Daniel M. Rochowiak
Senior Scientist — Sentar Inc, Huntsville AL
Emeritus Associate Professor — Computer Science
University of Alabama in Huntsville

NARRATIVE BIOGRAPHY

Dr. Rochowiak received his B.S. from St. Bonaventure University, and his Ph.D. from the University of Notre Dame. He is an Emeritus Associate Professor of Computer Science at the University of Alabama in Huntsville. He is currently a senior scientist at Sentar Inc in Huntsville AL. Formerly, he was Director of the Collaborative Learning Center, Associate Dean of the College of Science, Director of the Intelligent Systems Laboratory, and Associate Professor of Computer and Cognitive Science. His research blends theory and practice and focuses on explanation, collaboration, and communication. His research efforts have been funded by the National Science Foundation, Marshall Space Flight Center, the US Army Missile Command, the Alabama Department of Economic and Community Affairs, and the Tennessee Valley Authority in areas ranging from intelligent control of AGVs to process planning for composite materials and high performance networks. His current research interests concern computer supported critiquing, collaboration, argumentation, and knowledge presentation and, more generally, artificial intelligence, software development, the epistemology of science and technology and professional ethics. He is currently working on applications of artificial intelligence to software development and dark-web communication.

EDUCATION

Ph.D. University of Notre Dame, Notre Dame, IN. 1980.
B.S. St. Bonaventure University, St. Bonaventure, NY. 1971.

PROFESSIONAL EXPERIENCE

Senior Scientist – Sentar Inc. Huntsville AL, (September 2019 to present)

Emeritus Associate Professor - Computer Science, University of Alabama in Huntsville (September 2018 to present)

Director Collaborative Learning Center, University of Alabama in Huntsville, (January 2016 to August 2018)

Associate Dean College of Science, University of Alabama in Huntsville (October 2004 to August, 2015)

Associate Professor of Computer/Cognitive Science, University of Alabama in Huntsville (1990 to August 2018).

Director of Intelligent Systems Laboratory of the Center for Automation and Robotics, University of Alabama in Huntsville (February 1995 to 2005).

Research Scientist, Kenneth E. Johnson Research Center, University of Alabama in Huntsville (1989 to 1990).

Adjunct Assistant Professor in Philosophy, University of Alabama in Huntsville, (1989 to 1990).

Assistant Professor of Philosophy, University of Alabama in Huntsville, (1984 to 1989).

Advisor, University of Alabama in Huntsville, Academic Advisement and Information Center, (1985 to 1989).

Assistant Professor of Philosophy, Merrimack College, (1978 to 1984).

Instructor, Merrimack College, Division of Continuing Education, (1980 to 1984).

Advisor for Courses and Programs in the Liberal Arts, Merrimack College, Division of Continuing Education, (1982 to 1984).

Visiting Lecturer in Logic, Bradford College (1983).

TEACHING FIELDS

Knowledge-based Systems Artificial Intelligence.. Network Applications
Cognitive Science Software Development Philosophy of Science Logic Computer Ethics

PUBLICATIONS AND PROCEEDINGS

"Grounded conceptual graph models," Harry S. Delugach (Computer Science, UAH) and Daniel M. Rochowiak. Conceptual Structures: Knowledge Visualization and Reasoning, Proc. 16th Intl. Conf. on Conceptual Structures, Lecture Notes in Computer Science, vol. 5113, Springer-Verlag, Toulouse, France, pp. 269-281, 2008.

Modeling behavior and action: simulating choice and repertoire, Daniel Rochowiak. HSC 2003. Huntsville Simulation Conference (October, 2003) (Published on conference cd-rom, Simulation Councils, Inc, San Diego, CA)

Modeling behavior and action" Simulating Human Activity, Daniel Rochowiak. HSC 2002. Huntsville Simulation Conference (October, 2002) (Published on conference cd-rom.)

Collaborative decision making simulation for emergency response, Dan Rochowiak and David Purves, University of Alabama in Huntsville, SouthEastern Simulation Conference / HSC 2001 (Published on CD-ROM, Simulation Councils, Inc, San Diego, CA).

