

John W. Sheppard, PhD, FIEEE

CONTACT INFORMATION

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Gianforte School of Computing
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RESEARCH INTERESTS

Machine Learning (Bayesian, Reinforcement, Deep), Evolutionary and Swarm-Based Algorithms, Probabilistic Graphical Models (CTBNs, Factor Graphs), Decision Support (Diagnosis, Prognosis), System Design, Test, and Evaluation, Probabilistic Risk Assessment

EDUCATION

Johns Hopkins University **Baltimore, Maryland USA**

Ph.D., Computer Science, May 1997

- Dissertation: “Multiagent Reinforcement Learning in Markov Games”
- Advisor: Prof. Steven Salzberg
- Committee: Prof. Steven Salzberg, Prof. Simon Kasif, Dr. Fernando Pineda

M.S., Computer Science, May 1990

- Project: “Learning Diagnostic Information Using a Matrix-Based Approach to Knowledge Representation.”
- Advisor: Dr. David Zaret

Lutheran Theological Seminary

Gettysburg, Pennsylvania USA

Graduate work toward M.Div., 1983–1985

Southern Methodist University

Dallas, Texas USA

B.S. *Magna Cum Laude*, Computer Science, May, 1983

PROFESSIONAL APPOINTMENTS

Montana State University, Gianforte School of Computing **Bozeman, Montana USA**

Norm Asbjornson College of Engineering Distinguished Professor *May 2015 – present*
Professor (with tenure) & RightNow Technologies Fellow *August 2012 – May 2015*
Associate Professor & RightNow Technologies Fellow *August 2011 – August 2012*
RightNow Technologies Distinguished Professor & Associate Professor *August 2008 – August 2011*

Conducting research in machine learning and systems theory. Responsible for teaching departmental undergraduate and graduate courses, including courses in artificial intelligence, as well as advising graduate students. Focus on growing graduate research and PhD program in Computer Science. Director of the Numerical Intelligent Systems Laboratory. PhD coordinator for the Gianforte School of Computing. Lead designer in computer science for a new MS in data science.

Affiliated Faculty Member

- Center for Science, Technology, Ethics, and Society
- Energy Research Institute
- Institute on Ecosystems
- Optical Technology Center

Johns Hopkins University, Engineering for Professionals

Baltimore, Maryland USA

Lecturer in Computer Science

September 1994 – present

Instructor in part-time masters program in several programs, including artificial Intelligence, computer science, bioinformatics, information systems, cyber-security, and data science. Teaches courses in algorithms, artificial intelligence, machine learning, and evolutionary computation. Developed on-line versions of graduate algorithms, introductory machine learning, advanced machine learning, and

evolutionary computation courses. Credited with establishing formal independent study/research program for part time graduate students.

Johns Hopkins University, Dept. of Computer Science **Baltimore, Maryland USA**

<i>Adjunct Professor</i>	<i>July 2012 – June 2018</i>
<i>Adjunct Associate Professor</i>	<i>July 2011 – June 2012</i>
<i>Associate Research Professor</i>	<i>July 2008 – June 2011</i>
<i>Assistant Research Professor</i>	<i>August 2005 – June 2008</i>

Director of the Numerical Intelligent Systems Laboratory. Responsible for research in machine learning, data mining, evolutionary methods, Bayesian methods, and systems theory. Responsible for teaching undergraduate and graduate courses in artificial intelligence as well as advising graduate students. Graduated two PhD students and numerous MSE students through the full-time graduate program.

ARINC Incorporated **Annapolis, Maryland USA**

<i>Fellow</i>	<i>January 2001 – August 2008</i>
<i>Senior Principal Analyst</i>	<i>January 1997 – December 2000</i>
<i>Principal Staff Analyst</i>	<i>January 1995 – December 1996</i>
<i>Senior Staff Analyst</i>	<i>January 1991 – December 1994</i>
<i>Analyst</i>	<i>January 1989 – December 1990</i>
<i>Associate Analyst II</i>	<i>December 1986 – December 1988</i>

Technical lead in the Surface Transportation Division performing research in information engineering, data mining, cognitive modeling, and health management. Past technical lead in the Army and Advanced Applications Division leading initiatives in information operations, information warfare, electronic warfare, and intelligence collection and production. Developed methodology for semantic modeling for intelligence and information exchange. Past researcher in the Advanced Research and Development Group. Developed novel model-based diagnostic system that included a patented neural network. Developed novel approaches for diagnosis in dynamic satellite networks for Iridium. The third person in ARINC's history to achieved the corporation's highest technical rank of Fellow.

HONORS AND AWARDS

Montana State University Awards

1. Provost's Award for Graduate Research and Creativity Mentoring (2022)
2. MSU Alumni Foundation Faculty/Staff Award for Excellence (2022)
For mentoring undergraduate student Elliot Pryor (2021 Goldwater Scholar).
3. Provost Distinguished Lecturer (March 9, 2021): *Safe at Every Speed: Expeditions in Complex System Health*, produced by Montana PBS, <https://youtu.be/trn24F3wMbs>.
4. Sabbatical (Fall 2018): Realizing Complex Integrated Systems.
5. Vice President for Research Meritorious Technology and Science Award (2016).
6. Third recipient of the Norm Asbjornson College of Engineering Distinguished Professorship; first in Computer Science (2015).
7. Computer Science Department Excellence in Research Award (2015).
8. Computer Science Department Excellence in Service and Outreach Award (2014).
9. Computer Science Department Excellence in Research Award (2011).
10. Computer Science Department Excellence in Teaching Award (2009).
11. RightNow Technologies Distinguished Professorship (2008).

Publication Awards

1. Best Paper Award (FLAIRS-32), with former student Dr. Benjamin Mitchell, 2019.

2. Walter E. Peterson Award for Best New Technology Paper (AUTOTESTCON '17), with former student Dr. Shane Strasser, 2017.
3. Oscar W. Sepp Best Paper Award (AUTOTESTCON '16), with students Logan Perreault and Monica Thornton, 2016.
4. Runner-up Best Student Paper Award (AUTOTEST '14), with students Houston King and Nathan Fortier, 2014.
5. Best Student Paper Award (AUTOTESTCON '13), with students Nicholas Ryhajlo and Liessman Sturlaugson, 2013.
6. Runner-up Best Student Paper Award (AUTOTESTCON '13), with students Liessman Sturlaugson, Nathan Fortier, and Patrick Donnelly, 2013.
7. Runner-up Best Student Paper Award (AUTOTESTCON '12), with students Shane Strasser and Eben Howard, 2012.
8. Best Track Paper Award (AUTOTESTCON '11), 2011.
9. Best Student Paper Award (AUTOTESTCON '11), with students Shane Strasser and Michael Schuh, 2011.
10. Special Award for a Joint Faculty Member/Student Publication, The Johns Hopkins University, Engineering Programs for Professionals, 2008.
11. Special Award for a Joint Faculty Member/Student Publication, The Johns Hopkins University, Engineering Programs for Professionals, 2007.
12. Special Award for a Joint Faculty Member/Student Publication, The Johns Hopkins University, Engineering Programs for Professionals, 2006.
13. Best Student Paper Award (AUTOTESTCON '95), with student Jonas Åstrand, 1995.
14. Best Paper Award (AUTOTESTCON '94), 1994.

IEEE Professional Society Awards

1. Transactions on Instrumentation and Measurement, Top 70 (23rd) Most Productive Associate Editor (2013–2020), Handled 179 Papers, 70th Anniversary Celebration.
2. Standards Association Working Group Chair Award for IEEE Std 1636.-2019 (2020).
3. Standards Association Working Group Chair Award for IEEE Std 1636.1-2019 (2020).
4. Standards Association Working Group Chair Award for IEEE Std 1636.2-2019 (2020).
5. Certificate of Recognition for member retention for the Central Montana Section (2019).
6. Certificate of Recognition for member retention for the Central Montana Section (2017).
7. Certificate of Recognition for member retention for the Central Montana Section (2016).
8. Standards Association Working Group Chair Award for IEEE Std 1636.1-2013 (2014).
9. Standards Association Working Group Chair Award for IEEE Std 1636.99-2013 (2014).
10. Outstanding Reviewer Award, IEEE Transactions on Instrumentation and Measurement (2013).
11. Standards Association Working Group Chair Award for IEEE Std 1232-2010 (2011).
12. Standards Association Working Group Chair Award for IEEE Std 1636.2-2010 (2010).
13. Fellow (2007): Elected for contributions to system-level diagnosis and prognosis.
14. AUTOTESTCON Frank McGinnis Professional Achievement Award, 2007.
15. Standards Association Working Group Chair Award for IEEE Std 1522-2004 (2005).
16. Computer Society Certificate of Appreciation for Standards Activities (2004, 2002, 2000, 1999).
17. Computer Society Outstanding Contribution Award (2003).
18. Standards Association Working Group Chair Award for IEEE Std 1232-2002 (2003).

19. Computer Society Certificate of Appreciation for chairing System Test Workshop (1999).
20. Standards Association Working Group Chair Award for IEEE Std 1232.2-1998 (1999).
21. Standards Association Working Group Chair Award for IEEE Std 1232.1-1997 (1997).

ARINC Corporate Awards and Recognitions

1. Division Recognition Award (1996, 1999, 2001–2003)
2. Technical Excellence Award: Portable Interactive Troubleshooter, POINTER™ (1989)
The highest corporate technical award, and the first given by the corporation.
3. General Manager’s Award for Outstanding Performance (1989)
For developing a significant new product line (diagnostics) based in independent research.

General Recognition

1. Inducted as Member at Large, Sigma Xi ($\Sigma\Xi$): The Scientific Research Honor Society (2021)
2. Order of the Engineer (inducted at Johns Hopkins University, May 20, 2009).
3. Marquis Who’s Who in America (multiple years).
4. Marquis Who’s Who in Science and Technology (multiple years).
5. Marquis Who’s Who in the East (multiple years).
6. Outstanding Young Men of America (1989).

TEACHING

Montana State University

1. Artificial Intelligence: 2008, 2009, 2010–2016 (even years), 2020, 2021
2. Database Systems: 2017
3. Data Mining: 2012, 2014
4. Discrete Structures: 2011, 2013
5. Machine Learning: 2010–2022 (even years)
6. Machine Learning: Soft Computing: 2011–2017 (odd years), 2019, 2020
7. Reasoning Under Uncertainty – Computational Research Topics: 2009
8. Reasoning Under Uncertainty: 2011–2021 (odd years)
9. Seminar in Machine Learning: 2008–2021
10. Departmental Seminar: 2009–2010, 2015–2016

Johns Hopkins University

1. Artificial Intelligence: 1998–2008
2. Evolutionary Computation: 1995, 1996–2006 (even years)
3. Foundations of Algorithms: 2000–2008
4. Machine Learning: 1994, 1997–2007 (odd years)
5. Online Evolutionary Computation: 2011–2017 (odd years), 2018–2021
6. Online Foundations of Algorithms: 2006–2018, redesigned 2011.
7. Online Introduction to Machine Learning: 2016–2022
8. Online Advanced Machine Learning: 2010–2018 (even years), 2019-2022
9. Seminar in Machine Learning: 2007–2008

George Mason University

- System Test and Diagnosis: 1996

Conference Tutorials and Seminars

1. Advances in Diagnostics and Prognostics (AUTOTESTCON): 2004–2006
2. Artificial Intelligence and Test (AUTOTESTCON): 1997, 1998
3. Diagnostic Modeling (Digital Avionics Systems Conference): 2001
4. Diagnostic Modeling and Application Development (AUTOTESTCON): 1999–2003, 2007–2019
5. Diagnostic Modeling in STAMP (CSELT, Torino, Italy): 1996
6. Fundamentals of Fault Diagnosis (US Navy in-service course): 2006.
7. System Test and Diagnosis (NEPCON West): 1994–1996
8. System Test and Diagnosis (International Test Conference): 1994, 1995, 1999

GRADUATE
STUDENTS
GRADUATED

PhD Students

1. Stephyn Butcher (2018), *Information Sharing and Conflict Resolution in Particle Swarm Optimization Variants*, PhD in Computer Science, The Johns Hopkins University.
2. Patrick Donnelly (2015), *Learning Spectral Filters for Single- and Multi-Label Classification of Musical Instruments*, PhD in Computer Science, Montana State University.
3. Nathan Fortier (2015), *Inference and Learning in Bayesian Networks Using Overlapping Swarm Intelligence*, PhD in Computer Science, Montana State University.
4. Richard McAllister (2020), *Extracting Abstract Spatio-Temporal Features of Weather Phenomena for Autoencoder Transfer Learning*, PhD in Computer Science, Montana State University.
5. Benjamin Mitchell (2017), *The Spatial Inductive Bias of Deep Learning*, PhD in Computer Science, The Johns Hopkins University.
6. Logan Perreault (2017), *Improved Scalability and Expressiveness for Continuous Time Bayesian Networks*, PhD in Computer Science, Montana State University.
7. Shane Strasser (2017), *Factored Evolutionary Algorithms: Cooperative Coevolutionary Optimization with Overlap*, PhD in Computer Science, Montana State University.
8. Liessman Sturlaugson (2014), *Extensions to Modeling and Inference in Continuous Time Bayesian Networks*, PhD in Computer Science, Montana State University.
9. Hasari Tosun (2016), *Efficient Machine Learning Using Partitioned Restricted Boltzmann Machines*, PhD in Computer Science, Montana State University.
10. Scott Wahl (2021), *Hierarchical Fuzzy Spectral Clustering in Campaign Finance Social Networks*, PhD in Computer Science, Montana State University.

