CURRICULUM VITAE

DANIEL LEON CHESTER

CONTENTS

PERSONAL DATA

Name: Daniel Leon Chester
Address: 1106 Janice Drive, Newark, DE 19713
Phone: 738-6763 (Home) 831-1955 (Work)
Birthdate: 26 February 1943
Citizenship: USA

EMPLOYMENT

Assistant Professor, Department of Computer Sciences, University of Texas at Austin 1973–1980

Assistant Professor, Department of Mathematics, University of Texas at Austin (joint appointment) 1973–1976

Visiting Scientist, IBM, T.J. Watson Research Center 1978–1979

Assistant Professor, Department of Computer and Information Sciences, University of Delaware 1980–1985

Associate Professor, Department of Computer and Information Sciences, University of Delaware 1985–2021

Visiting Scientist, Applied Science and Engineering Laboratory (ASEL), A.I. duPont Institute, 1995–1996

EDUCATION

Ph.D.	1973	University of California at Berkeley (Math)
M.A.	1968	University of California at Berkeley (Math)
B.A.	1966	University of California at Berkeley (Math)

AWARDS, HONORS

Completed Honors program in Math, University of California at Berkeley, 1966

(with Joseph B. Elad, Apperson H. Johnson, Laurence A. Kramer, Jeffrey C. Kirk, Irene H. Philips, Suzan M. Zickus, and Erwin M. Saniga) US Patent No. 5,195,172, "System and Method for Representing and Solving Numeric and Symbolic Problems," March 16, 1993, assigned to Quantum Development Corporation, Claymont, Delaware.

(with Joseph B. Elad, Apperson H. Johnson, Laurence A. Kramer, Jeffrey C. Kirk, Irene H. Philips, Suzan M. Zickus, Erwin M. Saniga and William M. Norman III) US Patent No. 5,428,712, "System and Method for Representing and Solving Numeric and Symbolic Problems," June 27, 1995, assigned to Quantum Development Corporation, Claymont, Delaware.

(with Joseph B. Elad, Apperson H. Johnson, David S. Cleaver, Keith S. Decker, Thomas A. Roper and Irene H. Philips) US Patent No. 7,092,928, "Intelligent Portal Engine", August 15, 2006, assigned to Quantum Leap Research, Inc., Claymont, Delaware.

(with Stephen L. Daniel, Richard J. Fickelscherer, Douglas H. Lenz) US Patent No. 7,451,003, "Method and System of Monitoring, Sensor Validation and Predictive Fault Analysis," November 11, 2008, assigned to FALCONEER Technologies LLC, Williamsville, New York.

(with Joseph B. Elad, Apperson H. Johnson, Rob T. Aulwes, David S. Cleaver, Keith S. Decker, David N. Paules and Thomas A. Pelaia) US Patent No. 7,512,558, "Automated Method and System for Facilitating Market Transactions," March 31, 2009, assigned to Quantum Leap Research, Inc., Claymont, Delaware.

Joseph B. Elad, Apperson H. Johnson, David S. Cleaver, Daniel L. Chester, Keith S. Decker, Thomas A. Roper, Irene H. Philips. US Patent No. 8,027,945, "Intelligent portal engine," September 27, 2011, assigned to Kalano Meui HI, LLC, Dover, Delaware.

CIS Community Impact Award, 2024

COMMITTEES

(at UT Austin)

Member, Instructor Recruitment Committee (Math) 1974
Member, Undergraduate Curriculum Committee (CS) 1974–1975
Member, Faculty Advisory Panel for Computer Applications Laboratory 1975–1976
Member, Library Committee (CS) 1975–1976
Member, Library Committee (Math) 1975–1976
Member, Student Awards Committee (Math) 1976–1977
Member, College of Natural Sciences Building Committee 1976–1978
Chairman, Housing and Space Committee (CS) 1976–1978
Member, Literature Selection Committee for the Technical Literature Center 1976–1978
Chairman, Library Committee 1979–1980
Member, Laboratory and Equipment Committee 1977–1978, 1979–1980

(at Delaware)

COPE Task Group Reviewing Office of Computer Based Instruction 1980–1981

Member, University Forum Committee 1982, 1981–1982

Graduate Coordinator, CIS Graduate Committee, 1981–1983, 2000–2002

Member, ad hoc College of Arts and Sciences committee for Cognitive Science Program proposal, 1982–1983

Member, ad hoc Department of Computer and Information Sciences Committee on Personal Computers, 1984–1985

Member, Department of Computer and Information Sciences Undergraduate Committee, 1984–1985, 1992–1993, 1994–1995

Coordinator, Department of Computer and Information Sciences Undergraduate Committee, 1985–1986, 1988–1992

Member, Cognitive Science Executive Committee, 1985–1994

Member, CIRCLe Executive Committee, 1985–1989

Member, Committee Evaluating Chairperson of the Department of Computer and Information Sciences, 1986

Coordinator, Department of Computer and Information Sciences Facilities Committee, 1988, 1992–1993

Advisor, Student Chapter of the Association for Computing Machinery, 1988–1993

Member, Curriculum Task Force for Health Policy, Health Economics and Information Sciences, University of Delaware/Jefferson Medical College Joint Program in Medical Studies, 1988–1992

Member, CREATE Executive Committee, 1989–1991

Member, CIS Graduate Committee, 1993–1994, 1996–2002

Member, CIS Recruiting Committee, 1993–1994

Coordinator, CIS Colloquium, 1993–1994

Representative, University Faculty Senate, 1993–1995

Chair, CIS Library Committee, 1996–2000

Department Contact for Operations Research Program, 1996–1997

Member, CIS Graduate Applications Committee, 2003–2009

Member, Committee on Instructional, Computing and Research Support Services, 2005-2013

Liaison with Delaware Technical & Community College Computer Information Systems Technology Department to create new Program Articulation agreements between DTCC and UD, 2007–2011

Undergraduate Transfer Credits, 2007–2020

Emergency Preparedness Liaison, 2008–2020

member, CIS Undergraduate Committee 2009–2020

Chair, Undergraduate Advising Committee 2018–2020

ex officio member, Graduate Admissions Committee

member, Middle States Professional Education Work Group 2009–2010

PROFESSIONAL ACTIVITIES

Co-Chairman (with Dr. S. G. Wayment, U. T. San Antonio), Judges for International Science and Engineering Fair in the Category of Mathematics and Computers, San Antonio, Texas, May 1979

Member, Program Committee for the Symposium on Specifications of Reliable Software (IEEE) 1978–1979

Member, Editorial board, *American Journal of Computational Linguistics*, 1982–1984

National Lecturer for the Association for Computing Machinery, 1982–1983

Member, Program Committee for Micro-Delcon (IEEE) '83 1982–1983

Registration Chairman, IEEE Workshop on Principles of Knowledge-Based Systems, Denver, Colorado, 1984

Treasurer and Exhibition Chairman, IEEE Second Conference on Artificial Intelligence Applications, Miami Beach, Florida, 1985

Member, Program Committee, 23rd Annual Meeting of the Association for Computational Linguistics, 1985

Consultant, Quantum Leap Innovations, Inc., 1985–2003

Acting Director, University of Delaware Cognitive Science Program, 1987

Director, University of Delaware Cognitive Science Program, 1988–1994

Member, Steering Committee of the University of Delaware Chapter of the American Association of University Professors, 1988–1992

Co-chair, local arrangements committee for the Association for Computational Linguistics conference, 1992

Consultant, Applied Science and Engineering Laboratory, University of Delaware and A.I. DuPont Institute, 1993–1998

Associate Chair, Department of Computer and Information Sciences, University of Delaware, 2004–2020

Member, National Science Foundation review panel for Small Business Innovation Research (SBIR) proposals, 2006

COURSES TAUGHT

(at UT Austin)

