Daniel D. Corkill

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Education

Ph.D.   Computer and Information Science, University of Massachusetts Amherst, 1983.
Dissertation: *A Framework for Organizational Self-Design in Distributed Problem-Solving Networks*
Advisor: Victor Lesser.

M.S.   Computer Science, University of Nebraska Lincoln, 1976.
Thesis: *A Model for the Design of Conversational Programs*
Advisor: Sharad Seth.

B.S.   Computer Science, University of Nebraska Lincoln, 1975.

Honors

NASA Recognition of Excellence award for SBIR research, 1995.

Ph.D. dissertation nominated by the University of Massachusetts for the Association for Computing Machinery (ACM) Doctoral Dissertation Award, 1983.

First Place Team, ACM Regional Collegiate Programming Competition, Rolla, Missouri, 1976.[1]

Upsilon Pi Epsilon (Computer Science honors society), elected 1974.

Research Interests

Interaction and coordination among collaborating intelligent software systems and individuals.

High-performance blackboard-system and multi-agent architectures.

Organizational coordination of multi-agent systems.

Contribution integration and high-level information fusion.

On-line "live-representation" dynamic process management.

Integrated planning, scheduling, and execution of complex dynamic processes.

Design and implementation of complex and adaptable software systems.

Professional Positions and Experience

Associate Director, Multi-Agent Systems Laboratory, School of Computer Science, University of Massachusetts Amherst, September 2006–present.

Senior Research Scientist, School of Computer Science, University of Massachusetts Amherst, September 2002–present.

Independent consultant, March 2002–August 2002.

Chief Scientist, Knowledge Technologies International, Amherst, Massachusetts, October 1998–February 2002.

Founder and President, Blackboard Technology Group, Inc., Amherst, Massachusetts, October 1989–September 1998.

Associate Research Professor, Department of Computer Science, University of Massachusetts Amherst, August 1992–December 1994.

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[1]The first National Finals were organized the following year, in 1977.

Senior Research Computer Scientist, Department of Computer Science, University of Massachusetts Amherst, May 1990–July 1992.

Director, Parallel & Distributed AI/Lisp Development, Department of Computer Science, University of Massachusetts Amherst, July 1985–June 1990.

Research Computer Scientist, Department of Computer Science, University of Massachusetts Amherst, January 1983–May 1990.

Research assistant to Victor R. Lesser, Cooperative Distributed Problem Solving, Deparment of Computer Science, University of Massachusetts Amherst, November 1978–December 1982.

Research assistant to Edward M. Riseman and Allen R. Hanson, VISIONS: A Computer System for the Segmentation and Interpretation of Visual Scenes, Department of Computer Science, University of Massachusetts Amherst, November 1977–October 1978.

Research assistant to James H. Burrill, Development and Support of APL 2.0 (Control Data Corporation), University Computing Center, University of Massachusetts Amherst, January–September 1977.

User consultant, University of Nebraska Computer Network, University of Nebraska Lincoln, September 1974–May 1975.

Programmer (full-time staff position), University of Nebraska Computer Network, University of Nebraska Lincoln, October 1973–August 1974.

Professional Contributions and Service Activities

Program Committees: International Joint Conference on Autonomous Agents and Multi Agent Systems (AAMAS-04–07, & AAMAS-09–10); International Joint Conference on Artificial Intelligence (IJCAI-91); AAAI Conference on Artificial Intelligence (AAAI-90, AAAI-14); Agent Technology for Sensor Networks (ATSN-08); International Conference on Agents and Artificial Intelligence (ICCART 2009, 2011, 2013–2015); Coordination and Control in Massively Multi-Agent Systems (CCMMS 2007 & CCMMS 2008); Coordination, Organization, Institutions, and Norms in Agent Systems (COIN@AAMAS 2008, COIN@IJCAI 2009, COIN@AAMAS-2010); International Workshop on Massively Multiagent Systems (MMAS 2004, 2006, & 2009); Engineering Societies in the Agents World (ESAW 2006); From Organizations to Organization Oriented Programming (OOOP-05); Modelling and Simulation of Multi-Agent Systems Workshop, AAMAS-04; AI Tools 1994; Cooperating Knowledge-Based Systems 1990 & 1994; all AAAI Blackboard Systems Workshops.