MS Thesis Students

1. Giorgio L. Morales Luna (2021), *Towards Reduced-Cost Hyperspectral and Multispectral Image Classification*, en-route to PhD, MS in Computer Science, Montana State University.
2. Md. Asaduzzaman Noor (2022), *Evolutionary Combinatorial Optimization on the Grain Mixing Problem*, en-route to PhD, MS in Computer Science, Montana State University.
3. Amy Peerlinck (2019), *Improving a Precision Agriculture On-Farm Experimentation Workflow through Machine Learning*, en-route to PhD, MS in Computer Science, Montana State University.
4. Jacob Senecal (2019), *Convolutional Neural Networks for Multi- and Hyper-Spectral Image Classification*, MS in Computer Science, Montana State University.
5. Neil Walton (2019), *Utilizing Distributions of Variable Influence for Feature Selection in Hyperspectral Images*, MS in Computer Science, Montana State University.

MS Project Students

1. David Albert (1999), *Evolvable Hardware*, MS in Computer Science, The Johns Hopkins University.
2. Stephyn Butcher (2006), *No-So-Naïve Bayesian Diagnosis*, MS in Computer Science, The Johns Hopkins University.
3. Patrick Donnelly (2008), *Musical Harmonic Analysis with a Hidden Markov Model*, MSE in Computer Science, The Johns Hopkins University.
4. James Grantham (2007), *Cellular Automata and Transportation Systems*, MS in Computer Science, The Johns Hopkins University.
5. Andrew Hamilton (2011), *An Anytime Algorithm for Trust Propagation in Social Networks*, MS in Computer Science, Montana State University.
6. Brian Howard (2003), *Royal Roads Not Taken*, MS in Computer Science, The Johns Hopkins University.
7. Benjamin Mitchell (2008), *Computer Integrated Surgery*, MSE in Computer Science, The Johns Hopkins University.
8. Rashad Moore (2003), *Multi-Agent Learning of Airline Decision Making in Response to Airport Pricing Policies*, MS in Computer Science, The Johns Hopkins University.
9. Adam Peterson (2002), *Dynamic Motion Planning Among Uncertain Obstacles*, MS in Computer Science, The Johns Hopkins University.
10. Ramendra Ramendra (2008), *Recurrent Neural Networks for Time Series Prediction*, MSE in Computer Science, The Johns Hopkins University.
11. Scott Raymond (2002), *Evolving Alarm Calling Behavior*, MS in Computer Science, The Johns Hopkins University.
12. Charles Robertson (2009), *A Dynamic Bayesian Network Builder*, MSE in Computer Science, The Johns Hopkins University.
13. Nicholas Ryhajlo (2013), *Fuzzy Bayesian Networks for Prognostics and Health Management*, MS in Computer Science, Montana State University.
14. Marka Van Blitterswijk (2019), *Extensive Transcriptomic Study Emphasizes Importance of Vesicular Transport in C9orf72 Expansion Carriers*, MS in Bioinformatics, The Johns Hopkins University.
15. Ryan Van Soelen (2019), *Using Winning Lottery Tickets in Transfer Learning for Convolutional Neural Networks*, MS in Computer Science, The Johns Hopkins University.
16. Mike Waters (1999), *Genetic Programming and Co-Evolution with Exogenous Fitness in an Artificial Life Environment*, MS in Computer Science, The Johns Hopkins University.

MS Courses-Only Students

1. Anthony Arnone (2010), MS in Computer Science, Montana State University.
2. Seth Berardinelli (2015), MS in Computer Science, Montana State University.
3. Joseph DeBruycker (2017), MS in Computer Science, Montana State University
4. Tyler Forrester (2019), MS in Computer Science, Montana State University
5. Nathan Fortier (2013), MS in Computer Science, Montana State University.
6. Rollie Goodman (2017), MS in Computer Science, Montana State University.
7. Mark Harris (2020), MS in Computer Science, Montana State University.
8. Jacob Jenks (2016), MS in Computer Science, Montana State University
9. Houston King (2014), MS in Computer Science, Montana State University.
10. David Kelly – MS in Data Science, Montana State University

11. Shriyansh Kothari (2017), MS in Computer Science, Montana State University.
12. Ryan Nix (2015), MS in Computer Science, Montana State University, co-advised with Dr. Clemente Izurieta.
13. Cassandra Noble (2020) – MS in Data Science, Montana State University
14. Logan Perreault (2015), MS in Computer Science, Montana State University.
15. Janette Rounds (2017), MS in Computer Science, Montana State University.
16. Dennis Cole Schock (2012) MS in Computer Science, Montana State University.
17. Shane Strasser (2011), MS in Computer Science, Montana State University.
18. Liessman Sturlaugson (2012), MS in Computer Science, Montana State University.
19. Leah Thompson (2016), MS in Computer Science, Montana State University
20. Monica Thornton (2016), MS in Computer Science, Montana State University
21. Scott Wahl (2011), MS in Computer Science, Montana State University.
22. Ross Wendt (2019), MS in Computer Science, Montana State University
23. Na'Shea Wiesner (2017), MS in Computer Science, Montana State University.

GRADUATE
STUDENT ADVISING

Current PhD Students

1. Georgio Morales—Hyperspectral image classification in precision agriculture
2. Asad Noor—Text mining
3. Amy Peerlinck—Many-objective optimization with factored evolutionary algorithms
4. Jordan Schupbach—Replicated point processes and TDA (co-advised with Dr. John Borkowski)
5. Na'Shea Wiesner—Distributed evolutionary control of autonomous vehicles

Current MS Students

Kyle Webster – Computer Science

GRADUATE
STUDENT
COMMITTEES

Current PhD Committees

1. Gerard Fuhnwi—Anomaly detection
2. Dalton Gomez—Optimization
3. Apostolos Kalatzis—Machine learning and human-computer interaction
4. Seyedmojtaba Mohasel—Machine learning and IMU data (Mechanical Engineering)
5. Nathan Woods—Software engineering

Current MS Committees

1. David Kelly – Data Science
2. Derek Logan – Data Science
3. Michelle Vered – Data Science

Past PhD Committees

1. Alan Cleary (2018), *Computational Pan-Genomics: Algorithms and Applications*, PhD in Computer Science, Montana State University.
2. Christopher Colson (2012), *Towards Real-Time Power Management of Microgrids for Power System Integration: A Decentralized Multi-Agent Based Approach*, PhD in Engineering, Montana State University.

3. Kaveh Dehghanpour (2017), *Market-Based Power Management and Control of Resilient Smart Grids and Microgrids Using a Game Theoretic Multi-Agent Systems Approach*, PhD in Electrical Engineering, Montana State University.
4. Douglas Galarus (2017), *Anomaly Detection through Spatio-Temporal Data Mining, with Application to Near Real-Time Outlying Sensor Identification*, PhD in Computer Science, Montana State University.
5. Karthik Ganesan Pillai (2014), *Modeling Spatiotemporal Co-occurrence Patterns (STCOPs)*, PhD in Computer Science, Montana State University.
6. Brian Haberman (2011), *Routing Information Verification Tool for Securing Inter-Domain Routing Information*, PhD in Computer Science, The Johns Hopkins University.
7. Timothy Hahn (2010), *Investigation of Physically Aware Routing and Wavelength Assignment (RWA) Algorithms for Next Generation Transparent Optical Networks*, PhD in Computer Science, Montana State University.
8. Lynn Kaeding (2010, graduate representative), *Relative Contributions of Climate Variation, Lake Trout Predation, and Other Factors to the Decline of Yellowstone Lake Cutthroat Trout During the Three Recent Decades*, PhD in Ecology and Environmental Sciences, Montana State University.

Past MS Thesis Committees

1. Jeffrey Elser (2012), *Search Engine Tuning with Genetic Algorithms*, MS in Computer Science, Montana State University.
2. Richard McAllister (2010), *FP-Tree Motivated System for Information Retrieval Using an Abstraction Path-Based Inverted Index*, MS in Computer Science, Montana State university.
3. Bryan Scherer (2018), *Weed and Crop Discrimination with Hyperspectral Imaging and Machine Learning*, MS in Electrical Engineering (Optics), Montana State University
4. Shen Wan (2009), *Routing in WiMAX Networks*, MS in Computer Science, Montana State University

PROFESSIONAL ACTIVITIES AND SERVICE

Professional Society Memberships

1. Institute for Electrical and Electronics Engineers (IEEE), Fellow
 - Computational Intelligence Society
 - Computer Society
 - Instrumentation and Measurement Society
 - Standards Association
 - Central Montana Section (Secretary 2014–2015; Chair 2016–2017; Vice Chair 2018–2019)
2. Sigma Xi ($\Sigma\Xi$): The Scientific Research Honor Society, Member
3. Prognostics and Health Management Society, Member
4. Association for Uncertainty in Artificial Intelligence, Member
5. Association for Computing Machinery SIGEVO, Member

Technical Program Chair

1. IEEE International Workshop on System Test and Diagnosis: 1998, 1999, 2000
2. IEEE AUTOTESTCON
 - Technical Program Chair: 2001, 2007, 2011
 - Technical Program Vice Chair: 2013
 - Academic Vice Chair: 2008, 2009
 - Tutorials Chair: 2017–2019, 2021–present

Program Committees

1. ACM Genetic and Evolutionary Computation Conference: 1999–2003
2. European Design and Test Conference: 1994
3. IEEE AUTOTESTCON: 1995, 2001, 2007, 2008, 2009, 2011, 2013, 2014, 2017–2019, 2021
4. IEEE Board Test Workshop: 2003, 2004
5. IEEE Congress on Evolutionary Computation: 2001, 2008
6. IEEE International Conference on Prognostics and Health Management: 2008
7. IEEE International Joint Conference on Neural Networks: 2020, 2021
8. IEEE International Workshop on System Test and Diagnosis: 1992, 1998, 1999, 2000
9. IEEE Symposium on the Ethical, Social and Legal Implications of Artificial Intelligence: 2020
10. IEEE Workshop on Ethics And Social Implications Of Computational Intelligence: 2020, 2021
11. Int. Conference on Soft Computing & Int. Symposium on Advanced Intelligent Systems: 2012
12. Workshop on Principles of Diagnosis: 2007, 2008

Editorial Boards

1. IEEE Transactions on Instrumentation and Measurement
(Sp. Issue Editor: AUTOTESTCON 2007; Assoc. Ed.: 2008–2020)
2. International Journal of Prognostics and Health Management
(Member: 2009–2010; Co-EIC: 2011–2012; Sp. Issue Ed.: Battery Health Management, 2012)
3. Journal of Electronic Testing: Theory and Applications (Assoc. Ed.: 2007–2011)

Conference Session Chair

1. IEEE Aerospace Conference: 2010, 2011
2. IEEE AUTOTESTCON: 1995–2000, 2003, 2004, 2006, 2009, 2010, 2012, 2016–2018
3. IEEE Congress on Evolutionary Computation: 2021
4. IEEE International Joint Conference on Neural Networks: 2016
5. IEEE International Workshop on System Test and Diagnosis: 1998–2000