CS 325 Discrete Mathematics
CS 327 Programming Applications and Practice
CS 333 Automata Theory
CS 343 Artificial Intelligence
CS 370 Undergraduate Reading and Research
CS 381K Artificial Intelligence
CS 385 Elementary Automata Theory
CS 390 Conference Course
CS 395T Distinguished Speaker Program
M 603a Mathematics for Business and Economics
M 603b Mathematics for Business and Economics
M 808a Calculus I
M 808b Calculus II
M 608Eb Calculus with Analytic Geometry
M 311 Linear Algebra
M 427K Advanced Calculus for Applications
M 340L Matrices and Matrix Calculations

(at Delaware)

CIS 220 Data Structures
CISC 260 Machine Organization & Assembly Language
CISC 280 Programming Paradigms
CISC 303 Automata Theory
CISC 304 Logic and Programming
CIS 310 Logic and Programming
CISC 320 Introduction to Algorithms
CIS 440 Nonnumeric Applications
CIS 441 Heuristic Programming
CISC 471 Compiler Design
CIS 473 Computer Science Projects
CISC 467 Embedded Systems
CISC 467 Game Prototyping
CISC 489 AI in Games
CISC 601/401 Elements of the Theory of Computation
CISC 604/404 Logic in Computer Science
CISC 621 Algorithm Design and Analysis
CIS 625 Heuristic Programming
CIS 637/437 Database Systems
CIS 666 Special Problem
CISC 670/470 Programming Languages
CISC 681/481 Artificial Intelligence
CISC 685/485 Mechatronics
CIS 689 Expert Systems
CIS 689 Neural Networks
CISC 689 Genetic Algorithms and Genetic Programming
CISC 689/489 Computer Vision
CIS 809 Logic and Lambda Calculus
CIS 825 Expert Systems
CIS 866 Special Problem
CISC 869 Master's Thesis
CISC 881 Knowledge-Based Systems
CISC 884 Knowledge Representation
CIS 889 Knowledge Representation
CISC 889 Robotic Intelligence
CISC 889 Machine Learning
CISC 889 Automatic Programming
CISC 969 Doctoral Dissertation

STUDENTS

Summer Scholar

Chengzhou Wang, Simultaneous Action Game (poster), Summer 2018

Honors Thesis

Lorin Grubb, Natural language processing and automatic reasoning for a pre-constructed music composition system, May, 1992.

Masters

John Wilson Roach, Star Height Hacking, 1974 (UT at Austin).

Mark Harden Clark, Implementation of an Experimental Predicate Logic Interpreter on a Mini-computer, 1980 (UT at Austin).

Masood Shariff, A Simulation of Natural Deduction, 1982.

Hongkoo Tae, LIRIS: A Natural Language Interface for a Real-time Information System, August 1984.

Rachel Rasmussen, A User-Friendly Front-End for the CAPS Cognitive Modelling System, June 1985.

Ann Simon, The Human-Machine Interface for a Chemical Process Fault Consultant, June 1985.

John Lund, Multiple Cause Identification in Diagnostic Problem Solving, December 1985.

Shyam Chittajallu, Common Sense Reasoning for Dynamic Processes: A Case Study Using QP Theory and Envisionment, December 1986.

Joseph Brady, Knowledge Engineering Principles Learned While Building an Expert System for Industrial Credit Analysis, August 1986.

Ramanujam Kannan, Inductive Methodology for Analyzing Simulated Data and Writing Rules for an Expert System, December 1988.

Cathy Rookard, An ESKAPE Plan for an Expert Systems Programming Environment, May, 1989.

Prem Tirilok, An Object-Driven Approach to Concurrency Control on a Multiuser Database System, December 1992.

(with Pat Demasco) Andy Gallo, Color Image Cartooning for Augmentative and Alternative Communication Systems Through Small Palette Quantization, August, 1993.

Dan Gilliam, Neural Networks for Word Prediction in Augmentative Communication, August, 1993.

Douglas McKillip, An Evaluation of Software for Simulation of Manufacturing, June, 1994.

Bernd Finkbeiner, Verification of Fusion/FUS++ specifications using automated theorem proving, August, 1995.

(with Richard Mahoney) Andrew Moynahan, An Intelligent Single Switch Mouse Control Interface, January, 1997.

Yongqi Wang, Building Help Systems for People Who Cannot Read, January, 1997.

(with Rick Foulds) Matt Beitler, Language Organized Geometric Models and Behavior Control, January, 1998.

Marcus Hilka, Parsing Languages with Variable Word Order, May, 1999.

(with Dirk Heider) Preethi Natarajan, Statistical Analysis of Process Information for Vacuum-Assisted Resin Transfer Molding, August, 2003.

(with Christiana Honsberg) Mohit Mehta, Modifying PC1D to Model Spontaneous & Piezoelectric Polarization in III-V Nitride Solar Cells, Winter, 2008.

Ph.D.

Clive Dawson, The Role of Preprocessing in Problem Solving Systems, 1980 (UT at Austin).

Joseph Dreussi, Error Detection and Correction in Instruction Systems, 1982 (UT at Austin).

Kathy Cebulka, Solving Dynamic-Input Interpretation Problems Using the Hypothesize-Test-Revise Paradigm, August 1988.

Chuck Dierbach, Abstractional Concept Mapping: A Computational Model of Analogical Reasoning, August 1990.

Oscars Rieksts, Automatic Generation of Robot Plans with Loops and Conditionals, August 1992.

Marcelo Jenkins, Combining Object-Oriented and Logic Programming, August 1992.

(with Ali S. Khayrallah) Liang-Wen B. Chang, Modularized and Boolean Neural Networks For Image Processing, January, 1996.

(with Richard Foulds) Zunaid Kazi, Integrating Human-Computer Interaction with Planning for a Telerobotic System, May, 1997.

Chengjiang Mao, Learning for Semi-Deterministic Reasoning, May, 1999.

Jeremy Keffer, Constructing Strategies for Games with Simultaneous Movement, August 2015.

PUBLICATIONS

Ph.D. Dissertation

Formal logic and the representation of linguistic deep structure. University of California at Berkeley, 1973.

Refereed

A translator for formal proofs into English. *Proc. 4th Texas Conference on Computing Systems*, University of Texas, Austin, 1975.

The translation of formal proofs into English. *Artificial Intelligence*, Volume 7 No. 2 (1976), 261–278.

(with Robert F. Simmons) Inferences in Quantified Semantic Networks. *5th International Joint Conference on Artificial Intelligence*, MIT, Cambridge, Mass. (1977), 267–273.

(with Laurent Siklóssy) Data Bases that Talk Back. *Sixth Texas Conference on Computing Systems*, University of Texas, Austin, 1977.

(with R. T. Yeh) Software Development by Evaluation of System Design. *Proceedings of COMPSAC77, The IEEE Computer Society's First International Computer Software & Applications Conference* (1977), 431–441. Also in Ramamoorthy, C., and Yeh, R., eds., *Tutorial: Software Methodology*, October 1978, IEEE Catalog no. EHO 142-0, 209–215.

An approach to abstract specification based on traces. *Proceedings of COMPSAC79, The IEEE Computer Society's Third International Computer Software & Applications Conference*, Chicago, November 1979, 123–127.

A parsing algorithm that extends phrases. *American Journal of Computational Linguistics*, Vol. 6, No. 2, April–June 1980, 87–96.

HCPRVR: an interpreter for logic programs. *Proc. First Annual National Conf. on Artificial Intelligence*, The American Association for Artificial Intelligence, August 1980, 93–95.

Elements of Knowledge-Based Expert Systems. *Proceedings Micro-Delcon '82*, IEEE Computer Society Press, Silver Spring, Maryland, March 9, 1982, 42–48.

