

CONTACT INFORMATION	Santa Fe Institute 1399 Hyde Park Rd. Santa Fe NM, 87501 USA	<i>voice:</i> (505) 946-2774 <i>fax:</i> (505) 982-0565 <i>email:</i> aaronc at the santafe domain <i>web:</i> www.santafe.edu/~aaronc
RESEARCH INTERESTS	Statistical laws for complex systems; Complex networks (structure, function, algorithms); Computational systems biology, macroevolution, coevolution and ecology; Mathematics of violence (terrorism, war); the Internet (structure, routing, security); Power-law distributions (data, mechanisms); Adaptive and evolutionary computation; Self-organization; Robustness; Innovation.	
EDUCATION	Ph.D. Computer Science with distinction, University of New Mexico (2006) <ul style="list-style-type: none">• Dissertation: “Structural Inference and the Statistics of Networks”• Committee: C. Moore (chair), M. E. J. Newman, S. Forrest, and J. Saia B.S. Physics and Computer Science with honors, Haverford College (2001)	
ACADEMIC POSITIONS	Assistant Professor, Computer Science, <i>University of Colorado</i> , Boulder CO Omidyar Postdoctoral Fellow, <i>Santa Fe Institute</i> , Santa Fe NM Research Assistant, <i>University of New Mexico</i> , Albuquerque NM Research Fellow, <i>University of Pennsylvania</i> , Philadelphia PA	Fall 2010 – 2006 – present 2003 – 2006 2000 – 2001
INDUSTRY POSITIONS	Corporate Advisory Board, <i>33across LLC</i> , New York NY Scientific & Technical Consultant, <i>33across LLC</i> , New York NY Strategy & Management Consultant, <i>FischerJordan LLC</i> , New York NY Research Consultant, <i>Argonne National Laboratory</i> , Argonne IL Project Scientist, <i>Targacept Inc.</i> , Winston-Salem NC	2008 – present 2007 – present 2005 2005 2001 – 2002
HONORS & AWARDS (SELECTED)	Boulder School for Condensed Matter and Material Physics Graduation Speaker, U. New Mexico School of Engineering Convocation Elected to Sigma Xi Honor Society Outstanding Graduate Student Award, U. New Mexico School of Engineering Santa Fe Institute Complex Systems Summer School (CSSS)	2007 2006 2006 2006 2003
GRANTS	(co-PI) “Statistical Inference and Machine Learning for Complex Networks.” J. S. McDonnell Foundation, <i>Studying Complex Systems</i> program. Awarded September 1 st , 2008; \$417,576 over 3 years (Research Award). With (PI) C. Moore (New Mexico and SFI) and (co-PI) M. E. J. Newman (Michigan).	
JOURNAL ARTICLES (17)	A. Clauset and F. W. Wiegel, “A generalized aggregation-disintegration model for the frequency of severe terrorist attacks.” <i>Journal of Conflict Resolution</i> , to appear. (Preprint at arxiv:0902.0724) A. Clauset , L. Heger, M. Young and K. S. Gleditsch, “The Strategic Calculus of Terrorism: Substitution and Competition in the Israel-Palestine Conflict.” <i>Cooperation & Conflict</i> , to appear. A. Clauset , C. R. Shalizi and M. E. J. Newman, “Power-law distributions in empirical data.” <i>SIAM Review</i> , to appear. (Preprint at arxiv:0706.1062) D. Achlioptas, A. Clauset , D. Kempe and C. Moore, “On the Bias of Traceroute Sampling: Or, Power-law Degree Distributions in Regular Graphs.” <i>Journal of the ACM</i> 56 (4), 1–28 (2009).	

A. Clauset and S. Redner, “Evolutionary Model of Species Body Mass Diversification.” *Physical Review Letters* **102**, 038103 (2009).

A. Clauset, D. J. Schwab and S. Redner, “How many species have mass M ?” *American Naturalist* **173**, 256–263 (2009).

A. Clauset, H. G. Tanner, C. T. Abdallah and R. H. Byrne, “Controlling across complex networks – Emerging links between networks and control.” *Annual Reviews in Control* **32**, 183–192 (2008).

