

RAJARSHI DAS

CONTACT

Address (Work)

Research Staff Member
Institute for Advanced Commerce
IBM T.J. Watson Research Center
19 Skyline Drive
Hawthorne, NY 10532
USA

Phone (914)-784-7023

Fax (914)-784-6054

Email rajarshi@us.ibm.com

URL <http://www.research.ibm.com/people/r/rajarshi>

EDUCATION

Ph.D. in Computer Science, Colorado State University, Fort Collins, CO, 1996

M.S. in Electrical Engineering, University of Alabama, Tuscaloosa, AL, 1989

B.S. in Electrical Engineering, Indian Institute of Technology, Kharagpur, India, 1987

PROFESSIONAL POSITIONS

Research Staff Member, IBM T. J. Research Center, Hawthorne, NY, 1998-present
Postdoctoral Fellow, Los Alamos National Laboratory, Los Alamos, NM, 1996-1998
Research Associate, Santa Fe Institute, Santa Fe, NM, 1996-1998
Visiting Faculty, Universidad Nacional de San Luis, San Luis, Argentina, 1998
Visiting Research Scholar, Fujitsu Laboratories, Makuhari, Japan, 1995
Graduate Research Fellow, Santa Fe Institute, Santa Fe, NM, 1993-1995
Research Assistant, Colorado State University, Fort Collins, CO, 1990-1992
Summer Research Intern, Rowland Institute, Boston, MA, 1989
Summer Research Intern, Philips Laboratories, Briarcliff Manor, NY 1988

PROFESSIONAL AWARDS

Director's Postdoctoral Fellow, Los Alamos National Laboratory, Los Alamos, NM, 1996-1998
Computational Science and Engineering Postdoctoral Research Fellow,
National Science Foundation, USA, 1996 (declined)
Visiting Research Scholar, Institute for Social Information Science, Fujitsu Laboratories,
Makuhari, Japan, 1995
Graduate Research Fellow, Santa Fe Institute, Santa Fe, NM, 1993-1995
Graduate School Fellow, University of Alabama, Tuscaloosa, AL, 1988-1989
Indian Amateur Astronomer Fellow, Astronomical Society of India and
Indian Institute of Astrophysics, Bangalore, India, 1984
National Science Talent Scholar, J.B.N.S.T.S., Kolkata, India, 1983-1987

PATENT APPLICATION FILING

1. Autonomic Problem Determination and Recovery Method (Filed November 06, 2002).
Inventors: H. Chan, R. Das, J.O.Kephart and A. Segal.
2. Autonomic Composition Broker (Filed November 02, 2002)
Inventors: R. Das and I. Whalley.
3. Autonomic Software Update and Test Framework (Filed November 02, 2002)
Inventors: R. Das, S.R. White, and I. Whalley.
4. Automated Bidding Agent for Electronic Auctions (Filed April 10, 2001).
Inventors: R. Das, J.E. Hanson, J. O. Kephart and G. Tesauro.
5. Method for Making Operational Business Decisions Automatically (Filed July 25, 2001).
Inventors: R.Das, J. E. Hanson, J. O. Kephart and S. R. White.
6. Method for Making Operational Purchasing Decisions Automatically (Filed July 25, 2001).
Inventors: R.Das, J. E. Hanson, J. O. Kephart and S. R. White.

PUBLICATIONS (significant works are in boldface)

Book Chapters

1. J. P. Crutchfield, M. Mitchell, R. Das (2003). **Evolutionary Design of Collective Computation in Cellular Automata**. J. P. Crutchfield and P. Schuster (Eds.), *Evolutionary Dynamics*. New York, USA: Oxford University Press.
2. J. O. Kephart, R. Das and J. K. MacKie-Mason (2000). Two-sided Learning in a Agent Economy for Information Bundles. A. Moukas, C. Sierra, F. Ygge (Eds.), *Agent Mediated Electronic Commerce II (Lecture Notes in Artificial Intelligence 1788)*. Berlin, Germany: Springer-Verlag
3. M. Mitchell, J. P. Crutchfield and R. Das (1997). Evolving cellular automata to perform computations. T. Bäck, D. Fogel, and Z. Michalewicz (Eds.), *Handbook of Evolutionary Computation*. Bristol, U.K.: Institute of Physics Publishing.
4. D. Whitley, S. Dominic, R. Das and C. Anderson (1993). **Genetic reinforcement learning for neurocontrol problems**. J. J. Grefenstette (Ed.), *Genetic Algorithms for Machine Learning*. Boston, USA: Kluwer Academic Publishers.