(with Robert F. Simmons) Relating sentences and semantic networks with procedural logic. *Communications of the ACM*, August 1982, 527–547.

(with D. Lamb and P. Dhurjati) Rule-based computer alarm analysis in chemical process plants, *Proceedings Seventh Annual Micro-Delcon '84*, IEEE Computer Society Press, Silver Spring, Maryland, March 6, 1984, 22–29.

(with D. Lamb and P. Dhurjati) An expert system approach to on-line alarm analysis in power and process plants. *1984 ASME International Computers in Engineering Conference*, Las Vegas, Nevada, August 12–16, 1984, 345–351.

Towards a natural language semantics formalized in terms of physical symbol systems. In Stephanie Williams, ed., *Humans and Machines*, Ablex Publishing Corporation, Norwood, New Jersey, 1985, 54–66.

(with D. Lamb, P. Dhurjati and J. Hale) An academic/industry project to develop an expert system for chemical process fault detection. Paper 70c presented at the American Institute of Chemical Engineers Annual Meeting, Chicago, IL., November, 1985.

(with R. Fickelscherer, P. Dhurjati and D. Lamb) Dynamic Simulation in the Construction of Expert Systems for Process Fault Diagnosis. 1986 Spring National Meeting and Petro Expo '86, American Institute of Chemical Engineers, New Orleans, April 6-10, 1986, Paper No. 51d.

(with D. Lamb and P. Dhurjati) FALCON – An expert system for process fault diagnosis, I. system development. *The 6th International Workshop on Expert Systems and Their Applications*, Agence de l'Informatique, Avignon, France, April 28–30, 1986.

(with D. Lamb and P. Dhurjati) Development of an Expert System for Fault Identification in a Commercial Scale Chemical Process. *The 6th International Workshop on Expert Systems and Their Applications*, Agence de l'Informatique, Avignon, France, April 28–30, 1986.

(with P. Dhurjati and D. Lamb) Experience in the Development of an Expert System for Fault Diagnosis in a Commercial Scale Chemical Process. *Proceedings of the First International Conference on Foundations of Computer-Aided Process Operations, Park City, Utah*, G. V. Reklaitis and H. D. Spriggs, eds., CACHE–Elsevier Science Publishers, New York, New York, July 5–10, 1987, 589–625.

(with R. Fickelscherer, P. Dhurjati and D. Lamb) The FALCON Project: An Application of an Expert System in Process Fault Diagnosis. American Institute of Chemical Engineers Spring National Meeting, Houston, Texas, April, 1987, Paper No. 82a.

(with K. Cebulka and S. Carberry) Solving Dynamic-Input Interpretation Problems Using the Hypothesize-Test-Revise Paradigm. *Proceedings of the Fourth Conference on AI Applications*, IEEE Computer Society Press, March, 1988, 365–370.

(with S. Tung, J. H. Schuenemeyer and D. Ulery) An Expert System for Statistical Consulting — Definition and Design. *American Statistical Association 1988 Proceedings of the Section on Statistical Education*, American Statistical Association, New Orleans, Louisiana, August 22–25, 1988.

(with J. H. Schuenemeyer, S. Tung and D. Ulery) An Expert System for Statistical Consulting — Demonstration. *American Statistical Association 1988 Proceedings of the Section on Statistical Education*, American Statistical Association, New Orleans, Louisiana, August 22–25, 1988.

(with D. J. Mooney, P. Dhurjati and D. Lamb) Design and Operation of the FALCON Interface. *Proceedings of the ISA/88 International Conference and Exhibit*, Instrument Society of America, Houston, Texas, October 16–21, 1988, 747–758.

(with Z. Lichtman) Rule-Splitting in Production Systems. In Ryszard Janicki and Waldemar W. Koczkodaj, eds., *Computing and Information*, North-Holland, Amsterdam, 1989, 411–415.

(with Z. Lichtman) A Family of Cuts for Production Systems. *IEEE International Workshop on Tools for Artificial Intelligence: Architectures, Languages, and Algorithms*, IEEE Computer Society Press, Fairfax, Virginia, October 23–25, 1989, 353–357.

Why Two Hidden Layers are Better than One. *International Joint Conference on Neural Networks*, Washington, D. C., January 15–19, 1990, Lawrence Erlbaum Associates, Publishers, I-265–268.

A Comparison of Some Neural Network Models of Classical Conditioning. *Proceedings 5th IEEE International Symposium on Intelligent Control 1990*, Philadelphia, Pennsylvania, September 5–7, 1990, IEEE Computer Society Press, Los Alamitos, California, Volume 2, 1163–1168.

(with Ruokang Li and Jon H. Olson) Dynamic Fault Detection and Diagnosis Using Neural Networks. *Proceedings 5th IEEE International Symposium on Intelligent Control 1990*, Philadelphia, Pennsylvania, September 5–7, 1990, IEEE Computer Society Press, Los Alamitos, California, Volume 2, 1169–1174.

(with Charles Dierbach) A Formal Basis For Analogical Reasoning. In: Allen, J. A., Fikes, R., and Sandewall, E. (eds.) *Principles of Knowledge Representation and Reasoning: Proceedings of the Second International Conference*, April, 1991. Morgan Kaufmann Publishers, Inc., San Mateo, CA, 1991.

(with Erwin M. Saniga, Apperson Johnson, and Larry Kramer) A High-Level Hybrid Program for Representing and Solving Constraint Satisfaction and Optimization Problems. *1993 Proceedings Northeast Decision Sciences Institute*, Philadelphia, Pennsylvania, March 31–April 2, 1993, 157-159.

(with Boris L. Chang) Modularized Neural Network for Signal Processing. In: Dagli, C. H., Burke, L. I., Fernandez, B. R., Ghosh, J. (eds.) *Intelligent Engineering Systems Through Artificial Neural Networks, Volume 3.* ASME Press, New York, 1993, 443–448.

(with Marcelo Jenkins) A Combined Object-Oriented and Logic Programming Tool for AI. *Proceeding 5th IEEE International Conference on Tools with AI*, Boston, 1993, 152–159.

(with Shoupu Chen, Zunaid Kazi, and Richard Foulds) Multi-Modal Direction of a Robot by Individuals with a Significant Disability. *Fourth International Conference on Rehabilitation Robotics*, Wilmington, Delaware, June 14–16, 1994, 55–64.

(with M.T. Beitler, R.A. Foulds, Z.H. Kazi, S. Chen,and M. Salganicoff) A Simulated Environment of a Multimodal User Interface for a Robot. *Proceedings of RESNA 1995*, Vancouver, Canada, June 9–14, 1995, 490–492.

(with Z. Kazi, M. Salganicoff, M. Beitler, S. Chen, and R. Foulds) Multimodal User Supervised Interface and Intelligent Control for a Rehabilitation Robot. *Proceedings of IJCAI-95 Workshop on Developing AI Applications for the Disabled*, Montreal, Canada. August 19, 1995, 46–58c.

(with Z. Kazi, M. Beitler, M. Salganicoff, S. Chen, and R. Foulds) An Intelligent Telerobotic Assistant for People with Disabilities. *Proceedings of SPIE's International Symposium on Intelligent Systems and Advanced Manufacturing: Telemanipulator and Telepresence Technologies II*, Philadelphia, PA, USA, October 22–26, 1995, 120–130.

(with M. Beitler, Z. Kazi, M. Salganicoff, R. Foulds, and S. Chen) Multimodal User Supervised Interface and Intelligent Control (MUSIIC). In I. Horswill and M. Walker, (program chairs), *Embodied Language and Action: Papers from the 1995 Fall Symposium*, The AAAI Press, Technical Report FS-95-05, 5–11.

(with S. Chen, Z. Kazi, M. Beitler, M. Salganicoff, and R. Foulds) Gesture-Speech Based HMI for a Rehabilitation Robot. *Proceedings of IEEE Southeastcon'96*, Tampa, Florida, April 11–14, 1996, 29–36.