Textbook Reviewer

1. E. Alpaydin, *Introduction to Machine Learning*, 3rd edition, MIT Press
2. E. Alpaydin, *Introduction to Machine Learning*, 4th edition, MIT Press
3. D. Koller & N. Friedman, *Probabilistic Graphical Models: Principles and Techniques*, MIT Press
4. K. Murphy, *Machine Learning: A Probabilistic Approach*, 1st edition, MIT Press
5. G. F. Luger, *Artificial Intelligence*, 4th edition, Addison-Wesley
6. D. L. Poole & A. K. Mackworth, *Artificial Intelligence: Foundations of Computational Agents*, 3rd edition, Cambridge University Press
7. J. Spall, *Introduction to Stochastic Search and Optimization*, Wiley

Journal Reviewer

1. Applied Artificial Intelligence
2. Elsevier Journal of Information Sciences
3. IEEE Computer Magazine
4. IEEE Design and Test of Computers Magazine

5. IEEE Instrumentation and Measurement Magazine
6. IEEE Transactions on Aerospace and Electronic Systems
7. IEEE Transactions on Artificial Intelligence
8. IEEE Transactions on Data and Knowledge Engineering
9. IEEE Transactions on Neural Networks and Learning Systems
10. IEEE Transactions on Instrumentation and Measurement
11. IEEE Transactions on Systems, Man, and Cybernetics
12. IEEE Transactions on Very Large Scale Integration Systems
13. Journal of Statistical Software
14. Remote Sensing
15. Remote Sensing Applications: Society and Environment
16. Springer Journal of Electronic Testing: Theory and Applications
17. Springer Journal of Intelligent Manufacturing

Conference Reviewer

1. ACM Genetic and Evolutionary Computation Conference: 1999–2003
2. Annual Conference on Prognostics and Health Management: 2009, 2010, 2012
3. IEEE Aerospace Conference: 2010, 2011
4. IEEE Board Test Workshop: 2003–2005
5. IEEE Congress on Evolutionary Computation: 2001, 2008, 2009, 2019–2022
6. IEEE International Conference on Prognostics and Health Management: 2008
7. IEEE International Joint Conference on Neural Networks: 2020–2022
8. IEEE International Symposium on Intelligent Control: 2003, 2005
9. IEEE International Test Conference: 1995–2001
10. IEEE Symposium Series on Computational Intelligence: 2019–2021
11. IEEE VLSI Test Symposium: 1996, 1997
12. International Conference on Soft Computing: 2012
13. International Symposium on Advanced Intelligent Systems: 2012
14. National Conference on Undergraduate Research: 2020
15. Workshop on Principles of Diagnosis: 2007, 2008

Standards Committees

1. IEEE Standards Coordinating Committee 20
—(Computer Society Designated Representative and Past Vice Chair)
2. IEEE Computer Society Standards Activities Board (Designated Representative to SCC20)
3. IEEE SCC20 Diagnostic and Maintenance Control Subcommittee (Co-Chair and Secretary)
4. IEEE SCC20 P1232 Working Group (Chair and Secretary)
5. IEEE SCC20 P1636 Working Group (Chair)
6. IEEE SCC20 P1636.2 Working Group (Chair)
7. IEEE SCC20 P2848 Working Group (Chair)
8. IEEE P2976 Working Group (Member)
9. IEC Technical Committee 93 on Design Automation (US Delegate): 1996, 1997, 1998

- ARINC Test Equipment Guidance Subcommittee, Avionics Maintenance Conference (Member)

SERVICE TO
MONTANA STATE
UNIVERSITY

Faculty Advisory Board, Center for Science, Technology, Ethics, & Society, 2019–present
 Master of Science in Data Science Steering Committee, 2018–present
 College of Engineering Research Council, 2015–present
 Instructor, Osher Lifelong Learning Institute, *Artificial Intelligence and Society*, 2021
 University High Performance Computing Advisory Group, 2015–2019
 University Committee on Updating Data Access/Consistency, 2014–2015
 PhD Program Coordinator, Department of Computer Science, 2013–present
 Promotion and Tenure Committee, Department of Computer Science, 2013–2020
 Faculty Search Committee, Triple (Chair), Department of Computer Science, 2013–2015
 Curriculum Committee, College of Engineering, 2012–present
 Scholarship Committee, Department of Computer Science, 2012–2020
 Promotion and Tenure Committee, College of Engineering, 2012–2013
 University Committee on Accelerated Master’s Degrees, 2012
 Faculty Search Committee, Double, Department of Computer Science, 2010–2011
 Faculty Search Committee, School of Music, Music Technology Program, 2010–2011
 PhD Committee Graduate Representative, Graduate School, 2009–2010
 Graduate Admissions Committee, Department of Computer Science, 2008–present

GRANTS AND
CONTRACTS
(\$16,543,429)

Montana State University (Total: \$3,198,447)

- US Navy (sub-award from Global Strategic Solutions, LLC), Small Business Innovative Research (SBIR) Reachback, Dynamic Physical/Data-Driven Models for System-Level Prognostics, \$279,507, 8/1/21–11/30/22.
- US Department of Agriculture Natural Resources Conservation Service, Conservation Innovation Grant On-Farm Trials (sub-award from Univ. Illinois Urbana Champaign), USDA-NRCS CIGOFT: Improving the Economic and Ecological Sustainability of US Crop Production through On-Farm Precision Experimentation, \$665,750 (PI: \$402,381), 01/01/21–12/31/23.
- National Science Foundation, SCH: INT: Collaborative Research: An intelligent Pervasive Augmented reaLity therapy (iPAL) for Opioid Use Disorder and Recovery, \$726,902 (Co-PI: \$242,750), 10/1/20–9/31/24.
- TPS Associates (for US Navy), Automatic Test System Framework Working Group Support, \$93,894, 5/23/19–3/18/21.
- S2 Corporation, Artificial Intelligence and Machine Learning Research, \$75,000 (Sheppard: \$37,500), 9/1/18–8/31/20.
- US Army Corps of Engineers Research Laboratory (via TechLink), Software Quality Analysis of Army Construction Engineering Research Center Sustainment Management System, \$91,579, 2/26/18–6/30/19.
- Intel Corporation, Hyperspectral imaging and spatial learning for produce monitoring, \$165,352, 11/1/17–12/31/18.
- National Science Foundation/National Institutes of Health, QuBDD: Collaborative Research: Quantifying Morphologic Phenotypes in Prostate Cancer - Developing Topological Descriptors for Machine Learning Algorithms, \$420,706 (Co-PI: \$210,353), 8/1/17–7/31/20.
- TechLink, Department of Defense Patent Classification, \$120,100, 7/1/17–12/31/17.
- US Air Force (via TechLink and US Army Corps of Engineers), CS DLA Fueler, \$35,000, 7/28/16–7/31/17.
- US Army Corps of Engineers Research Laboratory (via TechLink), Sustainability Management System, \$146,000 (Co-PI: \$73,000), 10/1/15–9/30/16.

12. State of Montana (Montana Research and Economic Development Initiative), Increasing Profitability by Improving Efficiency of Montana's Farm and Ranch Lands—On-Farm Precision Experiment, \$260,000 (Co-PI: \$69,825), 7/1/15–6/30/17.
13. TPS Associates (for US Navy), Automatic Test System Framework Working Group Support, \$142,697, 7/6/15–12/22/17.
14. US Army Corps of Engineers Research Laboratory (via TechLink), Sustainability Management System, \$150,000 (Co-PI: \$74,061), 10/1/14–9/30/15.
15. Qualtech Systems Incorporated (for NASA), Small Business Technology Transfer Research (STTR) program (Phase II). Risk Engineering, Sciences, Computation, and Informed Decisions. \$283,924, 10/1/14–9/30/16.
16. Qualtech Systems Incorporated (for US Navy), Small Business Innovative Research (SBIR) program (Phase I). Improved Electronics Maintenance through Tester Prognostics. Base: \$25,852.58, 11/18/13–5/15/14.
17. Qualtech Systems Incorporated (for NASA), Small Business Technology Transfer Research (STTR) program (Phase I). Risk Engineering, Sciences, Computation, and Informed Decisions. \$41,982, 5/23/13–5/22/14.
18. United States Geological Survey, Decision Identification for Fish and Wildlife Management. Cooperative Agreement, 9/1/12–8/31/17. Initial funding for \$8,070. Co-PI with Dr. Elizabeth Shanahan (PI), Department of Political Science, Montana State University.
19. United States Geological Survey, Scenario Analysis Using Climate Knowledge for Fish and Wildlife Manager: Exploring and Integrating Artificial and Related Probabilistic Graphical Models. Cooperative Agreement, 3/15/12–3/14/17. Initial funding for \$44,944.
20. The Boeing Company, Development of a Bayesian approach to creating Dynamic Fault Isolation Manuals. \$90,115, 1/15/12–12/20/12.
21. Impact Technologies (for US Navy), Small Business Technology Transfer Research (STTR) program (Phase II). Develop and transition technology for combining physics-based and data-driven models for electronic fault prognostics. Base (9/1/11–1/31/13): \$199,917.83 + Option (8/15/13–5/15/14): \$87,748.24 = \$287,666.07.
22. The Boeing Company, Continue development of a proof-of-concept system for performing maturation of D-matrix-type diagnostic models based on ontology-guided data mining principles. \$39,745, 5/23/11–12/22/11.
23. Impact Technologies (for US Navy), Small Business Technology Transfer Research (STTR) program (Phase I). Develop and transition technology for combining physics-based and data-driven models for electronic fault prognostics. Base (7/31/10–1/31/11): \$32,522.82 + Option (1/31/11–4/30/11): \$13,994.49 = \$46,517.31.
24. The Boeing Company, Develop a proof-of-concept system for performing maturation of D-matrix-type diagnostic models based on ontology-guided data mining principles. \$51,157, 6/1/10–11/29/10.
25. The Boeing Company (for NASA), Develop approaches to ontology-guided data mining for purposes of supporting diagnostic maturation in vehicle level health monitoring and reasoning on commercial and military aircraft. \$59,175, 1/1/10–11/30/10.
26. The M&T Company (for US Navy, PMA-260D), Perform research in predictive health management and standardization; demonstrate standards effectiveness. \$181,300, 4/1/2009–3/31/2010.

Johns Hopkins University University (\$598,207)

1. Johns Hopkins University Applied Physics Laboratory (for US Navy, PMA-260D), Perform research in predictive health management and standardization. \$197,000 (2/1/2008–12/31/2008).
2. US Army, Redstone Arsenal (for US Navy, PMA-260D), Perform research in ATS interoperability with diagnostic systems. \$111,247 (5/1/2007–3/31/2008).

3. US Army, Redstone Arsenal, Perform research in Bayesian prognostics for predicting faults of an automatic test system. \$102,573 (1/1/2007–9/30/2007).
4. US Army, Redstone Arsenal (for US Navy, PMA-260D), Perform research in Bayesian diagnostics for automatic test systems. \$94,550 (9/1/2006–3/3/2007).
5. US Air Force and Global Strategic Solutions, LLC, Develop a model-based system synthesis and integration methodology for automatic test systems, subcontract under SBIR to GSS. \$12,000 (7/2006–12/2006).
6. NSWC Corona, Explore applications of Bayesian learning from IUID-enabled data to system diagnostics. \$80,837 (6/2006–9/2006).

ARINC Incorporated (\$12,746,775)

1. TTCI Data Radio, Transportation Technology Center, Analyze network demand and evaluate alternative data radios for positive train control applications, \$231,728 (2/2006–10/2006).
2. AAR Technical Support, Association of American Railroads, Perform research and development of messaging technologies, and develop messaging specifications for freight railroad operations, \$250,595 (1/2006–12/2006).
3. CMU Test Bed (Phase IV), Association of American Railroads, Evaluate alternative messaging architectures for onboard locomotive communications, \$249,996, 5/2005–12/2006.
4. Open Haven, US DoD, Perform research in intelligence analysis. Details classified, \$6,900,000 (4/2004–3/2007).
5. Open Haven Study, US DoD, Perform research in intelligence analysis. Details classified, \$100,000 (4/2004–6/2004).
6. Dark Star Secure Facility, US DoD, Build-out of special access program facility, \$67,581 (5/2004–9/2004).
7. Dark Star Special Study, US DoD, Details classified, \$173,670, 5/2004–9/2004
8. Vulcan Sky II, US DoD, Perform research in information operations. Details classified, \$201,582 (9/2004–4/2004).
9. Vulcan Sky I, US DoD, Perform research in information operations. Details classified, \$373,421 (4/2003–6/2004).
10. MASON, US DoD, Perform research in assessing information operations effectiveness, \$249,592 (1/2003–8/2003).
11. Dark Star, US DoD, Perform research in information warfare. Details classified, \$117,077 (7/2002–8/2004).
12. ATC Study, US DoD, Examine design alternatives for air traffic control system for Afghanistan reconstruction, \$299,162 (5/2002–8/2003).
13. Sampler Operations and Data System, US Air Force Technical Applications Center, Perform research and development of secure, on-line health monitoring system for radio-nuclide samplers, \$124,999 (7/2002–3/2003).
14. Soothsayer, US Air Force, Develop multi-level secure database and web applications for intelligence data integration and intelligence production/dissemination, \$669,337 (5/2001–4/2002).
15. AI-ESTATE SBIR, Hamilton Software and US Air Force, Provide expert consultation on standards-based diagnostics for automatic test systems development, \$22,502 (8/1999–7/2000).
16. ACAMS, NASA-LaRC, Perform research and development of integrated health monitoring technologies and real-time model-based diagnostics for commercial aircraft, \$1,606,091 (5/1999–7/2001).
17. Big Sombrero II, US Air Force, Provide information modeling and analysis for intelligence support, \$424,360 (5/1999–5/2000).