Refereed Journal Publications

5. C. Brooks, R. Gazalle, R. Das, J. O. Kephart, J. K. Mackie-Mason, and E. H. Durfee (2002). Model Selection in an Information Economy: Choosing What to Learn. *Computational Intelligence*, Vol. 18, pp. 566-582.
6. D. Whitley, S. Dominic, R. Das and C. Anderson (1993). Genetic reinforcement learning for neurocontrol problems. *Machine Learning*, Vol. 13, pp. 259-284.
7. D. Whitley, R. Das and C. Crabb (1992). Tracking primary hyperplane competitors during genetic search. *Annals of Mathematics and Artificial Intelligence*, Vol. 6, pp. 367-388.

8. S. Das and R. Das (1991). Induction of discrete state machine by stabilizing a continuous recurrent network using clustering. *CSI Journal of Computer Science and Informatics*, Vol. 21, No. 2, pp. 35-40.

Refereed Conference & Workshop Proceedings

9. W. E. Walsh, R. Das, G. Tesauro, and J. O. Kephart (2002). **Analyzing Complex Strategic Interactions in Multi-Agent Games**. *Game Theoretic and Decision Theoretic Agents Workshop* at AAAI-02, Edmonton, Canada.
10. R. Das, J. E. Hanson, J. O. Kephart and G. Tesauro (2001). **Agent-Human Interactions in the Continuous Double Auction**. *Proceedings of the 17th International Joint Conference on Artificial Intelligence (IJCAI)*, San Francisco, CA: Morgan-Kaufmann.
11. G. Tesauro and R. Das (2001). High-Performance Bidding Agents for the Continuous Double Auction. *Proceedings of the ACM Conference on Electronic Commerce (EC-01)*, and *IJCAI Workshop on Economic Agents, Models, and Mechanisms*.
12. C. Brooks, R. Das, J. O. Kephart, J. K. Mackie-Mason, R. Gazalle and E. H. Durfee (2001). Information bundling in a dynamic environment. *Proceedings of the IJCAI Workshop on Economic Agents, Models, and Mechanisms*.
13. C. Brooks, R. Das, J. O. Kephart, J. K. Mackie-Mason, R. Gazalle and E. H. Durfee (2001). Information bundling in a dynamic environment. *7th International Conference of the Society for Computational Economics*. Yale University.
14. P. Dasgupta and R. Das (2000). Dynamic Service Pricing for Brokers in a Multi-Agent Economy, *IEEE 4th International Conference on Multi-agent Systems (ICMAS)* (pp. 375-376). Los Alamitos, CA: IEEE Computer Society.
15. C. H. Brooks, E. Durfee and R. Das (2000). Price Wars and Niche Discovery in a Information Economy, *Proceedings of Electronic Commerce (EC-00)* (pp. 95-106). New York, NY: ACM Press.
16. P. Dasgupta and R. Das (2000). Dynamic Pricing with Limited Competitor Information in a Multi-Agent Economy, *Lecture Notes in Computer Science, 1901 (Proceedings of the 7th International Conference on Cooperative Systems, COOPIS)* (pp. 299-310). New York, NY: Springer-Verlag.
17. C. H. Brooks, S. Fay, R. Das, J. K. MacKie-Mason, J. O. Kephart and E. H. Durfee (1999). Automated strategy searches in an electronic goods market: learning and complex price schedules, *Proceedings of the first ACM conference on Electronic commerce (EC-99)* (pp. 31-40). New York, NY: ACM Press.
18. M. Mitchell, J. P. Crutchfield and R. Das (1996). Evolving Cellular Automata with Genetic Algorithms: A Review of Recent Work, *Proceedings of the First International Conference on Evolutionary Computation and Its Applications (EvCA'96)*. Moscow, Russia: Russian Academy of Sciences.
19. S. Das and R. Das (1996). Learning a robust strategy to catch a fly ball. *Proceedings of the International Conference on Software Engineering*.
20. R. Das, J. P. Crutchfield, M. Mitchell and J. E Hanson (1995). **Evolving Globally Synchronized Cellular Automata**. *Proceedings of the Sixth International Conference on Genetic Algorithms (ICGA-95)* (pp 336-343). San Mateo, CA: Morgan Kaufmann.