Workshop Organizer: Workshop Co-Chair, Agent Technology for Sensor Networks (ATSN-09); Workshop Chair, Integrative Information Systems for Homeland Security, University of Massachusetts Amherst, September 2004; Workshop Co-Chair, Agent Organizations: Theory and Practice, AAAI-04; Workshop Chair, Third & Fourth AAAI Blackboard Systems Workshops.

Reviewer: Numerous conferences and workshops; NASA proposals; NSF proposals and review panels; ISF proposals; numerous journals including: *AI Magazine*; *Artificial Intelligence for Engineering Design, Analysis, and Manufacturing Journal*; *Autonomous Agents and Multi-Agent Systems*; *Computer Journal*; *IEEE Expert*; *IEEE Transactions on Data and Knowledge Engineering*; *IEEE Transactions on Systems, Man, and Cybernetics*; *IEEE Transactions on Software Engineering*; *IEEE Transactions on Pattern Analysis and Machine Intelligence*; *IEEE Transactions on Real Time Systems*; *Journal of Artificial Intelligence Research*; *Journal of Parallel and Distributed Computing*; *Journal of Systems and Software*.

U.S. patent holder.

Teaching

Multi-Agent Organizations, graduate seminar, Department of Computer Science, University of Massachusetts Amherst, Spring 2007.

Developing Modern Blackboard-Systems Applications using GBBopen, training course, BBTech Corporation, presented periodically 2005–2007.

Multi-Agent Organizations, graduate seminar, Department of Computer Science, University of Massachusetts Amherst, Spring 2003.

Modern Blackboard & Multi-Agent System Technologies, Defence Research and Development Canada, Valcartier, Québec, December, 2002.

Designing and Implementing Blackboard Applications, training course, Blackboard Technology Group, presented regularly 1989–1998.

Designing Blackboard Applications, IEEE CAIA-91 (Conference on Artificial Intelligence for Applications) tutorial (with Rajendra Dodhiawala), Miami Beach, Florida, February 24, 1991.

Building Blackboard Applications, AAAI-90 tutorial (with Rajendra Dodhiawala), Boston, Massachusetts, August 1, 1990.

Blackboard-based AI Systems, Digital Equipment Corporation, Marlborough, Massachusetts, March, 1990.

Blackboard-based AI Systems, Digital Equipment Corporation, Marlborough, Massachusetts, February, 1989.

Blackboard-based AI Systems, Digital Equipment Corporation, Valbonne, France, June 1988.

Programming in Common Lisp: An emphasis on style, 12-hour videotape course distributed by the Minerva Group, 1986.

Blackboard Systems, guest lecture, part of *Introduction to Artificial Intelligence*, 40-hour, detailed video lecture series by Paul Cohen, Department of Computer and Information Science, University of Massachusetts Amherst, 1985.

Common Lisp/AI Programming, GTE Laboratories, Waltham, Massachusetts, September 1984–October 1984.

Control and Meta-Control in Problem Solving Systems, graduate seminar, Department of Computer and Information Science, University of Massachusetts Amherst, Fall 1983.

Data Structures, Department of Computer and Information Science, University of Massachusetts Amherst, Spring 1982.

Programming Methodology, Continuing Education Seminar, Atomic Energy of Canada Limited, Chalk River Nuclear Laboratories, Chalk River, Ontario, Canada, September 1979.

Programming Methodology, Computer Science, University of Nebraska, Lincoln, 1975–1976.

Students

Ph.D. Principal Research Advisor,[2] Zachary Rubinstein, 2002, "Efficient Scheduling of Evolving, Nondeterministic Process Plans in Dynamic Environments" (now System Scientist, Robotics Institute, Carnegie-Mellon University).

Ph.D. Chairman, David Hildum, 1994, "Flexibility in a Knowledge-Based System for Solving. Dynamic Resource-Constrained Scheduling Problems" (now Project Scientist, Robotics Institute, Carnegie-Mellon University).

M.S. Chairman, Venkat Manakkal, Mechanical Engineering, 1995 (now at Rayservers).

Dipl. Co-chairman, Andreas Hecht, University of Berlin, 1993 (now at Navigation Technologies Corporation).

M.S. Chairman, Shailprabhat Kulkarni, Mechanical Engineering, 1992 (returned to India).

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[2]Not thesis advisor.

Ph.D. Committee, Prasanna Katragadda, Mechanical Engineering, 1995 (now Vice President of R&D, Dassault Systems/KTI).

Ph.D. Committee, Daniel Neiman, 1992 (now at River Logic, Inc., Beverly, Massachusetts).