18. Big Sombrero, US Air Force, Perform intelligence database integration analysis, \$197,770 (5/1998–2/1999).
19. PERC-IPD, CSM Materialtechnik, Perform research and development for advanced, adaptive techniques in the fabrication of composite materials for aircraft. Focused on techniques from adaptive control and reinforcement learning. \$234,597 (7/1997–4/1998).
20. ARI, US Navy, Perform research and development for standard interfaces of automatic test equipment as member of the Automatic Test System Research and Development Integrated Product Team, \$132,660 (9/1996–5/1998).
21. OSA-IDD, McDonnell Douglas Aerospace and US Navy, Perform research and development in passive model-based diagnostics for F/A-18 C/D AN/APG-65 radar system, \$120,055 (3/1995–3/1997).

PUBLICATIONS

Patents

1. John W. Sheppard, William R. Simpson, and Jerry L. Graham, *Method and Apparatus for Diagnostic Testing Including a Neural Network for Determining Testing Sufficiency*, U.S. Patent, No. 5,130,936, issued July 14, 1992, U.K. and French patents also issued.
2. John W. Sheppard, John Gorton, Patrick Kalgren, and Liessman Sturlaugson, *Integrated Model for Failure Diagnosis and Prognosis*, U.S. Patent Pending, filed May 12, 2016.
3. Joseph A. Shaw, John W. Sheppard, Bryan J. Scherrer, and Prashant Jha, *Method of Herbicide-Resistant Weed Discrimination from Hyperspectral Images and Neural Networks*, U.S. Provisional Patent Application No. 62/780,033, filed December 14, 2018.
4. John W. Sheppard, Joseph A. Shaw, and Neil S. Walton, *Method and System for Evaluating Produce Ripeness Using Hyperspectral Imaging and Machine Learning*, U.S. Provisional Patent Application No. 62/801,882, filed February 6, 2019.

Books

1. John W. Sheppard and Anthony P. Ambler, *Realizing Complex Integrated Systems: Management*, CRC Press, Boca Raton, FL, in preparation.
2. John W. Sheppard and Anthony P. Ambler, *Realizing Complex Integrated Systems: Design*, CRC Press, Boca Raton, FL, CRC Press, in preparation.
3. John W. Sheppard and Anthony P. Ambler, *Realizing Complex Integrated Systems: System Health*, CRC Press, Boca Raton, FL, CRC Press, in preparation.
4. John W. Sheppard and Anthony P. Ambler, *Realizing Complex Integrated Systems: System Infrastructure*, CRC Press, Boca Raton, FL, CRC Press, in preparation.
5. John W. Sheppard and William R. Simpson (eds.), *Research Perspectives and Case Studies in System Test and Diagnosis*, Kluwer Academic Publishers, Norwell, Massachusetts, 1998.
6. William R. Simpson and John W. Sheppard, *System Test and Diagnosis*. Kluwer Academic Publishers, Norwell, Massachusetts, 1994.

Theses

1. John W. Sheppard, *Multi-Agent Reinforcement Learning in Markov Games*, Ph.D. Dissertation, The Johns Hopkins University, Baltimore, Maryland, 1996.
2. John W. Sheppard, *Learning Diagnostic Information Using a Matrix-Based Approach to Knowledge Representation*, Master's Project Report, The Johns Hopkins University, Baltimore, Maryland, 1989.

Book Chapters

1. Md. Asaduzzaman Noor and John W. Sheppard, “Evolutionary Grain-Mixing to Improve Profitability in Farming Winter Wheat,” in *Applications of Evolutionary Computation*, Lecture Notes in Computer Science, LNCS 12694, Springer, 2021, pp. 113-129.
2. Stephen Boisvert and John W. Sheppard, “Quality Diversity Genetic Programming for Learning Decision Tree Ensembles,” in *Genetic Programming*, Lecture Notes in Computer Science, LNCS 12691, Springer, 2021, pp. 3–18.
3. Patrick Donnelly and John Sheppard, “Evolving Four-Part Harmony Using Genetic Algorithm,” in *Applications of Evolutionary Computation*, Lecture Notes in Computer Science, LNCS 6625, Springer, 2011, pp. 273–282.
4. John W. Sheppard and William R. Simpson, “Accurate Diagnosis through Conflict Management, in *Research Perspectives and Case Studies in System Test and Diagnosis*, ed. John W. Sheppard and William R. Simpson, Springer Science+Business Media, 1998, pp. 103–124.
5. John W. Sheppard, “Inducing Diagnostic Inference Models from Case Data,” in *Research Perspectives and Case Studies in System Test and Diagnosis*, ed. John W. Sheppard and William R. Simpson, Springer Science+Business Media, 1998, pp. 69–102.
6. John W. Sheppard and Steven L. Salzberg, “A Teaching Strategy for Memory-Based Control,” in *Lazy Learning*, ed. David Aha, Springer Science+Business Media, 1997.

Journal Articles

1. Richard McAllister and John Sheppard, “Spatio-Temporal Feature Extraction for Transfer Learning in Hurricane Wind Vector Prediction,” revision submitted to *Neurocomputing*, November 2021.
2. Md. Asaduzzaman Noor, John Sheppard, and Sean Yaw, “Mixing Grain to Improve Profitability in WinterWheat using Evolutionary Algorithms,” to appear in *SN Computer Science Journal*, March 2022. (Invited paper)
3. Giorgio Morales, John W. Sheppard, Riley Logan, and Joseph A. Shaw, “Hyperspectral Dimensionality Reduction based on Inter-Band Redundancy Analysis and Greedy Spectral Selection,” *Remote Sensing* 13, 3649, September 2021.
4. Riley Logan, Bryan Scherrer, Jacob Senecal, Neil Walton, Amy Peerlinck, John Sheppard, and Joseph Shaw, “Assessing Produce Ripeness Using Hyperspectral Imaging and Machine Learning,” *Journal of Applied Remote Sensing*, 15(3) 034505, 2021.
5. Giorgio Morales, John Sheppard, Bryan Scherrer, and Joseph Shaw, “Reduced-Cost Hyperspectral Convolutional Neural Networks,” *Journal of Applied Remote Sensing*, 14(3) 036519, 2020.
6. Bryan Scherrer, John Sheppard, Prashant Jha, and Joseph Shaw, “Hyperspectral Imaging and Neural Networks to Classify Herbicide-Resistant Weeds,” *Journal of Applied Remote Sensing*, 13(4) 044516, 2019.
7. Dennis W. Dickson, Matthew C. Baker, Jazmyne L. Jackson, Mariely DeJesus-Hernandez, NiCole A. Finch, Shulan Tian, Michael G. Heckman, Cyril Pottier, Tania F. Gendron, Melissa E. Murray, Yingxue Ren, Joseph S. Reddy, Neill R. Graff-Radford, Bradley F. Boeve, Ronald C. Petersen, David S. Knopman, Keith A. Josephs, Leonard Petrucelli, Bjrn Oskarsson, John W. Sheppard, Yan W. Asmann, Rosa Rademakers, and Marka van Blitterswijk, “Extensive Transcriptomic Study Emphasizes Importance of Vesicular Transport in C9orf72 Expansion Carriers,” *Acta Neuropathologica Communications*, 2019, 7:150.
8. Logan Perreault and John Sheppard, “Compact Structures for Continuous Time Bayesian Networks,” *International Journal of Approximate Reasoning*, Vol 109, June 2019, pp. 19–41.

9. John Sheppard and Shane Strasser, "Multiple Fault Diagnosis Using Factored Evolutionary Algorithms," *IEEE Instrumentation and Measurement Magazine*, Vol. 21, No. 4, August 2018, pp. 27–38.
10. Kaveh Dehghanpour, M. Hashem Nehrir, John W. Sheppard, and Nathan C. Kelly, "Agent-Based Modeling of Retail Electrical Energy Markets with Demand Response," *IEEE Transactions on Smart Grid*, Vol. 9, Issue 4, July 2018.
11. Logan Perreault, Monica Thornton, John Sheppard, and Joseph DeBruycker, "Disjunctive Interaction in Continuous Time Bayesian Networks," *International Journal of Approximate Reasoning*, special FLAIRS 2016 issue on Uncertain Reasoning, Vol. 90, November 2017, pp. 253–271.
12. Liessman Sturlaugson, Logan Perreault, and John Sheppard, "Factored Performance Functions and Decision Making in Continuous Time Bayesian Networks," *Journal of Applied Logic*, special issue on Uncertain Reasoning, Vol. 22, July 2017, pp. 28–45.
13. Shane Strasser, John Sheppard, Nathan Fortier, and Rollie Goodman, "Factored Evolutionary Algorithms," *IEEE Transactions on Evolutionary Computation*, Vol. 21, No. 2, April 2017, pp. 281–293.
14. Kaveh Dehghanpour, M. Hashem Nehrir, John W. Sheppard, and Nathan Kelly, "Agent-Based Decision Making in Electrical Energy Markets Using Dynamic Bayesian Networks and Sparse Bayesian Learning," *IEEE Transactions on Power Systems*, Vol. 31, No. 6, November 2016, pp. 4744–4754.
15. Liessman Sturlaugson and John W. Sheppard, "Uncertain Evidence in Continuous Time Bayesian Networks," *International Journal of Approximate Reasoning*, Vol. 70, March 2016, pp. 99–122.
16. Caisheng Wang, Carol J Miller, M Hashem Nehrir, John W Sheppard, Shawn P McElmurry, "A Load Profile Management Integrated Power Dispatch Using a Newton-Like Particle Swarm Optimization Method," *Sustainable Computing: Informatics and Systems*, Special Issue on a Greener Water/Energy/Emissions, Vol. 8, December 2015, pp. 8–17.
17. Houston King, Nathan Fortier, and John Sheppard, "An AI-ESTATE Conformant Interface for Net-Centric Diagnostic and Prognostic Reasoning," *IEEE Instrumentation and Measurement Magazine*, reprinted from IEEE AUTOTESTCON, Vol. 18, No. 4, August 2015, pp. 18–24.
18. Liessman Sturlaugson and John W. Sheppard, "Sensitivity Analysis of Continuous Time Bayesian Network Reliability Models," *SIAM/ASA Journal of Uncertainty Quantification*, 3(1), 2015, pp. 346–369.
19. Nathan Fortier, John W. Sheppard, and Shane Strasser, "Abductive Inference in Bayesian Networks using Distributed Overlapping Swarm Intelligence," *Soft Computing*, 19(4):981–1001, April 2015.
20. Patrick J. Donnelly and John W. Sheppard, "Classification of Monophonic Musical Instruments Using Bayesian Networks," *Computer Music Journal*, 37(4), Winter 2014, pp. 70–86.
21. Shane Strasser and John W. Sheppard, "Diagnostic Model Maturation," *IEEE Aerospace and Electronic Systems Magazine*, Vol. 28, Issue 1, January 2013, pp. 34–43.
22. Michael Schuh, John W. Sheppard, Shane Strasser, Rafal Angrk, and Clemente Izurieta, "An IEEE Standards-Based Visualization Tool for Knowledge Discovery in Maintenance Event Sequences," *IEEE Aerospace and Electronic Systems Magazine*, Vol. 28, Issue 7, July 2013, pp. 30–39.
23. Brian Haberman and John W. Sheppard, "Overlapping Particle Swarms for Energy-Efficient Routing in Sensor Networks," *Wireless Networks*, 18(4):351–363, May 2012.
24. Jesse Berwald, Tom Gedeon, and John Sheppard, "Using Machine Learning to Predict Catastrophes in Dynamical Systems," *Journal of Applied Computational Mathematics*, Vol. 236, Issue 9, March 2012, pp. 2235–2245.