21. R. Das and S. Das (1994). Catching a baseball: A reinforcement learning perspective using a neural network. *Proceedings of 11th National Conference on Artificial Intelligence (AAAI-94)*.
22. R. Das, M. Mitchell and J. P. Crutchfield (1994) **A genetic algorithm discovers particle-based computation in cellular automata**. *Parallel Problem Solving from Nature Conference (PPSN-III)* (pp. 244-253). Berlin, Germany: Springer-Verlag.
23. S. Das and R. Das (1994). Using reinforcement learning to catch a baseball. *Proceedings of the IEEE World Congress on Computational Intelligence* (pp. 2808 –2812). New York, NY: IEEE Press.
24. S. Das and R. Das (1994). Learning to catch a baseball: A reinforcement learning perspective. *Proceedings of the International Conference on Neural Networks*.
25. R. Das (1995). Evolution in Cellular Automata Rule Space. *Proceedings of the 1993 Complex System Summer School* (pp. 447-457). Reading, MA: Addison-Wesley.
26. R. Das and D. Whitley (1992). Genetic sparse distributed memory. *International Workshop on Combinations of Genetic Algorithms and Neural Networks (COGANN)*, (pp. 97-107). New York, NY: IEEE Press.
27. N. Karunanithi, R. Das and D. Whitley (1992). Genetic cascade learning, *IEEE International Workshop on Combinations of Genetic Algorithms and Neural Networks (COGANN)*, (pp. 134 – 145). New York, NY: IEEE Press.
28. R. Das and D. Whitley (1991). The only challenging problems are deceptive: global search by solving order-1 hyperplanes. *Proceedings of the Fourth International Conference on Genetic Algorithms (ICGA-91)* (pp-166-173). San Mateo, CA: Morgan Kaufman.
29. D. Whitley, S. Dominic, R. Das and C. Anderson (1991). Genetic algorithms, neural networks and reinforcement learning. *Proceedings of the Fourth International Conference on Genetic Algorithms (ICGA-91)* (pp. 562-569). San Mateo, CA: Morgan Kaufmann.
30. S. Dominic, D. Whitley, C. Anderson and R. Das (1991). Genetic reinforcement learning for neural networks. *International Joint Conference on Neural Networks (IJCNN-91-Seattle)* (pp. 71-76). New York, NY: IEEE Press.
31. J.D. Schaffer, R. Caruana, L. Eshelman and R. Das (1989). **A study of control parameters affecting online performance of genetic algorithm for function optimization**. *Proceedings of the Third International Conference on Genetic Algorithms (ICGA-89)* (pp. 55-61). San Mateo, CA: Morgan Kaufmann.
32. R. Das and D. E. Goldberg (1988). Discrete-time parameter estimation with genetic algorithm. *Proceedings of the 19th Annual Pittsburgh Conference on Modeling and Simulation*.

Thesis Titles

- Ph.D. Thesis: The Evolution of Emergent Computation in Cellular Automata
- M.S. Thesis: Application of Genetic Algorithms in Graph Partitioning Problem
- B. S. Thesis: On-line Implementation of a Discrete Parameter Estimation

PROFESSIONAL ACTIVITIES

Professional Services

- Organizing Committee, Workshop on AI and Autonomic Computing: Developing a Research Agenda for Self-Managing Computer Systems, at IJCAI-03, 2003.
 - Program Committee, Workshop on Agent Mediated Electronic Commerce V: Designing Mechanisms and Systems at AAMAS-03, Melbourne, Australia, 2003.
 - Program Committee, First International Joint Conference on Autonomous Agents & Multi-Agent Systems (AAMAS), Bologna, Italy, 2002.
 - Program Committee, Genetic and Evolutionary Computation Conference (GECCO-02), New York, NY, 2002
 - Special Program Committee, Genetic and Evolutionary Computation Conference (GECCO), San Francisco, CA, 2001.
 - Program Committee, Sixth International Conference on Genetic Algorithms (ICGA-95), Pittsburgh, PA, 1995.
- Reviewer for the journals: IBM Research Journal, Physica D, Physical Review Letters, Machine Learning, Complexity, Evolutionary Computation Journal, International Journal of Approximate Reasoning, Journal of Experimental and Theoretical Artificial Intelligence, Artificial Life.

Invited Lecture Series

1. Escuela de Verano en Sistemas Complejos, Universidad de Chile, Santiago, Chile (1996).
2. FOMEC Lecture Series, Department of Computer Science, Universidad Nacional de San Luis, San Luis, Argentina (1996).