Ph.D. Committee, Philip Johnson, 1989 (now Professor, University of Hawaii).

Ph.D. Committee, Edmund Durfee, 1987 (now Professor, University of Michigan).

Ph.D. Committee, Rukmini Vijaykumar, 1987.

Ph.D. Committee, Eva Hudlická, 1986 (now President, Psychometrix Associates, Blacksburg, Virginia).

Ph.D. Committee, Jasmina Pavlin, 1985 (now Development Manager, Intel).

M.S. Committee, Mike Sheehy, Mechanical Engineering, 1995.

M.S. Committee, Anagha Jog, Mechanical Engineering, 1994.

M.S. Committee, Ken Meunier, Mechanical Engineering, 1988.

M.S. Committee, Ralph Verrilli, Mechanical Engineering, 1987.

Reader, numerous Master's Projects.

Research Administrative Responsibilities

Co-principal investigator (with Victor Lesser), "RI: Medium: Collaborative Research: Creating Organizationally Adept Software Agents and their Organizations", NSF, $720,000, June 2010–May 2013.

Principal investigator, "PLATO: Phased Learning using Active Thought & Observation," DARPA Bootstrapped Learning Program (subcontractor to SRI International), $388,364, April 2007–March 2011.

Principal investigator, "Secure Distributed Collaboration," Clozure Associates, $110,500, April 2010–February 2012.

Principal investigator, "Knowledgable Dynamic-Process Modeling and Execution," Infosys Technologies Limited, $150,000, March 2009–March 2010.

Principal investigator, "An Enhanced Collaborative-Software Environment for Information Fusion at the Unit of Action," U.S. Army RDECOM CERDEC Intelligence and Information Warfare Directorate, $536,808, April 2005–January 2007.

Principal investigator, "A Cognitive Framework for Resource-Aware Sensor Net Organizations," Air Force Research Laboratory, $314,981, January 2005–December 2007.

Principal investigator, "Architectural Analysis and Investigation of Command & Control and Data Fusion Systems," Public Works and Government Services Canada, $79,824, September 2004–March 2008.

Principal investigator, "Collaborative Software for Information Fusion," U.S. Army RDECOM CERDEC Intelligence and Information Warfare Directorate, $100,740, September 2004–March 2005.

Principal investigator, "Collaboration Toward Integrative Information Systems for Homeland Security," US - Israel Science & Technology Foundation (USISTF), $173,631, April 2004–January 2005.

Principal investigator, "Adaptive Artificial Intelligence for Next-Generation Conflict Simulation," USAF STTR (subcontactor to Information Extraction & Transport, Inc., Arlington, Virginia), $30,000, January 2004–June 2004.

Principal investigator, "MADEsmart subcontact," DARPA/NIST (subcontractor to Boeing), $207,000, October 1996–June 1998.

Principal investigator, "Knowledge-Based Radar Image Analysis System," Naval Surface Warfare Center, $171,754, June 1996–September 1998.

Principal investigator, "A Blackboard-Based Collaboration Environment for Human

Problem-Solving," NSF SBIR Phase I to Blackboard Technology Group, $74,422, February 1996–July 1996.

Principal investigator, "A Graphical User Interface for Prototyping Engineering Methodologies Using MDL," Ford Motor Company, $55,000, July 1995–January 1996.

Principal investigator, "A Blackboard-Based Framework for Mixed-Initiative, Crewed-Space-System Applications," NASA SBIR Phase II to Blackboard Technology Group, $445,674, February 1995–February 1997.

Principal investigator, "Integrated Finite-Element Generation in the IMCMA Intelligent Multichip Module Reliability Analysis System," Rome Laboratory to Blackboard Technology Group, $99,520, January 1994–January 1995.

Principal investigator, "A Blackboard-Based Framework for Mixed-Initiative, Crewed-Space-System Applications," NASA SBIR Phase I to Blackboard Technology Group, $65,730, January 1994–June 1994.

Principal investigator, "An Enhanced Architecture for Intelligent Finite-Element Modeling," Rome Laboratory to UMass, $99,994, April 1993–March 1994.

Principal investigator, "An Architecture for Intelligent Finite-Element Modeling," Rome Laboratory to UMass, $99,810, April 1992–March 1993.

Principal investigator, "Mixed-Paradigm Case-Based Reasoning using a Blackboard Architecture," DARPA SBIR Phase I to Blackboard Technology, $43,880, April 1991–September 1991.