25. John W. Sheppard, Timothy J. Wilmering, and Mark A. Kaufman, "IEEE Standards for Prognostics and Health Management," *IEEE Aerospace and Electronic Systems Magazine*, reprinted from IEEE AUTOTESTCON, Vol. 24, No. 9, September 2009, pp. 34–41.
26. Kihoon Choi, Satnam Singh, Anuradha Kodali, Krishna Pattipati, John W. Sheppard, Setu Namburu, Shunsuke Chigusa, Danil Prokhorov, and Liu Qiao, "Novel Classifier Fusion Approaches for Fault Diagnosis in Automotive Systems," *IEEE Transactions on Instrumentation and Measurement*, Vol. 58, No.3, March 2009, pp. 602–611.
27. John W. Sheppard, "Guest Editorial: Special Section on the 2007 IEEE AUTOTESTCON," *IEEE Transactions on Instrumentation and Measurement*, Vol 58, No 2, February 2009, pp. 238–239.
28. Stephyn G. W. Butcher and John W. Sheppard, "Distributional Smoothing in Bayesian Fault Diagnosis," *IEEE Transactions on Instrumentation and Measurement*, Vol 58, No 2, February 2009, pp. 342–349.
29. John W. Sheppard and Stephyn G. W. Butcher, "A Formal Analysis of Fault Diagnosis with D-Matrices," *Journal of Electronic Testing: Theory and Applications*, Vol. 23, No. 4, 2007, pp. 309–322.
30. John W. Sheppard and Mark A. Kaufman, "A Bayesian Approach to Diagnostics and Prognostics from Built In Test," *IEEE Transactions on Instrumentation and Measurement*, special issue on Built In Test, Vol. 54, No. 3, June 2005, pp. 1003–1018.
31. Lee A. Shombert and John W. Sheppard, "A Behavior Model for Next Generation Test Systems," *Journal of Electronic Testing: Theory and Applications*, Vol. 13, No. 3, December 1998, pp. 299–314.
32. John W. Sheppard, "Co-Learning in Differential Games," *Machine Learning*, special issue on Multi-Agent Learning, Vol. 33, No. 2/3, November/December 1998, pp. 201–233.
33. John W. Sheppard and William R. Simpson, "Managing Conflict in System Diagnosis," *IEEE Computer*, Vol. 31, No. 3, March 1998, pp. 69–76.
34. John W. Sheppard and Steven L. Salzberg, "A Teaching Strategy for Memory-Based Control," *Artificial Intelligence Review*, special issue on Lazy Learning, Vol. 11, pp. 343–370, 1997.
35. John W. Sheppard and Gerald C. Hadfield, "The Object-Oriented Design of Intelligent Test Systems," *CrossTalk: The Journal of Defense Software Engineering*, September 1994.
36. John W. Sheppard and William R. Simpson, "Performing Effective Fault Isolation in Integrated Diagnostics," *IEEE Design and Test of Computers*, Vol. 10, No. 2, 1993, pp. 78–90.
37. William R. Simpson and John W. Sheppard, "Fault Isolation in an Integrated Diagnostics Environment," *IEEE Design and Test of Computers*, Vol. 10, No. 1, 1993, pp. 52–66.
38. John W. Sheppard and William R. Simpson, "Applying Testability Analysis for Integrated Diagnostics," *IEEE Design and Test of Computers*, Vol. 9, No. 3, September 1992, pp. 65–78.
39. Arnold G. Blair, John W. Sheppard, and William R. Simpson, "CALs and Computer Diagnostic Aids: A Partnership for System Support," *CALS Journal*, Vol. 1, No. 1, Spring 1992.
40. Larry V. Kirkland, John W. Sheppard, and William R. Simpson, "Evaluating AI-ESTATE Standards Compliance Using a Functional Intelligence Ratio," *CrossTalk: The Journal of Defense Software Engineering*, No. 39, December 1992.
41. John W. Sheppard and William R. Simpson, "Expert Systems for Diagnostic Testing," *Avionics Magazine*, Vol. 16, No. 10, October 1992, pp. 47–52.
42. Arnold Blair, William R. Simpson, and John W. Sheppard, "A Partnership for Systems Support: Artificially Intelligent Maintenance Aids and CALs," *Logistics Spectrum*, Vol. 26, Issue 3, Summer 1992, pp. 19–26.

43. William R. Simpson and John W. Sheppard, "System Testability Assessment for Integrated Diagnostics," *IEEE Design and Test of Computers*, Vol. 9, No. 1, 1992, pp. 40–50.
44. John W. Sheppard and William R. Simpson, "Information Fusion and the Diagnosis of Avionics Systems," Invited article for *The ITEA Journal of Test and Evaluation*, Vol. XII, No. 3, 1991.
45. William R. Simpson and John W. Sheppard, "Information Fusion and the Testability of Avionics Systems," Invited article for *The ITEA Journal of Test and Evaluation*, Vol. XII, No. 2, 1991.
46. John W. Sheppard and William R. Simpson, "A Mathematical Model for Integrated Diagnostics," *IEEE Design and Test of Computers*, Vol. 8, No. 4, 1991, pp. 25–38.
47. William R. Simpson and John W. Sheppard, "System Complexity and Integrated Diagnostics," *IEEE Design and Test of Computers*, Vol. 8, No. 3, 1991, pp. 16–30.

Refereed Conference Papers

1. Sonja Brown and John W. Sheppard, "Two-Stage Eagle Strategy with Modified Differential Evolution Scale Factor for Unconstrained Global Optimization," submitted to the ACM Genetic and Evolutionary Computation Conference(GECCO), July 2022.
2. Giorgio Morales and John W. Sheppard, "Balancing Prediction Interval Width, Coverage, and Accuracy in Deep Neural Network Regression" submitted the IEEE International Joint Conference on Neural Networks (IJCNN), July 2022.
3. Amy Peerlinck and John W. Sheppard, "Multi-Objective Factored Evolutionary Optimization and the Multi-Objective Knapsack Problem," submitted to the IEEE Congress on Evolutionary Computation (CEC), June 2022.
4. Kyle Webster and John W. Sheppard, "Classifying Compressed Hyperspectral Images," submitted to IEEE International Joint Conference on Neural Networks (IJCNN), June 2022.
5. Kyle Webster and John W Sheppard, "Robust Spectral Based Compression of Hyperspectral Images using LSTM Autoencoders," submitted to IEEE International Joint Conference on Neural Networks (IJCNN), June 2022.
6. Elliott Pryor, Amy Peerlinck, and John Sheppard, "A Study in Overlapping Factor Decomposition for Cooperative Co-Evolution," *Proceedings of the IEEE Swarm Intelligence Symposium (SIS)*, Orlando, FL, December 2021.
7. Na'Shea Wiesner, John Sheppard, and Brian Haberman, "Using Particle Swarm Optimization to Learn a Lane Change Model for Autonomous Vehicle Merging," *Proceedings of the IEEE Swarm Intelligence Symposium (SIS)*, Orlando, FL, December 2021.
8. Farshina Nazrul Shimim, Mohammad Alali, Hashem Nehrir, John Sheppard, Maryam Bahramipannah, and Zagros Shahooei, "Resiliency-Aware Power Management of Microgrids using Agent-based Dynamic Programming and Q-learning," *Proceedings of the 10th IEEE PES Innovative Smart Grid Technologies Conference – Asia*, Brisbane, Australia, December 2021.
9. Giorgio Morales, John Sheppard, Riley Logan, and Joseph Shaw, "Hyperspectral Band Selection for Multispectral Image Classification with Convolutional Networks," *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN)*, July 2021.
10. Jason Kuo and John Sheppard, "Tournament Topology Particle Swarm Optimization," *Proceedings of the IEEE Congress on Evolutionary Computation (CEC)*, Krakow, Poland, July 2021.
11. Stephen Boisvert and John W. Sheppard, "Quality Diversity Genetic Programming for Learning Decision Tree Ensembles," *Proceedings of the 24th European Conference on Genetic Programming (EuroGP)*, Virtual Conference, April 2021, pp. 3–18.

12. Md Asaduzzaman Noor and John W. Sheppard, "Evolutionary Grain Mixing to Improve Profitability in Farming Winter Wheat," *Proceedings of the 24th International Conference on the Applications of Evolutionary Computation (EvoAPPS)*, Virtual Conference, April 2021, pp. 113–129.
13. Na'Shea Wiesner, John Sheppard, and Brian Haberman, "Autonomous Vehicle Control Using Particle Swarm Optimization in a Mixed Control Environment," *Proceedings of the IEEE Symposium Series on Computational Intelligence*, Canberra, Australia, December 2020.
14. Jordan Schupbach, John Sheppard, and Tyler Forrester, "Quantifying Uncertainty in Neural Network Ensembles using U-Statistics," *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN)*, Glasgow, Scotland, July 2020.
15. Richard McAllister and John Sheppard, "Enhancing Neural Networks with Locality-Sensitive Clustering of Internal Representations," *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN)*, Glasgow, Scotland, July 2020.
16. Sumeet Shah and John Sheppard, "Evaluating Explanations of Convolutional Neural Network Classifications," *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN)*, Glasgow, Scotland, July 2020.
17. Scott Wahl and John Sheppard, "Legislative Vote Prediction using Campaign Donations and Fuzzy Hierarchical Communities," *Proceedings of the IEEE International Conference on Machine Learning and Applications*, Boca Raton, FL, December 2019.
18. Tyler Forrester, Jacob Senecal, John Sheppard, and Mark Harris, "Continuous Time Bayesian Networks in Prognostics and Health Management of Centrifugal Pumps," *Proceedings of the Annual Conference of the PHM Society*, Scottsdale, AZ, September 2019.
19. Neil S. Walton, John W. Sheppard, and Joseph A. Shaw, "Using a Genetic Algorithm with Histogram-Based Feature Selection in Hyperspectral Image Classification," *Proceedings of the ACM Genetic and Evolutionary Computation Conference (GECCO)*, Prague, Czech Republic, July 2019.
20. Richard McAllister and John Sheppard, "Exploring Transferability in Deep Neural Networks with Functional Data Analysis and Spatial Statistics," *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN)*, Budapest, Hungary, July 2019.
21. Amy Peerlinck, John Sheppard, and Jacob Senecal, "AdaBoost with Neural Networks for Yield and Protein Prediction in Precision Agriculture," *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN)*, Budapest, Hungary, July 2019.
22. Jacob Senecal, John Sheppard, and Joseph Shaw, "Efficient Convolutional Neural Networks for Multi-Spectral Image Classification," *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN)*, Budapest, Hungary, July 2019.
23. Ryan Van Soelen and John Sheppard, "Using Winning Lottery Tickets in Transfer Learning for Convolutional Neural Networks," *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN)*, Budapest, Hungary, July 2019.
24. Amy Peerlinck, John Sheppard, Julie Pastorino, and Bruce Maxwell, "Optimal Design of Experiments for Precision Agriculture Using a Genetic Algorithm," *Proceedings of the IEEE Congress on Evolutionary Computation (CEC)*, Wellington, New Zealand, June 2019.
25. Benjamin R. Mitchell and John W. Sheppard. "Spatially Biased Random Forests," *Proceedings of the Florida Artificial Intelligence Research Symposium (FLAIRS)*, Sarasota, FL, May 2019, p. 20–25, winner Best Paper Award.
26. John W. Sheppard and Joseph D. DeBruycker, "An Investigation of Current and Emerging Standards to Support a Framework for Prognostics and Health Management in Automatic Test Systems," *IEEE AUTOTESTCON Conference Record*, National Harbor, MD, September 2018, pp. 124–130.