A. Clauset and D. H. Erwin, “The evolution and distribution of species body size.” *Science* **321**, 399–401 (2008).

A. Clauset, C. Moore and M. E. J. Newman, “Hierarchical structure and the prediction of missing links in networks.” *Nature* **453**, 98–101 (2008).

A. Clauset, M. Young and K. S. Gleditsch, “On the Frequency of Severe Terrorist Attacks.” *Journal of Conflict Resolution* **51**(1): 58–88 (2007).

V. Kalapala, V. Sanwalani, **A. Clauset** and C. Moore, “Scale Invariance in Road Networks.” *Physical Review E* **73** 026130 (2006).

J. T. Ayers, **A. Clauset**, J. D. Schmitt, L. P. Dvoskin and P. A. Crooks, “Molecular modeling of mono- and bis-quaternary ammonium salts as ligands at the $\alpha 4\beta 2$ nicotinic acetylcholine receptor subtype using nonlinear techniques.” *American Association of Pharmaceutical Scientists Journal* **7**(3): E678–85 (2005).

Y. D. Xiao, **A. Clauset**, R. Harris, E. Bayram, P. Santago II, and J. D. Schmitt, “Supervised Self-Organizing Maps in QSAR I: Robust behavior with underdetermined datasets.” *Journal of Chemical Information and Modeling* **46**(6): 1679 – 1758 (2005).

A. Clauset, “Finding local community structure in networks.” *Physical Review E* **72**, 026132 (2005).

A. Clauset and C. Moore, “Accuracy and Scaling Phenomena in Internet Mapping.” *Physical Review Letters* **94** 018701 (2005).

A. Clauset, M. E. J. Newman and C. Moore, “Finding community structure in very large networks.” *Physical Review E* **70**, 066111 (2004).

E. Bayram, P. Santago II, R. Harris, Y. D. Xiao, **A. Clauset** and J. D. Schmitt, “Genetic Algorithms and Self-Organizing Maps: A Powerful Combination for Modeling Complex QSAR and QSPR Problems.” *Journal of Computer-Aided Molecular Design* **18** (7-9): 483-493 (2004).

CONFERENCE
PROCEEDINGS
(REFEREED)

N. Eagle, **A. Clauset** and J. Quinn, “Location Segmentation, Inference and Prediction from Cellular Towers.” *Proc. 23rd AAAI Conference on Artificial Intelligence (AAAI '09)*.

N. Eagle, J. Quinn and **A. Clauset**, “Methodologies for Continuous Cellular Tower Data Analysis.” *Proc. 7th International Conference on Pervasive Computing (Pervasive '09)*, 342–353.

A. Clauset and N. Eagle. “Persistence and periodicity in a dynamic proximity network.” DIMACS Workshop on Computational Methods for Dynamic Interaction Networks (Piscataway), 2007.

A. Clauset, C. Moore and M. E. J. Newman, “Structural Inference of Hierarchies in Networks.” *Proc. Workshop on Statistical Network Analysis, 23rd International Conference on Machine Learning* (ICML '06). E. M. Airoldi et al., Eds., *Lecture Notes in Computer Science* **4503**, 1–13.

D. Achlioptas, **A. Clauset**, D. Kempe and C. Moore, “On the bias of traceroute sampling (or: Why almost every network looks like it has a power law).” *ACM Proc. 37th Symp. on Theory of Computing* (STOC '05), 694–703.

SUBMITTED
PAPERS

A. Clauset and K. S. Gleditsch, “Universal acceleration in the frequency of deadly attacks by terrorist organizations.” Submitted to *PNAS* (2009). (Preprint at [arxiv:0906.3287](https://arxiv.org/abs/0906.3287))

PREPRINTS

A. Clauset, “The Yeast Protein Interaction Network is Hardly Scale Free: Comment on Yu et al. *Science* 322, 104 (2008).” Preprint, [arxiv:0901.0530](https://arxiv.org/abs/0901.0530) (2009).