Director, NSF/CER AI/Lisp Development Group, July 1985–June 1990.

Principal investigator, "Blackboard Development Group Industrial Consortium," Texas Instruments to ACSIOM, Inc., $90,000, September 1989–August 1991.

Principal investigator, "Multiprocessing Generic Blackboard Research," Texas Instruments to UMass, $50,000, November 1987–August 1989.

Co-principal investigator (with Victor Lesser), "Implementation Support for UMass Parallel Common Lisp System", NSF/CER supplemental grant to UMass, $55,847, November 1987–October 1988.

Principal investigator, "Distributed Generic Blackboard Research," Texas Instruments to UMass, $50,000, July 1986–October 1987.

Major Open Source Implementation and Supervision Efforts

GBBopen (blackboard-based, collaborating-software framework), http://GBBopen.org, 2002–present.

Major Commercial Implementation and Supervision Efforts

KPM, a knowledge-based dynamic-process management-support product suite for managing complex automotive and aerospace design processes, 1998–2001.

GBB Product Family (GBB, NetGBB, NetEval, and ChalkBox) and collaborative-agent tools (AgentExchange and AgentEnv), 1989–2001. GBB is used in many noteworthy applications, such as the RADARSAT-1 Mission Control System, and received the Editor's Choice award from *Object Magazine* in 1996.

Major Academic Implementation and Supervision Efforts

ProME: Dynamic process management and execution engine, 2009–   .

CNAS: Collaborative Network for Atmospheric Sensing (a joint effort involving the University of Massachusetts Amherst and AFRL/IL), 2005–2007.

CIFAR: The CIFA (Collaborative Information-Fusion Assistant) Reasoning engine, 2005–2007.

IMCMA: The Intelligent Multichip Module Analyst (a collaborative effort effort involving

Blackboard Technology Group, the University of Massachusetts Amherst, and Rome Laboratory), 1992–1995.

The UMass Generic Blackboard Development System (distributed to over 300 sites worldwide), 1985–1990.

UMass Parallel Common Lisp System (a high-performance, shared-heap, multiprocessor Common Lisp for the Sequent Symmetry), 1987–1989.

DVMT: The Distributed Vehicle Monitoring Testbed (performed major design and implementation activities), 1979–1986.

CLisp (also known as "COINS Lisp"; VAX/VMS Lisp implementation, the first native Lisp developed for the VAX, written in Macro32 assembly language, distributed to 130 sites worldwide), 1978–1982.

Service and Consulting

Steering Committee, Technology Enterprise Council, Regional Technology Corporation, Springfield, Massachusetts, 2004–2006.

Faculty Advisory Committee, SEPRI (Security, Emergency Preparedness and Response Institute), University of Massachusetts Amherst, Amherst, Massachusetts, 2003–2006.

Board Member, Technology Enterprise Council, Hadley, Massachusetts, 2002–2004.

Engineering Advisory Team, Massachusetts Biomedical Initiatives, Worcester, Massachusetts, 2002–2005.

Founding Board Member and Treasurer, Western Massachusetts Software Association, 1995–1999.

Board Member, Applied Computing Systems Institute of Massachusetts, Amherst, Massachusetts, 1988–1989.

Consultant, GHX, Westminster, Colorado, 2007–2008.

Consultant, Defence Research and Development Canada, Valcartier, Quebec, 2002–2008.

Consultant, Information Extraction & Transport, Inc., Arlington, Virginia, 2002–2003.

Consultant, Boeing Computer Services, Seattle, Washington, 1986–1990.

Consultant, Texas Instruments, Dallas, Texas, 1986–1988.

Consultant, Amerinex Artificial Intelligence, Inc., Amherst, Massachusetts, 1986–1988.

Consultant, GTE Laboratories, Waltham, Massachusetts, 1984–1986.

Consultant, Science & Human Values, San Francisco, California, 1985–1986.

Consultant, Scientific Advisory Board, Scientific Leasing, Inc., Hartford, Connecticut, 1985.

Consultant, Bendix Corporation, Columbia, Maryland, 1984.

Consultant, General Electric Corporation, Syracuse, New York, 1984.