27. Scott Wahl and John Sheppard, “Association Rule Mining in Fuzzy Political Donor Communities,” *Proceedings of the International Conference on Machine Learning and Data Mining (MLDM)*, New York, NY, July 2018, pp. 231–245.
28. Stephyn Butcher, John Sheppard, and Brian Haberman, “Comparative Performance and Scaling of the Pareto Improving Particle Swarm Optimization Algorithm,” *Proceedings of the ACM Genetic and Evolutionary Computation Conference (GECCO)*, Kyoto, Japan, July 2018 pp. 83–84.
29. Stephyn Butcher, John Sheppard, and Shane Strasser, “Information Sharing and Conflict Resolution in Distributed Factored Evolutionary Algorithms,” *Proceedings of the ACM Genetic and Evolutionary Computation Conference (GECCO)*, Kyoto, Japan, July 2018, pp. 5–12.
30. Stephyn Butcher, John Sheppard, and Shane Strasser, “Pareto Improving Selection of the Global Best in Particle Swarm Optimization,” *Proceedings of the IEEE Congress on Evolutionary Computation (CEC)*, Rio de Janeiro, Brazil, July 2018, pp. 662–669.
31. Richard McAllister and John Sheppard, “Evaluating Spatial Generalization of Deep Learning in Wind Vector Determination,” *Proceedings of the Florida Artificial Intelligence Symposium (FLAIRS)*, Melbourne, FL, May 2018, pp. 68–73.
32. Richard McAllister and John W. Sheppard, “Deep Learning for Wind Vector Determination,” *Proceedings of IEEE Deep Learning Symposium*, Honolulu, HI, December 2017, pp. 1196–1203.
33. Shane Strasser and John W. Sheppard, “Evaluating Factored Evolutionary Algorithm Performance on Binary Deceptive Functions,” *Proceedings of IEEE Swarm Intelligence Symposium (SIS)*, Honolulu, HI, December 2017, pp. 564–571.
34. Shane Strasser, John Sheppard, and Stephyn Butcher, “A Formal Approach to Deriving Factored Evolutionary Algorithm Architectures,” *Proceedings of IEEE Swarm Intelligence Symposium (SIS)*, Honolulu, HI, December 2017, pp. 556–563.
35. Logan Perreault, Seth Berardinelli, Clemente Izurieta, and John Sheppard, “Using Classifiers for Software Defect Detection,” *Proceedings of the ISCA 26th International Conference on Software Engineering and Data Engineering*, San Diego, CA, October 2017.
36. John W. Sheppard and Shane Strasser, “A Factored Evolutionary Optimization Approach to Bayesian Abductive Inference for Multiple Fault Diagnosis,” *IEEE AUTOTESTCON Conference Record*, Schaumburg, IL, September 2017, pp. 53–62, winner of Walter E. Peterson Best New Technology Paper Award.
37. Scott Wahl and John Sheppard, “Fuzzy Spectral Hierarchical Communities in Evolving Political Contribution Networks,” *Proceedings of the International Florida Artificial Intelligence Research Society (FLAIRS) Conference*, May 2017, pp. 371–376.
38. Rollie Goodman, Monica Thornton, Shane Strasser, and John Sheppard, “MICPSO: A Method for Incorporating Dependencies into Discrete Particle Swarm Optimization,” *Proceedings of the IEEE Swarm Intelligence Symposium (SIS)*, Athens, Greece, December 2016.
39. Logan Perreault, Monica Thornton, and John W. Sheppard, “Deriving Prognostic Continuous Time Bayesian Networks from Fault Trees,” *Proceedings of the Annual Conference on Prognostics and Health Management*, September, 2016, pp. 347–356.
40. Logan Perreault, Monica Thornton, and John W. Sheppard, “Valuation and Optimization for Performance Based Logistics Using Continuous Time Bayesian Networks,” *IEEE AUTOTESTCON Conference Record*, September 2016, winner of Oscar W. Sepp Best Paper Award.
41. Stephyn G. W. Butcher, Shane Strasser, Jenna Hoole, Benjamin Demeo, and John W. Sheppard, “Relaxing Consensus in Distributed Factored Evolutionary Algorithms,” *Proceedings of the ACM Genetic and Evolutionary Computation Conference (GECCO)*, July 2016, pp. 5–12.
42. Shane Strasser, Rollie Goodman, John W. Sheppard, and Stephyn G. W. Butcher, “A New Discrete Particle Swarm Optimization Algorithm,” *Proceedings of the ACM Genetic and Evolutionary Computation Conference (GECCO)*, July 2016, pp. 53–60.

43. Shehzad Qureshi and John Sheppard, “Dynamic Sampling in Training Artificial Neural Networks with Overlapping Swarm Intelligence,” *Proceedings of the IEEE Congress on Evolutionary Computation (CEC)*, Vancouver, BC, July 2016, pp. 440–446.
44. Hasari Tosun, Ben Mitchell, and John Sheppard, “Assessing Diffusion of Spatial Features in Deep Belief Networks,” *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN)*, Vancouver, BC, July 2016, pp. 1625–1632.
45. Hasari Tosun and John Sheppard, “Fast Classifier Learning under Bounded Computational Resources using Partitioned Restricted Boltzmann Machines,” *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN)*, Vancouver, BC July 2016, pp. 2894–2900.
46. Logan Perreault, Shane Strasser, Monica Thornton, and John Sheppard, “A Noisy-OR Model for Continuous Time Bayesian Networks,” *Proceedings of the International Florida Artificial Intelligence Research Society (FLAIRS) Conference*, May 2016, pp. 668–673.
47. Logan Perreault, Monica Thornton, Rollie Goodman, and John Sheppard, “A Swarm-Based Approach to Learning Phase-Type Distributions for Continuous Time Bayesian Networks,” *Proceedings of the IEEE Swarm Intelligence Symposium (SIS)*, December 2015, pp. 1860–1867.
48. Logan Perreault, Monica Thornton, Shane Strasser, and John Sheppard, “Deriving Prognostic Continuous Time Bayesian Networks from D-matrices,” *IEEE AUTOTESTON Conference Record*, November 2015, pp. 152–161.
49. Benjamin Mitchell, Hasari Tosun, and John Sheppard, “Deep Learning Using Partitioned Data Vectors,” *Proceedings of the International Joint Conference on Neural Networks (IJCNN)*, July 2015.
50. Nathan Fortier, John Sheppard, and Shane Strasser, “Parameter Estimation in Bayesian Networks Using Overlapping Swarm Intelligence,” *Proceedings of the ACM Genetic and Evolutionary Computation Conference (GECCO)*, July 2015, pp. 9–16.
51. Liessman Sturlaugson and John Sheppard, “Marginalization for Long-Term Predictions in Continuous Time Bayesian Networks,” *Proceedings of the Conference on Uncertainty in Artificial Intelligence (UAI)*, July 2015, pp. 842–851.
52. Scott Wahl and John Sheppard, “Hierarchical Fuzzy Spectral Clustering in Social Networks Using Spectral Characterization,” *Proceedings of the International Florida Artificial Intelligence Research Society (FLAIRS) Conference*, May 2015, pp. 305–310.
53. Logan Perreault, Mike Wittie, and John Sheppard, “Communication-Aware Distributed PSO for Dynamic Robotic Search,” *Proceedings of IEEE Swarm Intelligence Symposium (SIS)*, December 2014, pp. 65–72.
54. Nathan Fortier and John Sheppard, “Learning Bayesian Classifiers Using Overlapping Swarm Intelligence,” *Proceedings of IEEE Swarm Intelligence Symposium (SIS)*, December 2014, pp. 205–212.
55. Hasari Tosun and John Sheppard, “Training Restricted Boltzmann Machines with Overlapping Partitions,” *Proceedings of the European Conference on Machine Learning-Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD)*, September 2014, pp. 195–208.
56. Houston King, Nathan Fortier, and John Sheppard, “An AI-ESTATE Conformant Interface for Net-Centric Diagnostic and Prognostic Reasoning,” *IEEE AutoTest Conference Record*, runner-up Best Student Paper Award, September 2014.
57. Houston King, Logan Perreault, and John Sheppard, “Using Continuous-Time Bayesian Networks for Standards-Based Diagnostics and Prognostics,” *IEEE AutoTest Conference Record*, September 2014.

58. Liessman Sturlaugson and John Sheppard, "Inference Complexity in Continuous Time Bayesian Networks," *Proceedings of the Conference on Uncertainty in Artificial Intelligence (UAI)*, July 2014, pp. 772–729.
59. Patrick J. Donnelly and John W. Sheppard, "Clustering Spectral Filters for Extensible Feature Extraction in Musical Instrument Classification," *Proceedings of the International Florida Artificial Intelligence Research Society (FLAIRS) Conference*, May 2014, pp. 37–42.
60. Liessman Sturlaugson and John W. Sheppard, "Factored Performance Functions with Structural Representation in Continuous Time Bayesian Networks," *Proceedings of the International Florida Artificial Intelligence Research Society (FLAIRS) Conference*, May 2014, pp. 512–517.
61. Nicholas J. Ryhajlo, Liessman Sturlaugson, and John Sheppard, "Diagnostic Bayesian Networks with Fuzzy Evidence," *IEEE AUTOTESTCON Conference Record*, Schaumburg, IL, September 2013, winner of Best Student Paper Award.
62. Liessman Sturlaugson, Nathan Fortier, Patrick Donnelly, and John Sheppard, "Implementing AI-ESTATE with Prognostic Extensions in Java," *IEEE AUTOTESTCON Conference Record*, Schaumburg, IL, September 2013, runner-up Best Student Paper Award.
63. Nathan Fortier, John Sheppard, and Karthik Ganesan Pillai, "Bayesian Abductive Inference using Overlapping Swarm Intelligence," *Proceedings of the IEEE Swarm Intelligence Symposium (SIS)*, April 2013, pp. 263–270.
64. Rachel Green and John Sheppard, "Comparing Frequency- and Style-Based Features for Twitter Author Identification," *Proceedings of the International Florida Artificial Intelligence Research Society (FLAIRS) Conference*, May 2013, pp. 64–69.
65. Timothy Wylie, John Sheppard, Michael Schuh, and Rafal Angryk, "Cluster Analysis for Optimal Indexing," *Proceedings of the International Florida Artificial Intelligence Research Society (FLAIRS) Conference*, May 2013, pp. 166–171.
66. Liessman Sturlaugson and John Sheppard, "Principal Component Analysis Preprocessing with Bayesian Networks for Battery Capacity Estimation," *Proceedings of the IEEE International Instrumentation and Measurement Conference (I2MTC)*, May 2013, pp. 98–101.
67. Shane Strasser and John Sheppard, "An Empirical Evaluation of Bayesian Networks Derived from Fault Trees," *Proceedings of the IEEE Aerospace Conference*, March 2013.
68. Richard McAllister, John W. Sheppard, and Rafal Angryk, "Taxonomic Dimensionality Reduction in Bayesian Text Classification," *Proceedings of the International Conference on Machine Learning Applications (ICMLA)*, December 2012, pp. 508–513.
69. Benjamin Mitchell and John Sheppard, "Deep Structure Learning: Beyond Connectionist Approaches," *Proceedings of the International Conference on Machine Learning Applications (ICMLA)*, December 2012, pp. 162–167.
70. Nathan Fortier, John Sheppard, and Karthik Ganesan Pillai, "DOSI: A New Approach for Training Artificial Neural Networks Using Overlapping Swarm Intelligence," *Proceedings of the International Conference on Soft Computing and Intelligence Systems and International Symposium on Advanced Intelligent Systems*, November 2012, pp. 1420–1425.
71. Karthik Ganesan Pillai and John Sheppard, "Abductive Inference in Bayesian Belief Networks Using Swarm Intelligence," *Proceedings of the International Conference on Soft Computing and Intelligence Systems and International Symposium on Advanced Intelligent Systems*, November 2012, pp. 375–380.
72. Patrick Donnelly, Liessman Sturlaugson, and John Sheppard, "A Standards-Based Approach to Gray-Scale Health Assessment Using Fuzzy Fault Trees," *IEEE AUTOTESTCON Conference Record*, Anaheim, CA, September 2012, pp. 174–181.