A. Clauset and C. Moore, “How Do Networks Become Navigable?” Preprint, [arxiv:cond-mat/0309415](https://arxiv.org/abs/cond-mat/0309415) (2003).

INVITED TALKS
(RECENT)

- Workshop on Nonlinear Dynamics of Networks, University of Maryland, College Park MD, April 5–9, 2010
- Plenary Talk, International Workshop on Coping with Crises in Complex Socio-Economic Systems, ETH, Zürich Switzerland, June 8–13, 2009
- Center for Complex Network Research, Northeastern University, Boston MA, May 13 2009
- Physics Dept. Colloquium Series, New Mexico Tech., Socorro NM, May 7 2009
- Computer Science Colloquium, University of Colorado, Boulder CO, March 12 2009
- Statistical Sciences (CCS-6) Seminar, Los Alamos Nat. Lab., Los Alamos NM, February 26 2009
- Comp. Sci. Research Inst. (CSRI) Seminar, Sandia Nat. Lab., Albuquerque NM, January 14 2009
- Comparative and International Studies (CIS) Complexity Colloquium, ETH, Zürich Switzerland, November 25 2008
- Network Models of Biological and Social Contagion Workshop, Center for Discrete Mathematics and Theoretical Computer Science (DIMACS) and Center for Dynamic Data Analysis (DyDAn), Rutgers University, Piscataway NJ, November 3–4 2008
- Yahoo! Research, New York NY, October 28 2008
- Selection Tinkering and Emergence in Complex Networks Workshop, Santa Fe Institute and Google, San Francisco CA, June 24 2008
- Applied Mathematics Colloquium, University of North Carolina, Chapel Hill NC, March 21 2008
- Workshop on Theoretical Aspects and Models of Large Complex and Open Information Networks, Institute for Scientific Interchange (ISI), Turino Italy, November 19–21 2007
- Workshop on Scaling in Bio. and Social Net., Santa Fe Institute, Santa Fe NM, July 9–13 2007
- Complex Networks: Dynamics and Community Detection Mini-Symposium, SIAM Conference on Applications of Dynamical Systems (DS07), Snowbird UT, May 31–June 1 2007

SEMINARS
(RECENT)

- Ecological Society of America (ESA) Annual Meeting, Albuquerque NM, Aug. 2–7 2009
- “Paleontology: Macroevolution, Diversity and Biogeography” Session, Geological Soc. of America (GSA) Joint Annual Meeting, Houston TX, October 5–9 2008
- Computer Science Dept. Seminar Series, Swarthmore College, Swarthmore PA, February 25 2008
- Computational Methods for Dynamic Interaction Networks Workshop, Center for Discrete Mathematics and Theoretical Computer Science (DIMACS) and Center for Dynamic Data Analysis (DyDAn), Rutgers University, Piscataway NJ, Sept. 24–25 2007
- International Conference on Network Science (NetSci), New York NY, May 22–25 2007

TEACHING

Students

- Andrew Mauboussin (High School Research Fellow, Santa Fe Institute) Summer 2009
- Benjamin Edwards (MA Sociology, U. New Mexico) Expected 2009
- Benjamin Good (REU, Santa Fe Institute) Summers 2008, 2009

Courses

- Faculty, Santa Fe Institute Research Workshop on Frontiers in Complex Systems, Beijing 2009
- Faculty, Santa Fe Institute Complex Systems Summer School, Beijing 2008
- Faculty, Santa Fe Institute Complex Systems Summer School, Santa Fe 2007–2008
- Guest Lecturer in Computational Physics, Haverford College, Physics 304 Spring 2008
- Guest Lecturer in Data Structures and Algorithms, UNM, CS 361 Fall 2004, 2006
- Guest Lecturer in Advanced Scheme Programming, UNM, CS 591 Spring 2004
- Guest Lecturer in Programming Language Paradigms, UNM, CS 451 Spring 2004
- Teaching Assistant for Introduction to the Theory of Computation, UNM, CS 500 Spring 2004
- Teaching Assistant for Data Structures and Algorithms, UNM, CS 361 Fall 2002