Journal Articles

Xiaoqin Shelley Zhang, Bhavesh Shrestha, Sungwook Yoon, Subbarao Kambhampati, Phillip DiBona, Jinhong K. Guo, Daniel McFarlane, Martin O. Hofmann, Kenneth Whitebread, Darren Scott Appling, Elizabeth T. Whitaker, Ethan B. Trewhitt, Li Ding, James R. Michaelis, Deborah L. McGuinness, James A. Hendler, Janardhan Rao Doppa, Charles Parker, Thomas G. Dietterich, Prasad Tadepalli, Weng-Keen Wong, Derek Green, Anton Rebguns, Diana Spears, Ugur Kuter, Geoff Levine, Gerald DeJong, Reid L. MacTavish, Santiago Ontañón, Jainarayan Radhakrishnan, Ashwin Ram, Hala Mostafa, Huzaifa Zafar, Chongjie Zhang, Daniel Corkill, Victor Lesser, and Zhexuan Song. An ensemble architecture for learning complex problem-solving techniques from demonstration. *ACM Transactions on Intelligent Systems and Technology* (TIST), 3(4):1–38, September 2012.

Daniel D. Corkill. Deploying power-aware, wireless sensor agents. *The Computer Journal,* special issue on Agent Technologies for Sensor Networks, 54(8):392–405, March 2011.

Huzaifa Zafar and Daniel D. Corkill. Reducing online model development time by agents using constraints between shared observations. *The Computer Journal,* special issue on Artificial Societies for Ambient Intelligence, 53(8):1302–1314, October 2010.

Alex Rogers, Daniel D. Corkill, and Nicholas R. Jennings. Agent technologies for sensor networks. *IEEE Intelligent Systems*, 24(2):13–17, March/April 2009.

Mark Sims, Daniel Corkill, and Victor Lesser. Automated organization design for multi-agent systems. *Autonomous Agents and Multi-Agent Systems*, 16(2):151–185, April 2008.

Erik Blasch, Ivan Kadar, John Salerno, Mieczyslaw M. Kokar, Subrata Das, Gerald M. Powell, Daniel D. Corkill, and Enrique H. Ruspini. Issues and challenges in situation assessment (Level 2 fusion). *Journal of Advances in Information Fusion*, 1(2):122–139, December 2006.

Daniel D. Corkill. Countdown to success: Dynamic objects, GBB, and RADARSAT-1. *Communications of the ACM*, 40(5):848–858, May 1997.

Susan E. Lander, Scott M. Staley, and Daniel D. Corkill. Designing integrated engineering environments: Blackboard-based integration of design and analysis tools. *Concurrent Engineering: Research and Applications,* special issue on the Application of Multi-Agent Systems to Concurrent Engineering, 4(1):59–72, March 1996.

Daniel D. Corkill. Blackboard systems. *AI Expert*, 6(9):40–47, September 1991.

Daniel D. Corkill. Embedable problem-solving architectures: A study of integrating OPS5 with UMass GBB. *IEEE Transactions on Knowledge and Data Engineering*, 3(1):18–24, March 1991.

Edmund H. Durfee, Victor R. Lesser, and Daniel D. Corkill. Trends in cooperative distributed problem solving. *IEEE Transactions on Knowledge and Data Engineering*, 1(1):63–82, March 1989. (Invited paper.)

Edmund H. Durfee, Victor R. Lesser, and Daniel D. Corkill. Coherent cooperation among communicating problem solvers. *IEEE Transactions on Computers*, C-36(11):1275–1291, November 1987. (Also published in *Readings in Distributed Artificial Intelligence*, Alan H. Bond and Les Gasser, editors, pages 268–284, Morgan Kaufmann, 1988.)

Victor R. Lesser and Daniel D. Corkill. The Distributed Vehicle Monitoring Testbed: A tool for investigating distributed problem-solving networks. *AI Magazine*, 4(3):15–33, Fall 1983. (Also published in *Blackboard Systems*, Robert S. Engelmore and Anthony Morgan, editors, pages 353–386, Addison-Wesley, 1988 and in *Readings from AI Magazine: Volumes 1–5*, Robert Engelmore, editor, pages 69–85, AAAI, Menlo Park, California, 1988.)

Victor R. Lesser and Daniel D. Corkill. Functionally accurate, cooperative distributed systems. *IEEE Transactions on Systems, Man, and Cybernetics*, SMC-11(1):81–96, January 1981.