73. Shane Strasser, Eben Howard, and John Sheppard, "An Integrated Toolset for Ontology-Guided Knowledge Discovery and Diagnostic Maturation Using Maintenance Data," *IEEE AUTOTESTCON Conference Record*, Anaheim, CA, September 2012, pp. 280–290, runner-up Best Student Paper Award.
74. Douglas Galarus, Rafal Angryk, and John Sheppard, "Automated Weather Sensor Quality Control," *Proceedings of the International Florida Artificial Intelligence Research Society (FLAIRS) Conference*, 2012, pp. 388–393.
75. Michael Schuh, Rafal Angryk, and John Sheppard, "Evolving Kernel Functions with Particle Swarm Optimization and Genetic Programming," *Proceedings of the International Florida Artificial Intelligence Research Society (FLAIRS) Conference*, 2012, pp. 80–85.
76. Shane Strasser and John W. Sheppard, "Diagnostic Alarm Sequence Maturation in Timed Failure Propagation Graphs," *IEEE AUTOTESTCON Conference Record*, Baltimore, MD, September, 2011, pp. 158–165, winner of Best Track Paper Award—Diagnostics and Health Assessment.
77. Mike Schuh, John Sheppard, Shane Strasser, Rafal Angryk, and Clemente Izurieta, "Ontology-Guided Knowledge Discovery Through the Generation and Visualization of Event Sequences in Maintenance Data," *IEEE AUTOTESTCON Conference Record*, Baltimore MD, September, 2011, pp. 279–285, winner of Best Student Paper Award.
78. Patrick Donnelly and John Sheppard, "Evolving Four-Part Harmony Using Genetic Algorithm," in *Proceedings of the 9th European Event on Evolutionary and Biologically Inspired Music, Sound, Art and Design (EvoMusArt)*, Torino, Italy, April 2011.
79. Karthik Ganesan Pillai and John W. Sheppard, "Overlapping Swarm Intelligence for Training Artificial Neural Networks," *Proceedings of the Swarm Intelligence Symposium (SIS)*, *Proceedings of the IEEE Swarm Intelligence Symposium*, Paris, France, April 2011.
80. Shane Strasser, John Sheppard, Michael Schuh, Rafal Angryk, and Clemente Izurieta, "Graph-Based, Ontology-Guided Data Mining for D-Matrix Model Maturation," *Proceedings of the IEEE Aerospace Conference*, Big Sky, MT, March 2011.
81. Scott Wahl and John Sheppard, "Extracting Decision Trees from Diagnostic Bayesian Networks to Guide Test Selection," *Proceedings of the Annual Conference of the Prognostics and Health Management Society*, October 2010.
82. John W. Sheppard, Stephyn G. W. Butcher, and Patrick J. Donnelly, "Demonstrating Semantic Interoperability of Diagnostic Reasoners via AI-ESTATE," *Proceedings of the IEEE Aerospace Conference*, Big Sky, MT, March 2010.
83. John W. Sheppard, Stephyn G. W. Butcher, and Patrick J. Donnelly, "Standard Diagnostic Services for the ATS Framework," *IEEE AUTOTESTCON 2009 Conference Record*, Anaheim, CA, September 2009, pp. 393–400.
84. John W. Sheppard, Stephyn G. W. Butcher, Patrick J. Donnelly, and Benjamin R. Mitchell, "Demonstrating Semantic Interoperability of Diagnostic Models via AI-ESTATE," *Proceedings of the IEEE Aerospace Conference*, Big Sky, MT, March 2009.
85. John W. Sheppard, Timothy J. Wilmering, and Mark A. Kaufman, "IEEE Standards for Prognostics and Health Management," *IEEE AUTOTESTCON 2008 Conference Record*, Salt Lake City, UT, September 2008, pp. 97–103.
86. Edward Kao, Peter VanMaasdam, and John Sheppard, "Image-Based Tracking Utilizing Particle Swarms and Probabilistic Data Association," *Proceedings of the IEEE Swarm Intelligence Symposium (SIS)*, St. Louis, MO, September 21–23, 2008.
87. Stephyn G. W. Butcher and John W. Sheppard, "Asset-Specific Bayesian Diagnostics in Mixed Contexts," *IEEE AUTOTESTCON 2007 Conference Record*, Baltimore, MD, September 2007, pp. 113–121.

88. Kihoon Choi, Satnam Singh, Krishna Pattipati, John W. Sheppard, Setu Madhavi Namburu, Shunsuke Chigusa, Danil V. Prokhorov, and Lui Qiao, "Novel Classifier Fusion Approaches for Fault Diagnosis in Automotive Systems," *IEEE AUTOTESTCON 2007 Conference Record*, Baltimore, MD, September 2007, pp. 260–269.
89. John W. Sheppard, Mark A. Kaufman, and Timothy J. Wilmering, "Model-Based Standards for Diagnostic and Maintenance Information Integration," *IEEE AUTOTESTCON 2007 Conference Record*, Baltimore, MD, September 2007, pp. 304–310.
90. Sean R. Martin, Steve E. Wright, and John W. Sheppard, "Offline and Online Evolutionary Bi-Directional RRT Algorithms for Efficient Re-Planning in Environments with Moving Obstacles," *Proceedings of the 3rd annual IEEE Conference on Automation Science and Engineering*, New York: IEEE Press, September 2007, pp. 1131–1136.
91. Stephen G. W. Butcher, John W. Sheppard, Mark A. Kaufman, Hanh Ha, and Craig MacDougall, "Experiments in Bayesian Diagnostics with IUID-Enabled Data," *IEEE AUTOTESTCON 2006 Conference Record*, Anaheim, California, September 2006, pp. 605–614.
92. John W. Sheppard, Stephyn G. W. Butcher, Mark A. Kaufman, and Craig MacDougall, "Not-So-Nave Bayesian Networks and Unique Identification in Developing Advanced Diagnostics," *Proceedings of the IEEE Aerospace Conference*, Big Sky, Montana, March 2006.
93. John W. Sheppard and Stephyn G. W. Butcher, "On the Linear Separability of Diagnostic Models," *IEEE AUTOTESTCON 2006 Conference Record*, Anaheim, California, September 2006, pp. 626–635.
94. John W. Sheppard and Timothy J. Wilmering, "Recent Advances in IEEE Standards for Diagnosis and Diagnostic Maturation," *Proceedings of the IEEE Aerospace Conference*, Big Sky, Montana, March 2006.
95. John W. Sheppard and Mark A. Kaufman, "Bayesian Diagnosis and Prognosis Using Instrument Uncertainty," *IEEE AUTOTESTCON 2005 Conference Record*, Orlando, Florida, September 2005.
96. John W. Sheppard and Mark A. Kaufman, "Bayesian Modeling: An Amendment to the AI-ESTATE Standard," *IEEE AUTOTESTCON 2005 Conference Record*, Orlando, Florida, September 2005.
97. Brian Howard and John W. Sheppard, "The Royal Road Not Taken: A Re-Examination of the Reasons for GA Failure on R1," *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO)*, Seattle, Washington, June 2004.
98. Rashad Moore, John W. Sheppard, and Ashley Williams, "Multi-Agent Simulation of Airline Travel Markets," *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO)*, Seattle, Washington, June 2004.
99. John W. Sheppard, "Accounting for False Indication in a Bayesian Diagnostics Framework," *IEEE AUTOTESTCON 2003 Conference Record*, Anaheim, California, September 2003.
100. John W. Sheppard and Mark A. Kaufman, "An Integrated View of Test and Diagnostic Information Standards," *IEEE AUTOTESTCON 2002 Conference Record*, Huntsville, Alabama, October 2002.
101. Antony Bartolini, John W. Sheppard, and Thomas E. Munns, "An Application of Diagnostic Inference Modeling in Vehicle Health Management," *IEEE AUTOTESTCON 2001 Conference Record*, Valley Forge, Pennsylvania, August 2001.
102. Mike Waters and John W. Sheppard, "Genetic Programming and Co-evolution with Exogenous Fitness in an Artificial Life Environment," *Proceedings of the Congress on Evolutionary Computation (CEC)*, May 1999.
103. John W. Sheppard, "Information Superiority through Intelligent Information Operations," *Proceedings of the Joint Aerospace Weapon System, Support, and Simulation Symposium*, San Diego, California, May 1999.

104. John W. Sheppard and William R. Simpson, "Standardized Representations of Diagnostic Models," *Proceedings of the IEEE International Conference on System, Man, and Cybernetics*, La Jolla, California, October 1998.
105. John W. Sheppard and Leslie A. Orlidge, "Artificial Intelligence Exchange and Service Tie to All Test Environments (AI-ESTATE)—A New Standard for System Diagnostics," *Proceedings of the International Test Conference (ITC)*, Washington, DC, October 1997.
106. John W. Sheppard and William R. Simpson, "Improving the Accuracy of Diagnostics Provided by Fault Dictionaries," *Proceedings of the 14th VLSI Test Symposium (VTS)*, Princeton, New Jersey, April 1996.
107. John W. Sheppard and Steven L. Salzberg, "Combining Genetic Algorithms with Memory-Based Reasoning," *Proceedings of the 6th International Conference on Genetic Algorithms (ICGA)*, Pittsburgh, Pennsylvania, July 1995.
108. William R. Simpson and John W. Sheppard, "The Impact of Commercial Off-the-Shelf (COTS) Equipment on System Test and Diagnosis," *Proceedings of the International Test Conference (ITC)*, Baltimore, MD, September 1993.
109. John W. Sheppard and William R. Simpson, "Elements of Machine Learning is a Field Diagnostic Maintenance Aid," *Proceedings of the ADPA Symposium on Artificial Intelligence Applications for Acquisition Management, Logistics Management, and Personnel Management*, Williamsburg, Virginia, March 1992.
110. William R. Simpson and John W. Sheppard, "An Intelligent Approach to Automatic Test Equipment," *Proceedings of the International Test Conference (ITC)*, Nashville, Tennessee, October 1991.
111. John W. Sheppard and William R. Simpson, "Using a Competitive Learning Neural Network to Evaluate Software Complexity," *Proceedings of the 1990 ACM Symposium on Personal and Small Computers*, Crystal City, Virginia, March 1990.
112. William R. Simpson, Brian A. Kelly, and John W. Sheppard, "Clinical Protocol Development: An Information Theoretic Approach," *Sixth World Congress on Medical Informatics*, Part a – Beijing, China, October, 1989, Part b - Raffle City, Singapore, December, 1989.
113. John W. Sheppard and William R. Simpson, "Functional Path Analysis: An Approach to Software Verification," *Proceedings of the 1988 ACM Computer Science Conference*, Atlanta, Georgia, February 1988.

Refereed Workshop Papers

1. Stephyn Butcher and John Sheppard, "An Actor Model Implementation of Distributed Factored Evolutionary Algorithms," *Proceedings of the GECCO Workshop on Parallel and Distributed Evolutionary Inspired Methods*, Kyoto, Japan, July 2018, pp. 1276–1283.
2. Shane Strasser and John Sheppard, "Convergence of Factored Evolutionary Algorithms," *Proceedings of the Workshop on Foundations of Genetic Algorithms (FOGA)*, Copenhagen, Denmark, January, 2017, pp. 81–94.
3. Patrick J. Donnelly and John W. Sheppard, "Cross-Dataset Validation of Feature Sets in Musical Instrument Classification," *Proceedings of the ICDM Workshop on Big Media Data: Understanding, Search, and Mining*, November 2015, pp. 94–101.
4. Hasari Tosun and John Sheppard, "Incorporating Evidence Into Trust Propagation Models Using Markov Random Fields," *Proceedings of the 3rd International Workshop on Security and Social Networking (SESOC), IEEE International Conference on Pervasive Computing*, March 21, 2011, pp. 263–269.
5. Stephyn G. W. Butcher and John W. Sheppard, "Improving Diagnostic Accuracy by Blending Probabilities: Some Initial Experiments," *Proceedings of the 18th International Workshop on Principles of Diagnosis (DX-07)*, Nashville, TN, May 2007, pp. 235–242.

6. Satnam Singh, Kihoon Choi, Anuradha Kodali, Krishna Pattipati, John Sheppard, Setu Madhavi Namburu, Shunsuke Chigusa, Danil V. Prokhorov, and Liu Qiao, “Dynamic Multiple Fault Diagnosis: Mathematical Formulations and Solution Techniques,” *Proceedings of the 18th International Workshop on Principles of Diagnosis (DX-07)*, Nashville, TN, May 2007, pp. 383–390.
7. Timothy J. Wilmering and John W. Sheppard, “Ontologies for Data Mining and Knowledge Discovery to Support Diagnostic Maturation,” *Proceedings of the 18th International Workshop on Principles of Diagnosis (DX-07)*, Nashville, TN, May 2007, pp. 210–217.
8. John W. Sheppard and Mark A. Kaufman, “Formal Specification of Testability Metrics in P1522,” *IEEE AUTOTESTCON 2001 Conference Record*, Valley Forge, Pennsylvania, August 2001.
9. John W. Sheppard, “System Prognostics with Non-Linear Time Series Prediction: Preliminary Results,” *IEEE International Workshop on System Test and Diagnosis Digest*, October 2000, Atlantic City, New Jersey.
10. John W. Sheppard, “Inducing Information Models from Case Data,” *IEEE International Workshop on System Test and Diagnosis*, Alexandria, Virginia, April 1998.
11. John W. Sheppard and Steven L. Salzberg, “Bootstrapping Memory-Based Learning with Genetic Algorithms,” *1994 AAAI Case-Based Reasoning Workshop*, Seattle, WA, August 1994.
12. John W. Sheppard, “Inducing Classification Rules for Public Health Data,” *Proceedings of the Second International Workshop on Multistrategy Learning*, Harpers Ferry, West Virginia, May 1993.