(with Z. Kazi, M. Beitler, M. Salganicoff, S. Chen, and R. Foulds) Multimodally Controlled Intelligent Assistive Robot. *Proceedings of the 16th Annual RESNA Conference*, Salt Lake City, Utah, June 7–12, 1996, 348–350.

(with Z. Kazi, S. Chen, M. Beitler, and R. Foulds) Multimodal HCI for Robot Control: Towards an Intelligent Robotic Assistant for People with Disabilities. *Developing Assistive Technology for People with Disabilities: Papers from the 1996 Fall Symposium.* The AAAI Press, Technical Report FS-96-05, 1996, 46–52.

(with Charles Dierbach) Abstractional Concept Mapping: A Foundational Model for Analogical Reasoning. *Computational Intelligence Volume 13, Number 1,* February, 1997, 32–86.

(with Kazi, Z., Chen, S., Beitler, M., and Foulds, R.) Grasping at straws: An intelligent multimodal assistive robot. *1997 International Conference on Rehabilitation Robotics (ICORR97)*, Bath, UK, 1997, 87–90.

(with Chen, S., Kazi, Z., and Foulds, R.) Color and Three-Dimensional Vision-Based Assistive Telemanipulation. *Image and Vision Computing*, Volume 16, Number 4, April, 1998, 265–274.

(with Z. Kazi, S. Chen., M. Beitler, and R. Foulds) Speech and Gesture Mediated Intelligent Teleoperation. In V. Mittel, H. Yanco, J. Aronis, and R. Simpson (Eds.), *Assistive Technology and Artificial Intelligence: Applications in Robotics, User Interfaces and Natural Language Processing*, Lecture Notes in Artificial Intelligence 1458, Springer, 1998, 194–210.

(with R. Fickelscherer and D. Lenz) Intelligent Process Supervision via Automated Data Validation and Fault Analysis: Results of Actual CPI Applications. American Institute of Chemical Engineers Spring National Meeting, New Orleans, Louisiana, March 30–April 3, 2003, Paper No. 115d.

(with Sandra Carberry, Stephanie Elzer, Nancy Green, and Kathleen McCoy) Understanding Information Graphics: A Discourse-Level Problem. *Proceedings of the Fourth SIGDial Workshop on Discourse and Dialogue*, Association for Computational Linguistics, July 5–6, 2003, 1–12.

(with Sandra Carberry, Stephanie Elzer, Nancy Green, and Kathleen McCoy) Extending Document Summarization to Information Graphics. *Proceedings of the ACL Workshop on Text Summarization*, July 25–26, 2004.

(with Stephanie Elzer) Getting Computers to See Information Graphics so Users Do Not Have to. In M.-S. Hacid et al., eds., *Proceedings of the 15th International Symposium on Methodologies for Intelligent Systems*, Lecture Notes in Artificial Intelligence 3488, Springer-Verlag, 2005, 660–668.

(with Stephanie Elzer, Sandra Carberry, Ingrid Zukerman, Nancy Green, Seniz Demir) A Probablistic Framework for Recognizing Intention in Information Graphics. *Nineteenth International Joint Conference on Artificial Intelligence*, Edinburgh, Scotland, July 30 – August 5, 2005.

(with Stephanie Elzer, Sandra Carberry, Seniz Demir, Nancy Green, Ingrid Zukerman, Keith Trnka) Exploring and Exploiting the Limited Utility of Captions in Recognizing Intention in Information Graphics. *43rd Annual Meeting of the Association for Computational Linguistics*, Ann Arber, Michigan, June 25–30, 2005.

(with Stephanie Elzer, Edward Schwartz, Sandra Carberry, Seniz Demir, and Peng Wu) A Browser Extension for Providing Visually Impaired Users Access to the Content of Bar Charts on the Web. *Proceedings of 3rd International Conference on Web Information Systems (WEBIST)*, Barcelona, Spain, March 3–6, 2007.

Stephanie Elzer, Edward Schwartz, Sandra Carberry, Daniel Chester, Seniz Demir, and Peng Wu. Accessible Bar Charts for Visually Impaired Users. *Proceedings of Fourth Annual IASTED International Conference on Telehealth and Assistive Technologies*, 2008.

Peng Wu, Sandra Carberry, Daniel Chester and Stephanie Elzer. Decision Tree Induction for Identifying Trends in Line Graphs. *17th International Symposium, ISMIS 2008*, Toronto, Canada, May 20–23, 2008. (acceptance rate 40%.)

Stephanie Elzer, Edward Schwartz, Sandra Carberry, Daniel Chester, Seniz Demir, and Peng Wu. Bar Charts in Popular Media: Conveying their Message to Visually Impaired Users via Speech. Book chapter in *Advances in Intelligent Information Systems*, Zbigniew W. Ras and Li-Shang Tsay editors, Springer, 2009, 275–298.

Peng Wu, Sandra Carberry, Stephanie Elzer, Daniel Chester. Recognizing the intended message of line graphs. *Diagrammatic Representation and Inference, 6th International Conference, Diagrams 2010*, Lecture Notes In Computer Science, Volume 6170, Springer-Verlag, 2010, 220–234. Acceptance rate 34%.

Seniz Demir, David Oliver, Edward Schwartz, Stephanie Elzer, Sandra Carberry, Kathleen F. McCoy, Daniel Chester. *Interactive* SIGHT: textual access to simple bar charts. *New Review of Hypermedia and Multimedia*, Volume 16, Number 3, November 25, 2010.

Charles Greenbacker, Peng Wu, Sandra Carberry, Kathleen McCoy, Stephanie Elzer, David McDonald, Daniel Chester and Seniz Demir. Improving the Accessibility of Line Graphs in Multimodal Documents. *Second Workshop on Speech and Language Processing for Assistive Technologies (SLPAT)*, July 30, 2011, University of Edinburgh, Scotland.

Richard Burns, Sandra Carberry, Stephanie Elzer and Daniel Chester. Automatically Recognizing Intended Messages in Grouped Bar Charts. In *Proceedings of the Seventh International Conference on the Theory and Application of Diagrams (Diagrams 2012)*, Canterbury, UK, 2–6 July 2012, pp. 8–22. Acceptance rate 30%.

Sandra Carberry, Stephanie Elzer, Richard Burns, Peng Wu, Daniel Chester, and Seniz Demir. Information Graphics in Multimodal Documents. Chapter 15 in *Multimedia Information Extraction*, Mark Maybury, Editor, September 4, 2012, pp 235–252.

Sandra Carberry, Stephanie Elzer Schwartz, Kathleen Mccoy, Seniz Demir, Peng Wu, Charles Greenbacker, Daniel Chester, Edward Schwartz, David Oliver, Priscilla Moraes. Access to Multimodal Articles for Individuals with Sight Impairments. *ACM Transactions on Interactive Intelligent Systems (TiiS)*, Volume 2 Issue 4, December 2012, Article 21.

Richard J. Fickelscherer and Daniel Chester, *Optimal Automated Process Fault Analysis*. Wiley, 2013.

Richard J. Fickelscherer and Daniel L. Chester, *Diagnosing faults in engineering models: Method of minimal evidence techniques help identify invalid modeling assumption variables*, on line at www.plantengineering.com , 06/19/2013.
Also at Control Engineering: www.controleng.com July, 2013, P4–P5, P7–P8.

Richard J. Fickelscherer and Daniel L. Chester, Automated Quantitative Model-based Fault Diagnostic Protocol via Assumption State Differences, *Computers and Chemical Engineering*, Vol 90, July 12, 2016, 94–110.

Unrefereed

A Digital Alphanumeric Display. *Byte* (April 1979), 218, 220.