Articles in Highly Refereed Proceedings

Ted E. Senator, Henry G. Goldberg, Alex Memory, William T. Young, Brad Rees, Robert Pierce, Daniel Huang, Matthew Reardon, Jay-Yoon Lee, Danai Koutra, Christos Faloutsos, David A. Bader, Edmond Chow, Irfan Essa, Joshua Jones, Vinay Bettadapura, Duen Horng Chau, Oded Green, Oguz Kaya, Anita Zakrzewska, Erica Briscoe, Rudolph L. Mappus IV, Robert McColl, Lora Weiss, Thomas G. Dietterich, Alan Fern, Weng-Keen Wong, Shubhomoy Das, Andrew Emmott, Jed Irvine, Daniel Corkill, Lisa Friedland, Amanda Gentzel, and David Jensen. Detecting insider threats in a real corporate database of computer usage activities. In *Proceedings of the Nineteenth ACM SIGKDD Conference on Knowledge Discovery and Data Mining* (KDD 2013), Chicago, Illinois, August 2013.

Xiaoqin (Shelley) Zhang, Sungwook Yoon, Phillip DiBona, Darren Scott Appling, Li Ding, Janardhan Rao Doppa, Derek Green, Jinhong K. Guo, Ugur Kuter, Geoff Levine, Rreid L. MacTavish, Daniel McFarlane, James R. Michaelis, Hala Mostafa, Sangiago Ontañón, Charles Parker, Jainarayan Radhakrishnan, Anton Rebguns, Bhavesh Shrestha, Zhexuan Song, Ethan B. Trewhitt, Huzaifa Zafar, Chongjie Zhang, Daniel Corkill, Gerald DeJong, Thomas G. Dietterich, Subbarao Kambhampati, Victor Lesser, Deborah L. McGuinness, Ashwin Ram, Diana Spears, Prasad Tadepalli, Elizabeth T. Whitaker, Weng-Keen Wong, James A. Hendler, Martin O. Hofmann, and Kenneth Whitebread. An ensemble learning and problem-solving architecture for airspace management. In *Proceedings of Twenty-First Annual Conference on Innovative Applications of Artificial Intelligence* (IAAI-09), pages 203–210, July 2009.

Huzaifa Zafar, Victor Lesser, Daniel Corkill, and Deepak Ganesan. Using organization knowledge to improve routing performance in wireless multi-agent networks. In *Proceedings of the Seventh International Joint Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS 2008), pages 821–828, Estoril, Portugal, May 2008. 142 of 640 submitted papers (22%) were accepted.

Raphen Becker and Daniel Corkill. Determining confidence when integrating contributions from multiple agents. In *Proceedings of the Sixth International Joint Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS 2007), pages 449–456, Honolulu, Hawaii, May 2007. 119 of 531 submitted papers (22%) were accepted.

Mark Sims, Daniel Corkill, and Victor Lesser. Separating domain and coordination in multi-agent organizational design and instantiation. In *Proceedings of the 2004 IEEE/WIC/ACM International Joint Conference on Intelligent Agent Technology and Web Intelligence* (IAT'04 and WI'04), pages 155–161, Beijing, China, September 2004. 42 of 263 submitted papers (16%) were accepted.

Daniel D. Corkill, Zachary B. Rubinstein, Susan E. Lander, and Victor R. Lesser. Live-representation process management. In *Proceedings of the Fifth International Conference on Enterprise Information Systems*, volume 8, pages 202–208, Angers, France, April 2003. 15% of submitted papers were accepted.

A. G. Jog, I. R. Grosse, and D. D. Corkill. Intelligent automatic mesh generation for multichip modules. In *Proceedings of the 1993 ASME International Computers in Engineering Conference*, San Diego, California, August 1993.

D. Holzhaeur, D. Richards, P. Rocci, M. Stoklosa, P. Yaworsky, I. Grosse, and D. Corkill. Designing reliability into multichip modules: An intelligent modeling approach. In *Proceedings of the AIAA/AHS/ASEE Aerospace Design Conference*, pages 16–19, Irvine, California, February 1993.

I. R. Grosse and D. D. Corkill. A blackboard-based approach to intelligent finite element modeling and analysis. In *Proceedings of the 1992 ASME International Computers in Engineering Conference*, pages 61–68, San Francisco, California, August 1992.

Daniel D. Corkill. Embedable problem-solving architectures: A study of integrating OPS5 with GBB. In *Proceedings of the Sixth IEEE Conference on Artificial Intelligence Applications*, pages 176–182, Santa Barbara, California, March 1990. 44 of 192 submitted papers (23%) were accepted. (Also presented at the Third Workshop on Blackboard Systems, IJCAI-89, Detroit, Michigan, August 23, 1989.)