Education for simulation, Dan Rochowiak, Sherri Messimer and James J. Swain (both ISE, UAH), University of Alabama in Huntsville, SouthEastern Simulation Conference / HSC 2001. (Published on CD-ROM, Simulation Councils, Inc, San Diego, CA).

A case study in the integration of knowledge-based and simulation based tools, Dan Rochowiak and Sherri Messimer (ISE, UAH). 1999 SouthEastern Simulation Conference (SESC '99), Joseph S, Gauthier (ed.) (Simulation Councils, Inc, San Diego, CA, 2000, pp. 107-111.)

Information and communication issues for law enforcement (Abstract). Dan Rochowiak and Harold Buie (Buie Corporation). 1999 SouthEastern Simulation Conference (SESC '99), Joseph S, Gauthier (ed.). (Simulation Councils, Inc, San Diego, CA, 2000, pp. 231-232.)

A pragmatic understanding of "knowing that" and "knowing how": The pivotal role of conceptual structures, Fulfilling Peirce's Dream: Proceedings of ICCS'97. D. Lukose, H Delugach, M. Keeler, L. Searle, and J. Sowa (eds.). (Spinger-Verlag, 1997, pp. 25 – 40).

Using the technology information system on the Internet. B. J. Schroer (Johnson Research Center, UAH), D. M. Rochowiak, and J. A. Cranston. *Technology Transfer* (April 1995) pp. 15 - 22.

Active rescheduling for automated guided vehicle systems, L. Interrante (ISE, UAH) and D. Rochowiak. *Intelligent Systems Engineering*. (Summer, 1994) pp. 87-96.

Active rescheduling and collaboration in dynamic manufacturing systems, L. Interrante (ISE, UAH) and D. Rochowiak. *Concurrent Engineering*. (1994) 2, 97-105.

Concurrent engineering and design: person-centered and computer assisted, D. Rochowiak and L. Interrante (ISE, UAH). *AI in Collaborative Design*, J. Gero and M. Mahler (eds.). Technical Report WS-93-07, AAAIPress, 1994, p.171-190.

Critiquing with Multiple Criteria: Conflict Detection and Resolution. Dan Rochowiak John Rogers, and Sherri Messimer (ISE, UAH). In *AAAI'94 Workshop on Models of Conflict Management in Cooperative Problem Solving* (Seattle, WA 1994), p. 97-106.

Scheduling of automated guided vehicles for material handling, L. Interrante (ISE, UAH), D. Rochowiak, B. Sumrall (Plant manager, HED, Chrysler Corporation) *Computer Control of Flexible Manufacturing Systems*, S. Joshi and J. Smith. Chapman and Hall, 1994, pp. 108-141.

The evolution of silicon life, Dan Rochowiak. *Inner Space / Outer Space*, D. Schenker, C. Hanks, and S. Kray (eds.), Southern Humanities Press, 1994, pp. 217-234.

Intelligent control of AGVs: dynamic scheduling via selective attention. L. Interrante (ISE, UAH), D. Rochowiak, and J. Rogers.) In *Proceedings of the 1993 NSF Design and Manufacturing Systems Conference*, pp. 1067-1074 (SME, 1993: Detroit, Michigan).

Concurrent engineering and design: person-centered and computer-assisted. D. Rochowiak and L. Interrante (ISE, UAH). In *AAAI'93 Workshop on AI in Collaborative Design* (Washington, DC 1993) p.171-190.

Composite design and manufacturing critiquing system. D. Rochowiak, J. Rogers, and S. Messimer (ISE,UAH). In *AAAI'93 Workshop on Expert Critiquing Systems* (Washington, DC 1993) p.99-108.

Active rescheduling for dynamic manufacturing systems. L. Interrante (ISE, UAH), D. Rochowiak, and A. Claassen. In *AAAI'93 SIGMAN Workshop* (Washington, DC 1993).

Local correctness, knowledge promotion and the looseness of knowledge. In proceedings of *AAAI '92 Workshop on Communicating Scientific and Technical Knowledge.* (SanJose, 1992).

Dynamic focus of attention for manufacturing design, operations, and control. L. Interrante (ISE, UAH) and D. Rochowiak. In proceedings of *AAAI '92-SIGMAN Workshop on Knowledge-based Production planning, Scheduling, and Control.* (SanJose, 1992).