String Processing, Anyone? *PRINT-OUT*, Journal of the Central Texas Computer Association, April 1977, 2–6.

(with Jerry W. Baker and Raymond T. Yeh) Software Development by Step-wise Evaluation and Refinement. *Infotech State of the Art Report: Software Revolution*, 1978.

Using HCPRVR. Appendix A in Simmons, Robert F., *Computations from the English*, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1984, 249–271.

New Trends in Neural Networks. *Scientific Computing & Automation*, Gordon Publications, Inc., Morris Plains, New Jersey, Vol. 8 No. 6, May 1992, 43–52.

Technical Reports

The translation of formal proofs into English. Department of Computer Sciences Technical Report NL-26, University of Texas at Austin, June 1975.

(with Yeh, Bledsoe, Chandy, Chang, Lipovski, Misra, Siklossy and Simmons) Decision support systems: a preliminary study. Department of Computer Sciences Technical Report TR-74, University of Texas at Austin, September 1977.

(with Jerry W. Baker and Raymond T. Yeh) Software Development by Step-wise Evaluation and Refinement. Department of Computer Sciences Technical Report SDBEG-2, University of Texas at Austin, January 1978.

(with Robert F. Simmons) Inferences in Quantified Semantic Networks. Department of Computer Sciences Technical Report NL-31, University of Texas at Austin, 1977.

(with Laurent Siklóssy) Data Bases that Talk Back. Department of Computer Sciences Technical Report SDBEG-3, University of Texas at Austin, January 1978.

Protected updates without locking. Software Technology Project Technical Memo No. 3, IBM, T. J. Watson Research Center, Yorktown Heights, New York, March 1979.

Solutions to interface problems of an XPLS version of VTAM. Software Technology Project Technical Memo No. 9, IBM, T. J. Watson Research Center, Yorktown Heights, New York, May 1979.

Abstract specifications by means of traces. Software Technology Project Technical Memo No. 10, IBM, T. J. Watson Research Center, Yorktown Heights, New York, May 1979.

Implementing a chain. Software Technology Project Technical Memo No. 11, IBM, T. J. Watson Research Center, Yorktown Heights, New York, May 1979.

How to use "PROVER". Software Technology Project Technical Memo No. 12, IBM, T. J. Watson Research Center, Yorktown Heights, New York, May 1979.

An abstract data type extension for COBOL. Department of Computer Sciences Technical Report SDBEG-17, University of Texas at Austin, June, 1980.

An integrated methodology and tools for software development: final report. Department of Computer Sciences Technical Report SDBEG-20, University of Texas at Austin, August, 1980.

(with R. Weischedel) Design of a system that understands informal specifications. Department of Computer and Information Sciences, University of Delaware, Newark, Delaware, April 1983.

(with Z. Kazi, M. Salganicoff, M. Beitler, S. Chen, S., and R. Foulds) Direct manipulation of 3-D objects through multimodal control: Towards a robotic assistant for people with physical disabilities. ASEL Technical Report, ROB9509, Applied Science & Engineering Laboratories University of Delaware/A.I. duPont Institute, Wilmington, Delaware, August, 1995.

(with Chengjiang Mao) Transformation of non-deterministic problem solvers into semi-deterministic problem solvers. Technical Report, NLP-HCI-AI-96-01. Department of Computer and Information Sciences, University of Delaware, Newark, Delaware, February 1996.

(with Yusuf Akgul) Solving Puzzles Using Sentential and Diagrammatic Representations. Technical Report No. 98-04. Department of Computer and Information Sciences, University of Delaware, Newark, Delaware, November 1997.

Reviews

Book review: John Craig Comfort. *A Flexible Efficient Computer System to Answer Human Questions.* In *Artificial Intelligence* 7 (1976), 379–381.

Book review: Sacerdoti. *A Structure for Plans and Behavior.* Prepared for American Elsevier, 1977.

Book review: David Loveland. *Automated Theorem Proving.* In *American Journal of Computational Linguistics*, Vol. 6, No. 1, January–March 1980, 48.

Book review: Robert Kowalski. *Logic for Problem Solving.* In *American Journal of Computational Linguistics*, Vol. 7, No. 1, January–March 1981, 45.

Book review: Robert F. Simmons. *Computations from the English.* Prepared for John Wiley & Sons, Inc., February 1982.

Book review: Terry Winograd. *Language as a cognitive process; vol 1: syntax.* In *Computing Reviews*, November 1983, 472.

Paper review: Nau, Dana. The last player theorem. *Artificial Intelligence* 18, 1, January 1982, 53–65. In *Computing Reviews*, March 1984, 155.

Paper review: Roizen, Igor and Pearl, Judea. A minimax algorithm better than alpha-beta? Yes and no. *Artificial Intelligence* 21, 1/2, March 1983, 199–220. In *Computing Reviews*, April 1984, 202.

Book review: Eric Solomon. *Games Programming.* In *Computing Reviews*, Volume 26, Number 8, August 1985, 437.

Paper review: Dilger, Warner and Wormann, Wolfgang. The METANET: a means for the specification of semantic networks as abstract data types. *International Journal of Man-Machine Studies* 21, 6, December 1984, 463–492. In *Computing Reviews*, Volume 26, Number 11, November 1985, 625–626.

Book Review: Alan Bundy. *The Computer Modelling of Mathematical Reasoning.* In *Computing Reviews*, Volume 27, Number 7, July 1986, 336–337.

Paper review: Manna, Zohar and Waldinger, Richard. Special relations in automated deduction. *Journal of the Association for Computing Machinery* 33, 1, January 1986, 1–59. In *Computing Reviews*, Volume 27, Number 10, October 1986, 521.

Paper review: Adelson, Beth and Soloway, Elliot. The role of domain experience in software design. *IEEE Transactions on Software Engineering* SE-11, 11, November 1985, 1351-1360. In *Computing Reviews*, Volume 28, Number 2, February 1987, 97–98.

Paper review: Lins, R. D. On the efficiency of categorical combinators as a rewriting system. *Software Practice and Experience* 17, 8, August 1987, 547–559. In *Computing Reviews*, Volume 29, Number 7, July 1988, 378–379.

Book review. Schalkoff, Robert. *Artificial Intelligence: Theory and Implementation.* Prepared for Prentice Hall, May, 1988.

Paper review: Shvaytser, Haim. On the learning power of networks with a bounded fan-in layer. *Neural Network Review*, Volume 4, Number 1, 1990, 32.

Reply to review of my paper "Why two hidden layers are better than one" by Bill Horne. *Neural Network Review*, Volume 4, Number 1, 1990, 30–31.

Paper review: Debray, Saumya K. and Warren, David S. Towards banishing the cut from Prolog. *IEEE Trans. Softw. Eng.* volume 16, Number 3, March 1990, 335–349. In *Computing Reviews* April 1991.

Book review: Coughlin, James and Baran, Robert H. *Problems in Collective Computation.* Prepared for University of Delaware Press, October 1991.

Book review: Liebowitz, Jay. *Institutionalizing Expert Systems: a Handbook for Managers.* In *Computing Reviews* November, 1991.

Paper review: Hermann, M.; Kirchner, C.; and Kirchner, H. Implementations of term rewriting systems. *Comput. J.*, Volume 34, Number 1, February 1991, 20–33. In *Computing Reviews*, Volume 33, Number 2, February 1992, 122.

Paper review: Cialdea, Marta. Resolution for some first-order modal systems. *Theor. Comput. Sci.*, Volume 85, Number 2, August 12, 1991, 213–229. To appear in *Computing Reviews.*

Book review: Spencer-Smith, Richard. *Logic and Prolog.* In *Computing Reviews*, Volume 34, Number 3, March 1993, 140–141.

Book review: Lalement, René. *Computation as Logic.* In *Computing Reviews*, Volume 35, Number 10, October 1994, 515.