Victor R. Lesser, Daniel D. Corkill, Joseph A. Hernandez, and Robert C. Whitehair. Focus of control through goal relationships. In *Proceedings of the Eleventh International Joint Conference on Artificial Intelligence*, pages 497–503, Detroit, Michigan, August 1989. 180 of 1200 submitted papers (15%) were accepted.

Daniel D. Corkill and Kevin Q. Gallagher. Tuning a blackboard-based application: A case study using GBB. In *Proceedings of the National Conference on Artificial Intelligence*, pages 671–676, St. Paul, Minnesota, August 1988. 148 of 850 submitted papers (17%) were accepted.

Daniel D. Corkill, Kevin Q. Gallagher, and Philip M. Johnson. Achieving flexibility, efficiency, and generality in blackboard architectures. In *Proceedings of the National Conference on Artificial Intelligence*, pages 18–23, Seattle, Washington, July 1987. 157 of 715 submitted papers (22%) were accepted. (Also published in *Readings in Distributed Artificial Intelligence*, Alan H. Bond and Les Gasser, editors, pages 451–456, Morgan Kaufmann, 1988.)

Daniel D. Corkill, Kevin Q. Gallagher, and Kelly E. Murray. GBB: A generic blackboard development system. In *Proceedings of the National Conference on Artificial Intelligence*, pages 1008–1014, Philadelphia, Pennsylvania, August 1986. 187 of 817 submitted papers (23%) were accepted. (Also published in *Blackboard Systems*, Robert S. Engelmore and Anthony Morgan, editors, pages 503–518, Addison-Wesley, 1988.)

Edmund H. Durfee, Victor R. Lesser, and Daniel D. Corkill. Increasing coherence in a distributed problem-solving network. In *Proceedings of the Ninth International Joint Conference on Artificial Intelligence*, pages 1025–1030, Los Angeles, California, August 1985.

Jasmina Pavlin and Daniel D. Corkill. Selective abstraction of AI system activity. In *Proceedings of the National Conference on Artificial Intelligence*, pages 264–268, Austin, Texas, August 1984.

Daniel D. Corkill and Victor R. Lesser. The use of meta-level control for coordination in a distributed problem-solving network. In *Proceedings of the Eighth International Joint Conference on Artificial Intelligence*, pages 748–756, Karlsruhe, Federal Republic of Germany, August 1983. (Also published in *Computer Architectures for Artificial Intelligence Applications*, Benjamin W. Wah and G.-J. Li, editors, IEEE Computer Society Press, pages 507–515, 1986.)

Daniel D. Corkill, Victor R. Lesser, and Eva Hudlická. Unifying data-directed and goal-directed control: An example and experiments. In *Proceedings of the National Conference on Artificial Intelligence*, pages 143–147, Pittsburgh, Pennsylvania, August 1982.

Victor R. Lesser and Daniel D. Corkill. The application of Artificial Intelligence techniques to cooperative distributed processing. In *Proceedings of the Sixth International Joint Conference on Artificial Intelligence*, pages 537–540, Tokyo, Japan, August 1979.

Daniel D. Corkill. Hierarchical planning in a distributed environment. In *Proceedings of the Sixth International Joint Conference on Artificial Intelligence*, pages 168–175, Tokyo, Japan, August 1979. (An extended version was published as Technical Report 79-13, Department of Computer and Information Science, University of Massachusetts Amherst, Amherst, Massachusetts 01003, February 1979.)

Chapters in Books

Edmund H. Durfee, Victor R. Lesser, and Daniel D. Corkill. Distributed problem solving. In Stuart C. Shapiro, editor, *Encyclopedia of Artificial Intelligence*, volume 1, pages 245–251. John Wiley & Sons, second edition, 1992.

Daniel D. Corkill. Advanced architectures: Concurrency and parallelism. In V. Jagannathan, Rajendra Dodhiawala, and Lawrence S. Baum, editors, *Blackboard Architectures and Applications*, pages 77–83. Academic Press, 1989. (Invited chapter foreword.)

Daniel D. Corkill. Design alternatives for parallel and distributed blackboard systems. In V. Jagannathan, Rajendra Dodhiawala, and Lawrence S. Baum, editors, *Blackboard Architectures and Applications*, pages 99–136. Academic Press, 1989. (Presented at the Second Workshop on Blackboard Systems, AAAI-88, St. Paul, Minnesota, August 24, 1988.)