REFEREE WORK

- **Applied Math:** SIAM ICDM Workshop on Analysis of Dynamic Networks (2009)
- **Biology:** Bioinformatics, Global Ecology and Biogeography, IET Systems Biology, Journal of Animal Ecology, Journal of Theoretical Biology, PLoS Biology
- **Computer Science:** Computer Science Reviews, Foundations and Trends in Machine Learning, IEEE International Conference on Robotics and Automation (2006), RANDOM (2007), ACM Journal of Experimental Algorithmics, Journal of Statistical Analysis and Data Mining, SODA (2006, 2007), SDM Workshop on Analysis of Dynamic Networks (2009), NIPS Workshop on Analyzing Graphs (2008), Workshop on Experimental Algorithms (2006), ACM SIGKDD Workshop on Social Network Mining and Analysis (2008, 2009), WSDM (2010), WWW (2010)
- **General:** Proceedings of the National Academy of Science USA, Science Magazine
- **Physics:** European Physical Journal B, Europhysics Letters, New Journal of Physics, Physica A, Physical Review E, Physical Review Letters
- **Political Science:** Defense & Peace Economics, Journal of Peace Research
- **Others:** Advances in Complex Systems, Journal of Chemical Information and Modeling, Networks and Spatial Economics

PROFESSIONAL SERVICE

Workshops

- *The Mathematics of Terrorism*
Joint with MITRE, Santa Fe NM, Aug. 31–Sept. 2, 2009. Organized with B. Tivnan (MITRE).
- *Statistical Inference for Complex Networks*
Santa Fe NM, Dec. 3–5 2008. Organized with C. Moore (UNM, SFI).
- *Navigability and Complex Networks*
Joint with UCSD's Cooperative Association for Internet Data Analysis (CAIDA), Santa Fe NM, Aug. 4–6, 2008. Organized with D. Krioukov (UCSD) and kc claffy (UCSD).
- *Is There a Physics of Society?*
Santa Fe NM, Jan. 10–12, 2008. Organized with M. Girvan (UMD).

Conferences

- 2nd *Computer Science at UNM Student Research Conference*, Conference Chair, Albuquerque NM, March 3, 2006.
- 1st *Computer Science at UNM Student Research Conference*, Conference Chair, Albuquerque NM, March 4, 2005.

Program Committees

- *World Wide Web Conference (WWW) 2010*, Raleigh NC, April 26–30, 2010.
- *3rd ACM International Conference on Web Search and Data Mining (WSDM) 2010*, New York NY, February 4–6, 2010.
- *3rd Workshop on Social Network Mining and Analysis* (part of ACM SIGKDD 2009), Paris France, June 28–July 1, 2009
- *CompleNet 2009* Workshop, Catania, Italy, May 12–13, 2009.
- Workshop on *Analysis of Dynamic Networks* (part of SIAM International Conf. on Data Mining), Sparks, Nevada, April 30 – May 2, 2009.
- Workshop on *Analyzing Graphs: Theory and Applications* (part of NIPS 2008), Whistler, Canada, December 12, 2008.
- *2nd Workshop on Social Network Mining and Analysis* (part of ACM SIGKDD 2008), Las Vegas NV, August 24–27, 2008
- *5th International Workshop on Experimental Algorithms*, Menorca Spain, May 24–27, 2006

Institutional Committees

- Santa Fe Institute, Colloquium Committee 2007 – 2009
- UNM Computer Science Faculty Search Committee 2005 – 2006

Professional Society Positions

- President, UNM Computer Science Grad. Student Assoc. (CSGSA) 2004 – 2005
- Vice President, UNM Computer Science Grad. Student Assoc. (CSGSA) 2003 – 2004

Professional Societies

American Physical Society (APS), Association of Computing Machinery (ACM), Ecological Society of America (ESA), Geological Society of America (GSA), Midwest Political Science Association (MPSA), American Society of Naturalists (ASN), Society for Industrial and Applied Mathematics (SIAM)

SYNERGISTIC ACTIVITIES

Science blogger at *Structure+Strangeness* (cs.unm.edu/~aaron/blog/) 2005 – present
Wikipedia contributor (various science and mathematics articles) 2006 – present