Paper review. Crouch, R.S.; and Pulman, S.G. Time and modality in a natural language interface to a planning system. *Artificial Intelligence*, Volume 63, Numbers 1–2, October 1993, 265–304. In *Computing Reviews*, Volume 35, Number 10, October 1994, 540.

Paper review. Widrow, Bernard; Rumelhart, David E.; and Lehr, Michael A. Neural networks: applications in industry, business and science. *Communications of the ACM*, Volume 37, Number 3, March 1994, 93–105. In *Computing Reviews*, Volume 35, Number 12, December 1994, 657.

Paper review. Frazier, Michael; and Pitt, Leonard. CLASSIC learning. *Computational Learning Theory,* Proceedings of the Seventh Annual ACM Conference, New Brunswick, New Jersey, July 12–15, 1994. In *Computing Reviews*, Volume 36, Number 5, May 1995, 268.

Book review. Hutchinson, Alan. *Algorithmic Learning.* In *Computing Reviews*, Volume 36, Number 7, July 1995, 350.

Paper review. Kapur, Shyam; and Bilardi, Gianfranco. Language learning without overgeneralization. *Theoretical Computer Science*, Volume 141, Number 1-2, April 1995, 151–162. In *Computing Reviews*, Volume 37, Number 1, January 1996, 79.

Paper review. Ney, Hermann. On the probabilistic interpretation of neural network classifiers and discriminative training criteria. *IEEE Trans. Pattern Anal. Mach. Intell.*, Volume 17, Number 2, February 1995, 107–119. In *Computing Reviews*, Volume 37, Number 9, September 1996, 494.

Paper review. Langley, Pat, and Simon, Herbert A. Applications of machine learning and rule induction. *Communications of the ACM*, Volume 38, Number 11, November 1995, 54–64. In *Computing Reviews*, Volume 38, Number 1, January 1997, 77.

Book review. Rogers, Joey. *Object-Oriented Neural Networks in C++.* In *Computing Reviews*, Volume 38, Number 4, April, 1997, 200.

Book review. Sanchis, Luis E. *Set Theory—an Operational Approach.* In *Computing Reviews*, Volume 38, Number 9, September, 1997, 426–427.

Book review. Klir, George J., St. Clair, Ute, and Yuan, Bo. *Fuzzy Set Theory: Foundations and Applications.* In *Computing Reviews*, Volume 38, Number 12, December, 1997, 615.

Paper review. Ross, Kenneth A.; Srivastava, Divesh; Stuckey, Peter J.; and Sudarshan, S. Foundations of aggregation constraints. *Theoretical Computer Science*, Volume 193, Number 1/2, February 28, 1998, 149–179. In *Computing Reviews*, Volume 39, Number 8, August 1998, 423.

Paper review. Amadioi, Roberto M.; Castellani, Haria; and Sangiorgi, Davide. On bisimulations for the asynchronous pi-calculus. *Theoretical Computer Science*, Volume 195, Number 2, March 30, 1998, 291–324. In *Computing Reviews*, Volume 39, Number 11, November 1998, 576.

Paper review. Blum, Avrim L.; and Langley, Pat. Selection of relevant features and examples in machine learning. *Artificial Intelligence*, Volume 97, Numbers 1-2, December, 1997, 245–271. In *Computing Reviews*, Volume 40, Number 1, January 1999, 77.

Paper review. Nieuwenhauis, Robert. Decidability and complexity analysis by basic paramodulation. *Information and Computation*, Volume 147, Number 1, November 25, 1998, 1–21. In *Computing Reviews*, Volume 40, Number 5, May 1999, 259.

Paper review. Schmidt-Schauss, Manfred. Decidability of behavioral equivalence in Unary PCF. *Theoretical Computer Science*, Volume 216, Numbers 1–2, March 12, 1999, 363-373. In *Computing Reviews*, Volume 40, Number 7, July 1999, 353.

Book review. Amadio, Roberto M., and Curien, Pierre-Louis. *Domains and lamda-calculi.* In *Computing Reviews*, Volume 40, Number 10, October 1999, 460.

Paper review. Cox, Michael T., and Ram, Ashwin. Introspective multistrategy learning: on the construction of learning strategies. *Artificial Intelligence*, Volume 112, Numbers 1–2, August 1999, 1–55. In *Computing Reviews*, Volume 40, Number 12, December 1999, 580–581.

Paper review. Vilhelm, Christian; Ravaux, Pierre; Calvelo, Daniel; Jaborska, Alexandre; Chambrin, Marie-Christine; and Boniface, Michel. Think!: a unified numerical-symbolic knowledge representation scheme and reasoning system. *Artificial Intelligence*, Volume 116, Numbers 1–2, January 2000, 67–85. In *Computing Reviews*, Volume 41, Number 5, May 2000, 253–254.

Paper review. Diamantidis, N. A.; Karlis, D., and Giakoumakis, E. A. Unsupervised stratification of cross-validation for accuracy estimation. *Artificial Intelligence*, Volume 116, Numbers 1–2, January 2000. In *Computing Reviews*, Volume 41, Number 5, May 2000, 254.

Book review. Epstein, Richard. *Predicate logic: the semantic foundations of logic.* In *Computing Reviews*, Volume 41, Number 11, November 2000, 391–392.

Book review. Mints, Grigori. *A short introduction to intuitionistic logic.* In *Computing Reviews*, Volume 42, Number 7, July 2001, 208.

Book review. Piegat, Andzej and Kacprzyk, Janusz. *Fuzzy modeling and control.* In *Computing Reviews*, Volume 43, Number 1, January 2002, 11–12.

Paper review. Jain, Sanjay and Sharma, Arun. On a generalized notion of mistake bounds. *Information and Computation*, Volume 166, Number 2, May 2001, 156–166. In *Computing Reviews*, Volume 43, Number 1, January 2002, 24–25.

Paper review. Bréhélin, Laurent; Gascuel, Oliver, and Caraux, Giles. Hidden Markov models with patterns to learn Boolean vector sequences and application to the built-in self-test for integrated circuits. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Volume 23, Number 9, September 2001, 997–1008. In *Computing Reviews*, Volume 43, Number 11, November 2002, 399.

Book review. Schulte, Christian. *Programming constraint services: high level programming of standard and new constraint services.* In *Computing Reviews*, Volume 44, Number 2, February 2003, 79–80.

Book review. Robinson, J., and Voronkov, Andrei (ed.). *Handbook of automated reasoning: volume 1.* In *Computing Reviews*, Volume 44, Number 7, July 2003, 378–379.

Paper review. Voicu, H. Hierarchical cognitive maps. *Neural Networks*, Volume 16, Numbers 5–6, 2003, 569–576. In *Computing Reviews*, Volume 45, Number 2, February 2004.

Book review. Herrera, F., Cordon, O., Magdalena, L., and Casillas, J. (ed.). *Accuracy improvements in linguistic fuzzy modeling.* In *Computing Reviews*, Volume 45, Number 4, April 2004.

Paper review. Schramm, M., Fronhöfer, B. Probabilistic aspects of score systems. *International Journal of Uncertainty, Fuzziness and Knowledge-based Systems*, Volume 11 (Supp.), 2003, 51–73. In *Computing Reviews*, Volume 45, Number 12, December 2004.

Paper review. Fichtner, M., Großmann, A., Thielscher, M. Intelligent execution monitoring in dynamic environments. *Fundamenta Informaticae*, Volume 57, Numbers 2–4, 2003, 371–392. In *Computing Reviews*, Volume 46, Number 1, January 2005.

Paper review. Dinerstein J., Egbert P. Fast multi-level adaptation for interactive autonomous characters. *ACM Transactions on Graphics*, Volume 24, Number 2, 2005, 262–288. In *Computing Reviews*, Volume 47, Number 1, January 2006.