Edmund H. Durfee, Victor R. Lesser, and Daniel D. Corkill. A survey of cooperative distributed problem solving. In Avron B. Barr, Paul R. Cohen, and Edward A. Feigenbaum, editors, *The Handbook of Artificial Intelligence*, volume 4, chapter 17, pages 83–147. Addison-Wesley, 1989.

Kevin Q. Gallagher and Daniel D. Corkill. Performance aspects of GBB. In V. Jagannathan, Rajendra Dodhiawala, and Lawrence S. Baum, editors, *Blackboard Architectures and Applications*, pages 323–346. Academic Press, 1989.

Victor R. Lesser, Robert C. Whitehair, Daniel D. Corkill, and Joseph A. Hernandez. Goal relationships and their use in a blackboard architecture. In V. Jagannathan, Rajendra Dodhiawala, and Lawrence S. Baum, editors, *Blackboard Architectures and Applications*, pages 9–26. Academic Press, 1989. (Presented at the Second Workshop on Blackboard Systems, AAAI-88, St. Paul, Minnesota, August 24, 1988.)

Victor R. Lesser and Daniel D. Corkill. Distributed problem solving. In Stuart C. Shapiro, editor, *Encyclopedia of Artificial Intelligence*, volume 1, pages 245–251. John Wiley & Sons, 1987.

Edmund H. Durfee, Victor R. Lesser, and Daniel D. Corkill. Cooperation through communication in a distributed problem-solving network. In Michael N. Huhns, editor, *Distributed Artificial Intelligence*, Research Notes in Artificial Intelligence, chapter 2, pages 29–58. Pitman, 1987.

H. Edward Pattison, Daniel D. Corkill, and Victor R. Lesser. Instantiating descriptions of organizational structures. In Michael N. Huhns, editor, *Distributed Artificial Intelligence*, Research Notes in Artificial Intelligence, chapter 3, pages 59–96. Pitman, 1987.

Extended Abstracts, Conference and Workshop Papers

Daniel Corkill, Chongjie Zhang, Bruno Da Silva, Yoonheui Kim, Daniel Garant, Victor Lesser, and Xiaoqin Zhang. Biasing the behavior of organizationally adept agents (extended abstract). In *Proceedings of the Twelveth International Joint Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS 2013), pages 1309–1310, May 2013.

Daniel Corkill, Chongjie Zhang, Bruno Da Silva, Yoonheui Kim, Xiaoqin Zhang, and Victor Lesser. Using annotated guidelines to influence the behavior of organizationally adept agents. In *Proceedings of the 14th International Workshop on Coordination, Organization, Institutions and Norms in Agent Systems* (COIN@AAMAS 2012), pages 46–60, June 2012.

Daniel D. Corkill, Edmund Durfee, Victor R. Lesser, Huzaifa Zafar, and Chongjie Zhang. Organizationally adept agents. In *Proceedings of the 12th International Workshop on Coordination, Organization, Institutions and Norms in Agent Systems* (COIN@AAMAS 2011), pages 15–30, May 2011.

Daniel D. Corkill. Reporting down under: A CNAS (Collaborative Network for Atmospheric Sensing) update. In *Proceedings of the Second International Workshop on Agent Technology for Sensor Networks* (ATSN-08), pages 25–32, Estoril, Portugal, May 2008.

Huzaifa Zafar and Daniel Corkill. Simplifying solar-harvesting model development in situated agents using pre-deployment learning and information sharing. In *Proceedings of the Second International Workshop on Agent Technology for Sensor Networks* (ATSN-08), pages 41–48, Estoril, Portugal, May 2008.

Daniel D. Corkill, Douglas Holzhauer, and Walter Koziarz. Turn off your radios! Environmental monitoring using power-constrained sensor agents. In *Proceedings of the First International Workshop on Agent Technology for Sensor Networks* (ATSN-07), pages 31–38, Honolulu, Hawaii, May 2007.

Mark Sims, Hala Mostafa, Bryan Horling, Haizheng Zhang, Victor Lesser, Daniel Corkill, and John Phelps. Lateral and hierarchical partial centralization for distributed coordination and scheduling of complex hierarchical task networks. In *Proceedings of the AAAI 2006 Spring Symposium on Distributed Plan and Schedule Management*, Stanford, California, March 2006.

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