Heterogeneous knowledge based systems and situational awareness. D. Rochowiak and L. Interrante (ISE, UAH). In proceedings of *AAAI '91 Workshop on Cooperation Among Heterogeneous Agents.* (Anaheim, 1991). [Reviewed in "AAAI Workshop on Cooperation Among Heterogeneous Agents," M. Adler, E. Durfee, M. Huhns, W. Punch, and E. Simoudis *AI magazine*, Summer 1992, pp. 39-42.]

ELICITing monitoring and control knowledge for an intelligent training system. L. Interrante (ISE, UAH) and D. Rochowiak). In proceedings of *AAAI '91Workshop on Knowledge Acquisition: From Science to Technology to Tools.* (Anaheim, 1991).

Document driven knowledge acquisition for expert systems in aquaculture with D. Ford (MIS, UAH) and G. Akin (TVA). In *AI Applications in Natural Resource Management*. (1991).

Types of explanation and looseness of knowledge. In proceedings of *AAAI '90 Workshop on Explanation* (Boston, 1990), pp. 172-177.

A tool for the management of document driven knowledge acquisition. In proceeding of *AAAI '90 Workshop on Knowledge Acquisition: Practical Tools and Techniques* (Boston, 1990).

Documentation and knowledge acquisition with W. Mosley (Computer Science, UAH). In *Fifth Conference on Artificial Intelligence for Space Applications* (Huntsville, 1990), pp. 477-486.

Ada as an implementation language for knowledge based systems. In *Fifth Conference on Artificial Intelligence for Space Applications* (Huntsville, 1990) pp. 589-597.

Programming paradigms: a managerial perspective (with E. D. Howard). In *Software for Strategic Systems Conference*, (Huntsville, 1990), pp. 124-131.

Sociobiology maturing: James Fetzer's Sociobiology and Epistemology. *Behaviorism* 17(1989): 85-87.

Documentation and knowledge acquisition with W. Mosley (Computer Science, UAH). In *AAAI'89 Workshop on Knowledge Acquisition*, (IJCAI'89, Detroit, 1989), pp. 83-86.

Document driven knowledge acquisition in the construction of expert systems for aquaculture with D. Ford (MIS, UAH) and D. Hays (Psychology, UAH). In *Expert Systems'89* (ESD, 1989: Detroit, Michigan), pp. 109-120.

An integrated hypertext and rule based system for explanation (with B. Ragesdale and L. Wurzelbacher). In *Expert Systems'89* (ESD, 1989: Detroit, Michigan), pp. 345-352.

Simple explanation and reasoning: from philosophy of science to expert systems. In *AAAI'88 Workshop on Explanation* (AAAI, St. Paul, 1988), pp. 95-98. [Reviewed in "The 1988 AAAI Workshop on Explanation," M. R. Wick. *AI magazine*, Fall, 1989, pp. 22-26.]

Simple explanation and reasoning. In *Fourth Conference on Artificial Intelligence for Space Applications* (Huntsville, 1988), pp. 341-347.

Discovery and problem solving: triangulation as a weak heuristic. In *Third Conference on Artificial Intelligence for Space Applications*, (Huntsville, 1987), pp. 285 - 290.

Extensibility and completeness: an essay on scientific reasoning. *The Journal of Speculative Philosophy* (2) 1988: 241-266.

Darwin's psychological theorizing: triangulating on habit. *Studies in History and Philosophy of Science* (19) 1988: 215-241.

Subliminal advertising: an open question. In *Contemporary Issues in Business Ethics*, J. DesJardins and J. McCall (eds.). Belmont, Calif.: Wadsworth, 1985 (pp. 187 - 192).

PRESENTATIONS

Design Tool for Assessing Manufacturing and Environmental Impact, Daniel Rochowiak, Sheri Messimer, Dawn Russell, Dawn Utley (all ISE, UAH); Proceedings of Second International Conference on Engineering Design and Automation, Maui HI, August 1998.

"Distance learning across the middle school curriculum", Christy Carroll (Education, UAH) and Dan Rochowiak for Faculty Consortium on Distance Learning, Auburn, AL. (February 1997)

"Cooperating agents: scheduling, dispatch, and routing." With L. Interrante (ISE, UAH) for 1996 NSF-DDM Grantees Conference, Albuquerque, NM. January 1996.