Invited Talks

1. John W. Sheppard, “AI Fireside Chat,” American Computer and Robotics Museum, with Dr. Mary Ann Cummings and Dr. Kristen Intemann, May 4, 2021.
2. John W. Sheppard, “Safe at Every Speed: Expeditions in Complex System Health,” Provost Distinguished Lecture, Montana State University, March 9, 2021. (~ 3000 views on Facebook and YouTube)
3. John W. Sheppard, “The Ethics of Precision Agriculture,” Panel Discussion, IEEE Workshop on Ethics And Social Implications Of Computational Intelligence, Glasgow, Scotland, July 19, 2020.
4. John W. Sheppard, “The Big-Data Promise of PHM in an ATS Environment,” DoD/MoD’s Digital Data Transformation and the Impacts on Automatic Test Systems, DoD ATS Executive Plenary Panel, IEEE AUTOTESTCON 2018, National Harbor, MD, September 2018.
5. Joseph DeBruycker, Jessi L. Smith, John W. Sheppard, and Dustin B. Thoman, “New Analyses for an Old Problem, Modeling Effects of an Implicit Bias Intervention in Faculty Searches Using Continuous Time Bayesian Networks,” Poster Presentation at the Society for Personality and Social Psychology Annual Convention, Atlanta, GA, March 2018.
6. John W. Sheppard, “Risk-based PHM: Probabilistic Methods for Continuous-time Hazard Analysis and Risk Mitigation,” Keynote Speaker, IEEE PHM-2017, Harbin, China, July 2017.
7. John W. Sheppard and Michael Malesich, “DoD ATS Framework—Diagnostic and Prognostic Elements,” Invited Plenary Panelist, IEEE AUTOTESTCON 2008, Salt Lake City, Utah, September 2008.
8. John W. Sheppard, “Design for Test—The Integrated Diagnostics Perspective,” Invited Panelist, AUTOTESTCON 2006, Anaheim, California, September 2006.
9. John W. Sheppard, “Information-Based Standards and Diagnostic Component Technology,” Invited Paper and Plenary Talk for 2nd IEEE International Workshop on System Test and Diagnosis, Atlantic City, New Jersey, September 1999.

10. John W. Sheppard, "Artificial Intelligence in Diagnosis," Invited Seminar, Institute for Information Industry, Taipei, Taiwan, February 1998.
11. John W. Sheppard, "The Role of Information Modeling in Developing Standards," Invited Seminar for Computer Science Department, Florida State University, March 1998.
12. John W. Sheppard, "System Test and Diagnosis," Invited Seminar, Institute for Information Industry, Taipei, Taiwan, February 1998.
13. John W. Sheppard, "Is ROI Sufficient Justification for DFT?" Keynote Address, 1993 Economics of Test Workshop, Austin, Texas, May 1993.
14. John W. Sheppard, "Testing Fully Testable Systems: A Case Study," Invited Panel Presentation for the International Test Conference (ITC), Baltimore, Maryland, September 1993.
15. William R. Simpson and John W. Sheppard, "Design for Testability and Diagnosis at the System Level," Invited Paper for Proceedings of the NASA Space Operations, Applications, and Research (SOAR) Conference, Houston, Texas, August 1992.
16. William R. Simpson and John W. Sheppard, "A Model Based Approach to System Test and Diagnosis," Invited Presentation for the International Conference on Computer Design, Cambridge, Massachusetts, October 1992.
17. John W. Sheppard, "System Perspective on Diagnostic Testing," Invited Panel Presentation for the International Test Conference (ITC), Baltimore, Maryland, September 1992.
18. Eugene A. Esker, Jean-Paul Martin, William R. Simpson, and John W. Sheppard, "Integrating Design for Testability and Automated Testing Approaches," IEEE AUTOTESTCON '90 Conference Record, San Antonio, Texas, September 1990.
19. John W. Sheppard, "An Approach to Verifying Expert System Rule Bases," Invited Paper for 1989 International Conference on Systems, Man, and Cybernetics, Boston, Massachusetts, November 1989.

Unrefereed Conference Papers

1. Bruce Maxwell, Paul Hegedus, Sasha Loewen, Hannah Duff, John Sheppard, Amy Peerlinck, Giorgio Morales, and Anton Bekkerman, "Decision Support from On-Field Precision Experiments," submitted to the International Conference on Precision Agriculture, June 2022.
2. Giorgio Morales, John Sheppard, Amy Peerlinck, Paul Hegedus, and Bruce Maxwell, "Generation of Site-specific Nitrogen Response Curves for Winter Wheat using Deep Learning," submitted to the International Conference on Precision Agriculture, June 2022.
3. Amy Peerlinck, Giorgio Morales, John Sheppard, Paul Hegedus, and Bruce Maxwell, "Optimizing Nitrogen Application to Maximize Yield and Reduce Environmental Impact in Winter Wheat Production," submitted to the International Conference on Precision Agriculture, June 2022.
4. Giorgio Morales and John W. Sheppard, "Two-Dimensional Deep Regression for Early Yield Prediction of Winter Wheat," *Proceedings of the SPIE Future Sensing Technologies Conference* (invited), November 2021.
5. Riley D. Logan, Bryan Scherrer, Jacob Senecal, Neil S. Walton, Amy Peerlinck, John W. Sheppard, and Joseph A. Shaw, "Hyperspectral Imaging and Machine Learning for Monitoring Produce Ripeness," *Proceedings of the SPIE Defense + Commercial Sensing Conference*, April 27 – May 1, 2020.
6. Peter Lawson, Jordan Schupbach, John Sheppard, and Brittany Terese Fasy, "Persistent Homology for the Automatic Classification of Prostate Cancer Aggressiveness in Histopathology Slides," *Proceedings of the SPIE Medical Imaging Conference*, February 16-21, 2019, San Diego, CA.

7. Amy Peerlinck, John Sheppard, and Bruce Maxwell, "Using Deep Learning in Yield and Protein Prediction of Winter Wheat in Precision Agriculture," *Proceedings of the International Conference on Precision Agriculture*, May 2018.
8. Bruce Maxwell, Paul Hegedus, Philip Davis, Anton Bekkerman, Robert Payn, John Sheppard, Nicholas Silverman, and Clemente Izurieta, "Can Optimization Associated with On-Farm Experimentation Using Site-Specific Technologies Improve Producer Management Decisions?" *Proceedings of the International Conference on Precision Agriculture*, May 2018.
9. John W. Sheppard and Mark A. Kaufman, "IEEE 1232 and 1522 Standards," *IEEE AUTOTESTCON 2000 Conference Record*, Anaheim, California, September 2000.
10. John W. Sheppard and Mark A. Kaufman, "IEEE Test and Diagnosis Standards," *Proceedings of the 19th Digital Avionics Systems Conference*, August 2000.
11. John W. Sheppard and Amanda Jane Giarla, "Information-Based Standards and Component Technology," *IEEE AUTOTESTCON 2000 Conference Record*, Anaheim, California, September 2000.
12. John W. Sheppard and Mark A. Kaufman, "AI-ESTATE—The Next Generation," *IEEE AUTOTESTCON 99 Conference Record*, San Antonio, Texas, September 1999.
13. Mark A. Kaufman and John W. Sheppard, "P1522: A Formal Standard for Testability and Diagnosability Standards," *IEEE AUTOTESTCON 99 Conference Record*, San Antonio, Texas, September 1999.
14. John W. Sheppard and William R. Simpson, "Prototyping a Diagnostic Interface," *IEEE AUTOTESTCON 98 Conference Record*, Salt Lake City, Utah, August 1998.
15. John W. Sheppard, Antony Bartolini, and Leslie A. Orledge, "Standardizing Diagnostic Information Using IEEE AI-ESTATE," *IEEE AUTOTESTCON 97 Conference Record*, Anaheim, California, September 1997.
16. Richard L. Maguire and John W. Sheppard, "Application Scenarios for AI-ESTATE Services," *IEEE AUTOTESTCON 96 Conference Record*, Dayton, Ohio, September 1996.
17. William R. Simpson and John W. Sheppard, "Encapsulation and Diagnosis with Fault Dictionaries," *IEEE AUTOTESTCON 96 Conference Record*, Dayton, Ohio, September 1996.
18. Don Gartner and John W. Sheppard, "An Experiment in Encapsulation in System Diagnosis," *IEEE AUTOTESTCON 96 Conference Record*, Dayton, Ohio, September 1996.
19. John W. Sheppard, "Maintaining Diagnostic Truth with Information Flow Models," *IEEE AUTOTESTCON 96 Conference Record*, Dayton, Ohio, September 1996.
20. John W. Sheppard and William R. Simpson, "A Systems View of Test Standardization," *IEEE AUTOTESTCON 96 Conference Record*, Dayton, Ohio, September 1996.
21. William R. Simpson and John W. Sheppard, "Diagnosis: Art versus Science," *Proceedings of NEPCON West*, Anaheim, California, February 1996.
22. John W. Sheppard and Jonas strand, "Modeling Diagnostic Constraints with AI-ESTATE," *IEEE AUTOTESTCON 95 Conference Record*, Atlanta, Georgia, August 1995, winner of Best Student Paper award.
23. John W. Sheppard and William R. Simpson, "A View of the ABBET" Upper Layers," *IEEE AUTOTESTCON 95 Conference Record*, Atlanta, Georgia, August 1995.
24. William R. Simpson and John W. Sheppard, "Dependency Modeling Pitfalls," *IEEE AUTOTESTCON 94 Conference Record*, Anaheim, CA, September 1994.
25. John W. Sheppard and William R. Simpson, "Multiple Failure Diagnosis," *IEEE AUTOTESTCON Conference Record 94*, Anaheim, CA, September 1994, winner of Best Paper award.
26. John W. Sheppard, "Standardizing Diagnostic Models for System Test and Diagnosis," *IEEE AUTOTESTCON 94 Conference Record*, Anaheim, CA, September 1994.

27. William R. Simpson and John W. Sheppard, "A Data Fusion Approach to Integrated Diagnostics," *Proceedings of the Test Facility Working Group Conference*, Las Vegas, Nevada, June 1993.
28. Jean-Luc Larraga, William R. Simpson, and John W. Sheppard, "Intelligent Automatic Test Equipment for the Improvement of Avionics Maintenance," *Proceedings of ToolDiag 93*, Toulouse, France, 1993.
29. William R. Simpson and John W. Sheppard, "The Multicriterion Nature of Diagnosis," *IEEE AUTOTESTCON Conference Record*, San Antonio, TX, September 1993, co-authored with William R. Simpson.
30. John W. Sheppard and Gerald C. Hadfield, "The Object-Oriented Design of Intelligent Test Systems," *IEEE AUTOTESTCON Conference Record*, San Antonio, Texas, September 1993.
31. John W. Sheppard and William R. Simpson, "A Systems Approach to Specifying Built-in Tests," *Proceedings of the Test Facility Working Group Conference*, Las Vegas, Nevada, June 1993.
32. William R. Simpson and John W. Sheppard, "Analysis of False Alarms During System Design," *Proceedings of the 1992 National Aerospace Electronics Conference*, Dayton, Ohio, May 1992.
33. John W. Sheppard, and William R. Simpson, "Automated Production of Information Models for Use in Model-Based Diagnosis," *Proceedings of the 1992 National Aerospace Electronics Conference*, Dayton, Ohio, May 1992, co-authored with William R. Simpson.
34. Larry V. Kirkland, John W. Sheppard, and William R. Simpson, "Evaluating AI-ESTATE Standards Compliance Using a Functional Intelligence Ratio," *IEEE AUTOTESTCON 92 Conference Record*, Dayton, Ohio, September 1992, winner of Walter E. Peterson Award for Best New Technology Paper.
35. John W. Sheppard, "Explanation Based Learning With Diagnostic Models," *IEEE AUTOTESTCON Conference Record*, Dayton, Ohio, September 1992.
36. John W. Sheppard and William R. Simpson, "Fault Diagnosis Under Temporal Constraints," *IEEE AUTOTESTCON Conference Record*, Dayton, Ohio, September 1992.
37. Leonard Haynes, Sharon Goodall, Floyd Phillips, William R. Simpson, and John W. Sheppard, "Test Strategy Component of an Open Architecture for Electronics Design and Support Tools," *IEEE AUTOTESTCON Conference Record*, Dayton, Ohio, September 1992.
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