Paper review. Balakrishnan, N., Hariharakrishnan, K., Schonfeld, D. A new image representation algorithm inspired by image submidality models, redundancy reduction, and learning in biological vision. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Volume 27, Number 9, 2005, 1367–1378. In *Computing Reviews*, Volume 47, Number 2, February 2006.

Book review. Mitkov, R. (ed.). *The Oxford handbook of computational linguistics.* In *Computing Reviews*, Volume 47, Number 3, March 2006.

Book review. Havil, J. *Nonplussed!: mathematical proof of implausible ideas.* In *Computing Reviews*, September 3, 2008.

Book review. Ullrich C. *Pedagogically founded courseware generation for Web-based learning: an HTN-planning-based approach implemented in PAIGOS.* In *Computing Reviews*, February 20, 2009.

Paper review. Raafat H., Tolba A., Shaddad E. Committee machines for facial-gender recognition. *International Journal of Hybrid Intelligent Systems*, Volume 6, Number 1, 2009, 41–51. In *Computing Reviews*, October 20, 2009.

Book review. Van Den Broek G., Cavallo F., Wehrmann C. *AALIANCE ambient assisted living roadmap.* Online at *Computing Reviews*, http://www.reviews.com, 8/5/2010.

Paper review. Kakade S., Kalai A., Ligett K. Playing games with approximation algorithms. *SIAM Journal on Computing*, Volume 39, Number 3, 2009, 1088–1106. In *Computing Reviews*, June 16, 2010.

Paper review. Cimiano P., Rudolph S., Hartfiel H. Computing intensional answers to questions–an inductive logic programming approach. *Data & Knowledge Engineering*, Volume 69, Number 3, 2010, 261–278. In *Computing Reviews*, September 29, 2010.

Book review. van den Bosch A., Bouma G. *Interactive multi-modal question-answering.* Springer, 2011. In *Computing Reviews*, online at http://www.computingreviews.com on August 18, 2011.

Paper review. Karsmakers P., Pelckmans K., Brabanter K., Hamme H., Suykens J. Sparce conjugate directions pursuit with application to fixed-size kernel models. *Machine Learning*, 85(1–2): 109–148, 2011. In *Computing Reviews*, online at http://www.computingreviews.com on February 6, 2012.

Paper review. Dandurand F., Shultz T., Rey A. Including coginitive biases and distance-based rewards in a connectionist model of complex problem solving. *Neural Networks*, 2541–56, 2012. In *Computing Reviews*, online at http://www.computingreviews.com on March 1, 2012.

Book review. Zhang C., Ma Y. *Ensemple machine learning: methods and applications*. Springer, 2012. In *Computing Reviews*, online at http://www.computingreviews.com on July 10, 2012.

Book chapter. Dzieńkowski B., Markowska-Kaczmar U. Agent cooperation within adversarial teams in dynamic environment — key issues and development trends. In *Transactions on Computational Collective Intelligence VI* Springer 2012. Review in *Computing Reviews*, online at http://www.computingreviews.com on November 20, 2012.

Book review. Lee S., Yoon K., Lee J., *Frontiers of intelligent autonomous systems*. Springer, 2013. In *Computing Reviews*, on line at http://www.computingreviews.com on May 1‘6, 2013.

ORAL PRESENTATIONS

Outside the University

The following oral presentations were made without preparation of a paper:

"Phrase Extension in Logic Program Parsers of Natural Language." Logic Programming Workshop, Syracuse University, April 8–9, 1981.

"Answer Generators to Improve Theorem Proving Efficiency." Logic Programming Workshop, Syracuse University, April 8–9, 1981.

"An Introduction to Prolog as a Specification Language." Part of a presentation to a U.S. Army BMD team organized by Dr. Raymond Yeh, University of Maryland, College Park. Preliminary to a research proposal involving eight investigators. April 14, 1981.

"Natural Language Processing." Twelfth Annual Virginia Computer Users Conference, Virginia Polytechnic Institute and State University, April 16–17, 1982.

"Knowledge-Based Expert Systems." Presented at the following places:

Rochester ACM Chapter, October 25, 1982.
Niagara Frontier ACM Chapter, October 26, 1982.
Cuyahoga Valley Ohio ACM Chapter, November 8, 1982.
Ohio State University, November 10, 1982.
Wright State University, November 11, 1982.
Eastern Idaho ACM Chapter, January 6, 1983.
Utah ACM Chapter, January 11, 1983.
Phoenix ACM Chapter, January 14, 1983.
Virginia Polytechnic Institute and State University, January 26, 1983.
Willamette Valley ACM Chapter, February 2, 1983.
University of Portland, February 4, 1983.
University of Wisconsin at Oshkosh, February 8, 1983.
Michigan Technological University, February 9, 1983.
University of Wisconsin-La Crosse, February 10, 1983.
Towson State University, February 23, 1983.
Corpus Christi State University, March 22, 1983.
Oklahoma City ACM Chapter, March 25, 1983.
Memphis State University, April 26, 1983.
Memphis ACM Chapter, April 26, 1983.
Westminster College, April 28, 1983.

"Natural Language Understanding." Presented at the following places:

Utica College, October 28, 1982.
Hiram College, November 8, 1982.
Cleveland Ohio ACM Chapter, November 9, 1982.
Central Ohio ACM Chapter, November 10, 1982.
De Pauw University, November 11, 1982.
Old Dominion University, January 24, 1983.
Portland State University, February 3, 1983.
Lake Forrest College, February 7, 1983.
Sabine-Neches ACM Chapter, March 21, 1983.
Lamar University, March 21, 1983.
New Mexico Institute of Mining and Technology, March 23, 1983.
University of Oklahoma, March 24, 1983.

Oklahoma State University, March 24, 1983.
Southern Illinois University, April 27, 1983.

"Logic Programming." Presented at the following places:

Oregon State University, February 2, 1983.
Washington D. C. ACM Chapter, July 19, 1984.

"Towards a natural language semantics formalized in terms of physical symbol systems." Presented in seminars of the following computer science departments:

University of Rochester, October 25, 1982.
State University of New York at Buffalo, October 27, 1982.
Virginia Polytechnic Institute and State University, January 26, 1983.
U.S. Navy Center for Applied Research in Artificial Intelligence, Naval Research Laboratory, Washington, DC, May 23, 1983.

"Whats Wrong Now? — Finding Faults in Process Units with Expert Systems". National Petroleum Refiners Association, October 29, 1984.

"Knowledge-Based Approaches to Diagnosing Faults in Dynamic Processes". Presented at the following places:

University of Virginia, January 20, 1986.
DuPont Jackson Laboratory, January 23, 1986.

"The FALCON Project". 1988 ASME International Computers in Engineering Conference, San Francisco, August 2, 1988.

"The FALCON Project in Retrospect". Scientific Computing and Automation Conference, Philadelphia, October 25, 1988.

(with John Roach) "Neural Networks: Learning Systems That Process Signals". Scientific Computering and Automation Conference, Philadelphia, September 18, 1990.

"Neural Networks — A 50 Year Summary." Delaware Valley Artificial Intelligence Association, St. Joseph's University, Philadelphia, November 14, 1990.

"The Generalization Capabilities of Piecewise Linear Networks." Workshop on Theoretical Aspects of Neural Networks, DIMACS, Rutgers University, New Brunswick, New Jersey, May 23, 1991.

"Future Trends in Neural Networks." Scientific Computering and Automation Conference, Philadelphia, September 26, 1991.

"Adaptable Behavior as an Evolutionary Response to Nonstationary Environments." NIPS (Neural Information Processing Systems) Workshop on Recurrent Networks: Theory and Applications, Vail Colorado, December 6–7, 1991.