"Cooperative research Opportunity Project - A look at technology and distance learning in the middle school curriculum across the state of Alabama" Christy Carroll (Education, UAH) and Dan Rochowiak for 1996 Alabama Educational Technology Conference. Birmingham, AL. November 1996

"Education and multimedia productions." With C. Carroll (Education, UAH) for 1995 Alabama Educational Technology Conference. Birmingham, AL. November 1995.

"Internet communications," Huntsville CALS. October 1995.

"The World Wide Web," Retired Officers Club (Redstone). October 1995.

"Network information technologies." With C. Carroll (Education, UAH) for Regional Financial Aid Officers. Huntsville, AL. September 1995.

"Multimedia and computer assisted instruction." With C. Carroll (Education, UAH) for NASA Space Science and Engineering Teachers. Joe Wheeler, AL. August 1995.

"The evolution of silicon life." For Aliens, apes, and artificial intelligence, Symposium at the 1993 Southern Humanities Council Conference. February 1993 (Huntsville).

"Reasoning, symbols, and the future of philosophy." Presidential Address. Alabama Philosophical Society. October 1991 (Birmingham).

"Cognition and machines." Presented at TABES'91. May 1991 (Huntsville).

"Maintenance outage scheduling assistant" (with M. Brown and R. Driggans, TVA). Presented at EPRI Plant Maintenance Technology Conference. November 1989 (Houston).

"The technologist and the philosopher." Presented at the Alabama Philosophical Society. November 1989 (Auburn).

"Document driven knowledge acquisition for expert systems in aquaculture" with D. Ford (MIS, UAH) and G. Akin (TVA). Presented at Artificial Intelligence in Natural and Agricultural Resource Management Workshop in conjunction with IJCAI'89 (Detroit).

"It just disappeared." Invited commentary on N. Malcolm's 'Ceasing to exist.' Presented at the Alabama Philosophical Society. November 1988 (Mobile).

"The logic of discovery reconsidered." Presented at the Alabama Philosophical Society. November 1987 (Montevallo, Alabama).

"Looking for biology: field and laboratory methods in the study of animal activity." Presented at the conference for the History, Philosophy and Social Study of Biology - 87 (Blacksburgh, Virginia). June 1987.

"Expertise and reasoning with possibility: an exploration of modal logic and expert systems." Presented at the Second Conference on Artificial Intelligence for Space Applications (Huntsville, Alabama). Included in Proceedings. November 1986.

"Autonomy and reduction: a domain oriented interpretation." Presented at the Alabama Philosophical Society (Birmingham, Alabama). October 1986.

"Language and understanding: a common ground for philosophy and artificial intelligence." Presented at Artificial Intelligence - From Outer Space. . . Down to Earth (Huntsville, Alabama). Included in Proceedings. October 1985.

"Contra informavores: the relations between the cognitive and neural sciences." Presented at the summer conference for the History, Philosophy and Social Study of Biology - 85 (Notre Dame, Indiana) June 1985.

"The habit, instinct, structure, heredity circle: Darwin to Watson." Presented at the summer conference for the History and Philosophy of Biology (Denison University, Ohio). July 1983.

"Theories of scientific rationality: from dogma to anarchy." Presented at St. Joseph University (Philadelphia, PA). October 1982.

"To attack the citadel: Darwin and the philosophy of mind." Presented at the American Catholic Philosophical Association. (New England). October 1982.

"The responsibilities of engineers." Presented to the American Society of Civil Engineers (Merrimack Chapter). November 1980.

"A Janusian account of evolutionary psychology and behaviorism." Presented at the University of New Hampshire. November 1980.

CONTRACTS AND GRANTS

Wide-bandwidth networks for distributed HWIL simulation and advanced information engineering 2002-2006 SMDC Co-PI (Sara Graves PI)

Internet2/EPSCoR 2001-2003 NSF/EPSCOR..Co-PI (Sara Graves PI)

Testbed for mutltinetwork infrastructure for research. March 1998 to February 2000. NSF. Co-principal investigator (S. Graves, PI with T. Newman and S. Redman Co-I).