Invited Conference Presentations

3. International Joint Conference on Artificial Intelligence (IJCAI-01), Seattle, WA (2001).
4. International Conference of the Society for Computational Economics, Yale University (2001).
5. ACM Conference on Electronic Commerce (EC-99), Denver, CO (1999).
6. First International Conference on Unconventional Models of Computation, University of Auckland, Auckland, New Zealand (1998).
7. Digital Burgess Conference, Banff, Canada (1997).
8. Modern Developments in Thermodynamics, Gordon Research Conference, Ventura, CA (1997).
9. AAAI Spring Symposium, Stanford University, CA (1994).
10. 19th Annual Pittsburgh Conference on Modeling and Simulation, Pittsburgh, PA (1988).

Invited Speaker Series Presentations

11. New York Complexity Symposium, New York, NY (2001).
12. Graduate Workshop in Economics: Computational Modeling and Complexity, Santa Fe Institute, Santa Fe, NM (1998).
13. Los Alamos National Laboratory, Los Alamos, NM (1996, 1998).
14. Department of Physics, Universidad de Los Andes, Merida, Venezuela (1998).
15. Department of Computer Science, University of Canterbury, Christchurch, New Zealand (1998).
16. Computer Science Department, Victoria University of Wellington, Wellington, New Zealand (1998).
17. Department of Computer Science, University of Otago, Dunedin, New Zealand (1998).
18. Department of Applied Mathematics, University of Florence, Florence, Italy (1997).
19. Institute of Psychology, National Research Council (CNR), Rome, Italy (1997).

20. Argentine Congress on Computer Science, Universidad Nacional de San Luis, San Luis, Argentina (1996).
21. Computer Science Department, Universidad Nacional de La Plata, La Plata, Argentina (1996).
22. Institute on Social Information Sciences, Fujitsu Laboratories, Makuhari and Numazu, Japan (1995).
23. Physics Department, Tokyo University, Tokyo, Japan (1995).
24. Computer Science Department, University of Tsukuba, Tsukuba, Japan (1995).
25. Japan Technology Transfer Association Meeting, Tokyo, Japan (1995).
26. Jagadis Bose National Science Talent Scholarship's Alumni Meeting, Calcutta, India (1995).
27. Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, CO (1995).
28. IBM T.J. Watson Research Center, Yorktown Heights, NY (1995, 1996).
29. Applied Mathematics Department, Weizmann Institute, Rehovot, Israel (1994).

Invited Workshop & Poster Presentations

30. IJCAI Workshop on Economic Agents, Models, and Mechanisms, Seattle, WA (2001).
31. First World Congress of the Game Theory Society (Games-2000), Bilbao, Spain (2000).
32. 4th International Conference on Multi-agent Systems Boston, MA (2000).
33. E.R. Caianiello Summer School, Salerno, Italy (1997).
34. Parallel Problem Solving from Nature Conference (PPSN-III), Jerusalem, Israel (1993).
35. Complex Systems Summer School, Santa Fe, NM (1992)

Invited Participation in Summer Schools

1. E.R. Caianiello Summer School on Adaptive Processing of Sequences, Salerno, Italy (1997).
2. Summer Inst. on Probability in Artificial Intelligence, Corvallis, OR (1994).
3. Complex Systems Summer School, Santa Fe Institute, Santa Fe, NM (1992).
4. Connectionist Models Summer School, Univ. of Colorado, Boulder, CO (1992).
5. International Summer School on Comparative Approaches to Cognitive Science, Aix-en-Provence, France (1992).

MEDIA COVERAGE OF RESEARCH ACTIVITY

1. Red Herring Magazine (February 8, 2001). *Smart technology trounces traders.*
http://www.redherring.com/index.asp?layout=story_generic&doc_id=RH200017420
2. The New York Times (January 2, 2001). *New Age Bidding: Against Computer Humans Usually Loose.* <http://www.nytimes.com/2001/01/02/science/02BIDS.html>
3. The New York Times (March 23, 1999). *Mindless Creatures Acting 'Mindfully'* (Cover article of the Science Times).
http://www.nytimes.com/library/national/science/032399sci-cellular_automata.html
4. The Telegraph (April 5, 1999) *From Laws to Reality.*
5. World & I, The Washington Times. (September, 1995) *Silicon Laboratory.*