"Automatically Recognizing Intended Messages in Grouped Bar Charts." Seventh International Conference on the Theory and Application of Diagrams (Diagrams 2012), Canterbury, UK, 2–6 July, 2012.

"Game Design in the Computer Science Department at UD." 36th Annual Southwest Popular/American Culture Association Conference, Albuquerque, New Mexico, February 11–14, 2015.

Inside the University

The following oral presentations were made without preparation of a paper:

"Theorem Proving." Graduate Seminar, Department of Computer and Information Sciences, University of Delaware, December 10, 1980.

"Artificial Intelligence." Thursday Noon Seminar, Sigma Xi, University of Delaware Chapter, February 12, 1981.

"Can Machines Think?" Honors Humanities Semester, Course AS 360/80, Spring 1981, Creativity and the Bounds of Thought and Expression, University of Delaware, March 10, 1981.

"Natural Language Processing in Prolog." Artificial Intelligence Seminar, Department of Computer and Information Sciences, University of Delaware, October 22, 1981.

"WARPLAN Approach to Problem Solving." Artificial Intelligence Seminar, Department of Computer and Information Sciences, University of Delaware, November 12, 1981.

"Transformations to Logic Programs." Program Transformations Seminar, Department of Computer and Information Sciences, University of Delaware, November 24, 1981.

"A Self-Improving Teaching Program." Dr. Khalil's Computer Aided Instruction group, Department of Computer and Information Sciences, University of Delaware, December 2, 1981.

"An Approach to Robot Problem Solving in HCPRVR." Artificial Intelligence Seminar, Department of Computer and Information Sciences, University of Delaware, March 25, 1982.

"Knowledge-based Expert Systems." Artificial Intelligence Seminar, Department of Computer and Information Sciences, University of Delaware, October 21, 1982.

"Towards a Natural Language Semantics Formalized in Terms of Physical Symbol Systems." Artificial Intelligence Seminar, Department of Computer and Information Sciences, University of Delaware, December 2, 1982.

"Foundations for a Mathematical Theory of Computation, Based on Lectures by Dana Scott." Logic Seminar, Department of Computer and Information Sciences, University of Delaware, August 12, 1983.

"Expert System Approach to Real-time Fault Analysis of Chemical Processes." Scientific/Engineering Workstation Seminar, Department of Computer and Information Sciences and Department of Electrical Engineering, University of Delaware, February 28, 1984.

"Logic Programming." Logic Programming Seminar, Department of Computer and Information Sciences, University of Delaware, May 29, 1984.

"Understanding Understanding — The Road from Language to Knowledge Representation." Cognitive Science Noon Seminar, University of Delaware, March 26, 1986.

"Contemporary Theorem Provers." Artificial Intelligence Seminar, Department of Computer and Information Sciences, University of Delaware, October 22, 1987.

"Expert System Technology." Agricultural Engineering Seminar AGE 365–10, conducted by P. Krishnan, University of Delaware, February 29, 1988.

"Understanding Understanding — The Road from Language to Knowledge Representation." Artificial Intelligence Seminar, Department of Computer and Information Sciences, University of Delaware, March 14, 1988.

"Neural Networks — A 50 Year Summary." Artificial Intelligence Seminar, Department of Computer and Information Sciences, University of Delaware, October 25, 1989. Also at the Neural Networks Seminiar, October 25, 1989.

"The Perceptron Controversy." Neural Networks Seminar, Cognitive Science Program, University of Delaware, November 6, 1989.

"Modelling Vision Systems." Neural Networks Seminar, Cognitive Science Program, University of Delaware, November 21, 1989.

"The ART-ful Networks of Steve Grossberg." Neural Networks Seminar, Cognitive Science Program, University of Delaware, December 5, 1989.

"Why Two Hidden Layers are Better than One." Artificial Intelligence Seminar, Department of Computer and Information Sciences, University of Delaware, February 14, 1990. (Expanded version of conference talk.)

"Neural Network Models of Classical Conditioning." Neural Network Seminar, Cognitive Science Program, University of Delaware, September 17, 1990.

"Computer Models of Associative Memory." Neural Network Seminar, Cognitive Science Program, University of Delaware, October 1, 1990.

"Computer Models of Associative Memory + Neural Network Drives Van." Artificial Intelligence Seminar, Department of Computer and Information Sciences, University of Delaware, October 24, 1990.

"Speculations on the Evolution of Intelligence," Special Interest Group in Artificial Intelligence, Department of Computer and Information Sciences, University of Delaware, April 14, 1993.

"Artificial Neural Networks as a Data Modeling Method," Special Interest Group in Artificial Intelligence, Department of Computer and Information Sciences, University of Delaware, October 27, 1993.

"How Computers Play Chess," Special Interest Group in Artificial Intelligence, Department of Computer and Information Sciences, University of Delaware, April 25, 1994. Also given to Chess Club, Fraim Senior Center, Wilmington, Delaware, May 23, 1994.

"Strategizing in Games Where Players Move Simultaneously." International Games Day at Morris Library, University of Delaware, November 10, 2018.

RESEARCH SUPPORT

(with W. W. Bledsoe, M. Chandy, P. Chang, J. Lipovski, J. Misra, R. F. Simmons, L. Siklóssy and R. T. Yeh) Novel Architecture and Design Methodology for Data Base Systems—A Preliminary Study. ARPA Grant N00039-77-C-0254. Summer 1977. $49,112.

(Co-Principal Investigator with R. T. Yeh and M. K. Chandy) Software Engineering Design Methodology and Tools. Air Force Grant AFOSR-77-3409. 1977–1978 Continued as An Integrated Methodology and Tools for Software Development. 1978–1980. $223,745.

(with W. W. Bledsoe *et al*) Interactive Theorem Proving. NSF Grant 772-0701. 1977–1980. $232,146.

(Co-Principal Investigator with R. T. Yeh) Research Initiation and Support — Integrated Laboratory and Course Development for Computer Application in Science. NSF Grant SER76-18243. 1976–1980. $242,200.

(with R. Weischedel) Prerequisites to Deriving Formal Specifications from Natural Language Requirements. Air Force Grant AFOSR-80-0190. 1980–1983. $78,973.

(Co-Principal Investigator with D. Lamb) Expert System for Exception Analysis. Grant from E. I. duPont De Nemours & Co. and The Foxboro Company. 1983–1984. $180,000.

(Co-Principal Investigator with D. Lamb) Expert System for Chemical Fault Diagnosis. Grant from E. I. duPont De Nemours & Co. and The Foxboro Company, with matching money from the Delaware State/Industry High-Tech Research Program. 1985. $262,000.

(Co-Principal Investigator with D. Lamb) Application of Artificial Intelligence to Fault Diagnosis in Industrial Processes. Grant from E. I. duPont De Nemours & Co. and The Foxboro Company, with matching money from the Delaware State/Industry High-Tech Research Program. 1986. $262,000.

(Co-Principal Investigator with D. Lamb) Research Partnership Funding of Expert Systems. Grant from E. I. duPont De Nemours & Co. 1987. $31,265.

(Co-Principal Investigator with S. Carberry and K. McCoy) Computer Research Equipment (Computer Science). NSF Grant No. CCR-8612706. 1987. $115,896.

Robotic Control Program for Repetitive, Variable Tasks. Grant from the Electric Power Partners program. 1991. $18,800.

(Faculty Participant) Parallel and Distributed Computing: Systems and Application Development Infrastructure. **NSF** CISE Research Infrastructure Award, 5 years starting September 1, 1997, $633,513, with matching funds of $273,400 from U. of Delaware, PI: Lori Pollock, Co-PIs: Sandra Carberry, Guang Gao, Errol Lloyd.

(with Adarsh Sethi) Arts and Science Research Award, $2000, February 18, 1998.

Game study group award $150 2012.