Design assistant for composite materials. September 1997 to August 2000. MICOM. Principal Investigator (S. Messimer, Co-PI).

Prototype hypervelocity missile interactive multimedia design database. June 1997 to May 1998. AMCOM. Co-principal investigator (B. Schroer, PI).

Alabama aerospace information server. ACASI-ADECA. May 1, 1995 to September 30, 1995. Principal Investigator.

Evaluation of Tri-state educational initiative. April 1995 to December 1995. SERVE/NASA. Principal Investigator.

Design assistant for composite materials. June 1992 to May 1995. MICOM. (S. Messimer, PI). Co-principal investigator.

Intelligent dynamic control of automated guided vehicles. NSF. September 1992 to February 1995. (L. Interrante, PI) Co-principal investigator.

Alabama information server. ADECA. June 1, 1994 to September 30, 1994. Principal investigator.

Knowledge-based system for solid rocket motor design. MSFC-NASA. March 1993 to February 1994. (L. Interrante and D. Rochowiak, Co-PIs). Co-principal investigator.

Identifying student model conceptual deficiencies. MICOM. July 1992 to December 1992. (L. Interrante, D. Rochowiak, and P. Israel, Co-PIs). Co-principal investigator.

Applications of artificial intelligence techniques for decision support software for scheduling maintenance on fossil fuel power generating plants. TVA. July 1989 to September 1990. Principal Investigator.

Applications of artificial intelligence techniques to the falling curtain urea granulation process. TVA-NFDC. June 1989 to September 1990. Principal Investigator.

A framework for cooperating intelligent systems. NASA-MSFC. July 1989 to January 1990. Principal Investigator.

Ada as an implementation language for knowledge-based systems. NASA-MSFC. June 1989 to December 1989. Principal Investigator.

ECLSS advanced automation requirements. NASA-MSFC. May, 1989 to October, 1989. Investigator.

Cooperating intelligent systems, FAST II. NASA-MSFC. September 1988 to August 1989. Principal Investigator.

Knowledge organization for machine systems, II. NSF. Summer, 1987. (D. Hays and S. Floyd, Principal Investigators.) Investigator / Instructor. Advisor for projects by Carolyn Ausborn (University of Alabama in Huntsville) on "A program for mapping words to concepts," Donna Dumás (Augusta College) on "Putting a television show together: A computer advisory system," William Philips (The University of the South) on "Metaphorical Analysis: A theory and a program," Blake Ragsdell (University of Louisville) on "Expert systems environment with extended explanations and hypermedia," and Lisa Wurzelbacher (Thomas Moore College) on "An interactive storyteller."

An expert system for aquaculture: development for field use. AUTRC - TVA. September 1987 through August 1988. (With D. Hays and D. Ford.) Co-Principal Investigator.

Knowledge organization for machine systems. NSF. Summer, 1987. (D. Hays and S. Floyd, Principal Investigators.) Investigator / Instructor. Directed projects by Brian Keely (University of South Alabama) on "Intelligence: A philosophical perspective," Mark McManis (University of West Florida) on "A model of human emotion and motivation on an adaptive machine," and Naomi Delora Burge (University of Southern Mississippi) on "An advisory system for experimental data analysis using inferential statistics in the behavioral sciences."

An expert system for aquaculture. AUTRC - TVA. September 1986 through August 1987. (With D. Hays and D. Ford) Co-Principal Investigator.

A domain oriented interpretation of recent research in the cognitive and neural sciences. UAH Research Mini-Grant. Summer, 1986.

The decline of Darwinism and the rise of professionalism: An historical and philosophical account of biology at the turn of the century. UAH Research Mini-Grant. Summer, 1985.

Research on the habit, instinct, structure, heredity circle. Research sponsored by a Merrimack College Faculty Development Grant. Summer, 1983.

Further research on the Janusian account of evolutionary psychology and behaviorism. Research sponsored by a Merrimack College Faculty Development Grant. Summer, 1980.

The young Darwin: metaphysics and morals. Research funded by the N.E.H. at the Darwin Archives (Cambridge). Directed by Dr. E. Manier. Summer, 1974.

State, family and abortion. Community discussion leader in a project funded by the I.E.H. Directed by Dr. E. Manier. Summer, 1973.