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Education

- Ph.D. (Computer Science), Michigan State University, 1983.
- M.S. (Computer Science), Michigan State University, 1980.
- B.Tech. (Electrical Engineering), Indian Institute of Technology, Bombay, 1977.

Academic Experience

2017-present	Cornelius Vanderbilt Endowed Chair, Professor of Computer Science and Computer Engineering, Department of Electrical Engineering and Computer Science, Vanderbilt University, Nashville, TN. Senior Research Scientist, Institute for Software Integrated Systems (ISIS)
2004-2016	Professor of Computer Science and Computer Engineering, Department of Electrical Engineering and Computer Science, Vanderbilt University, Nashville, TN. Senior Research Scientist, Institute for Software Integrated Systems (ISIS)
2001-2004	Director of Graduate Studies, Computer Science, Vanderbilt University, Nashville, TN.
1998-99	Visiting Associate Professor in Computer Science, Stanford University, Stanford, CA.
1990-2004	Associate Professor of Computer Science, Computer Engineering and Management of Technology, Department of Electrical Engineering and Computer Science, Vanderbilt University, Nashville, TN. Senior Research Scientist, Institute for Software Integrated Systems (ISIS) Associate Director, Center for Intelligent Systems Research Faculty Member, Learning Sciences Institute.
1996-1998	Director, Computer Engineering Program, Vanderbilt University, Nashville, TN.
1988-1990	Assistant Professor, Department of Computer Science, Vanderbilt University, Nashville, TN.

1983-1987	Assistant Professor, Department of Computer Science University of South Carolina, Columbia, S.C. Research Faculty Member, Intelligent Systems Lab, Dept. of Computer Science, USC.
1978-1982	Graduate Research Assistant in Pattern Recognition and Image Processing Lab, Computer Science Department, Michigan State University, E. Lansing.
1980-1982	Programmer in Computer Laboratory, Dept. of Audiology and Speech Sciences, Michigan State University, E. Lansing.
1977-1978	Graduate Teaching Assistant, Computer Science Dept., Univ. of Rhode Island, Kingston.

Non-Academic Experience

Summer 1990, 1991 & 1992	Consultant to Amoco Research Laboratories. Non numeric data analysis and risk analysis.
Summer 1990	Consultant To Federal Express Air Ops Division. Multi-level diagnosis systems and training systems for mechanics.
Summer 1988	Consultant at Amoco Research Laboratories. Knowledge Based systems for well log interpretation, basin characterization, estimation of production capacities, and risk analysis.
Summer 1984	Consultant to CMS-1 Systems Engg. Group, AT&T Bell Labs, Holmdel, NJ. Designed CMS-1 (Circuit Maintenance System-1), a system for administration and maintenance of trunk lines as an expert system.
Summer 1980 & Dec. 1980	Specialist at Advanced Technology Transfer, Inc., Culver City, CA. Developed fast interactive image processing system (PPP - Picture Processing Package) on the VAX-11/780 computer system.
Summer 1974	IBM Manufacturing Operations, Bombay.

Publication Statistics

- Google h-index: 50 (i10 index: 248); Total citations: 11,351. (June 2019)

Journal Publications

Published

1. G. Biswas, A.K. Jain, and R.C. Dubes, "An Evaluation of Projection Algorithms," *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. PAMI-3, pp. 702-708, 1981.
2. G. Biswas and R.C. Dubes, "Some experiments in 2-D grammatical inference," *Pattern Recognition Letters*, vol. 2, pp. 173-177, 1984.
3. A. Sen and G. Biswas, "Decision Support Systems: An Expert Systems Approach," *Decision Support Systems: The International Journal*, vol. 1, pp. 197-204, 1985.

4. V. Subramanian, G. Biswas, and J.C. Bezdek, "Document Retrieval Using a Fuzzy Knowledge-Based System," *Journal of Optical Engineering*, vol. 25, pp. 445-455, 1986.
5. J.C. Bezdek, G. Biswas, and L. Huang, "Transitive Closure of Fuzzy Thesauri for Information Retrieval Systems," *Intl. Jour. of Man-Machine Studies*, vol. 25, pp. 343-356, 1986.
6. G. Biswas, J.C. Bezdek, M. Marques, and V. Subramanian, "Knowledge-Assisted Document Retrieval: I. The Natural Language Interface," *Journal of the American Society for Information Sciences*, vol. 38, pp. 83-96, 1987.
7. G. Biswas, J.C. Bezdek, V. Subramanian, and M. Marques, "Knowledge-Assisted Document Retrieval: II. The Retrieval Process," *Journal of the American Society for Information Sciences*, vol. 38, pp. 97-110, 1987.
8. G. Biswas, R. Abramczyk, and M. Oliff, "OASES - An Expert System for Operations Analysis: The System for Cause Analysis," *IEEE Trans. on Systems, Man and Cybernetics*, vol. 17, pp. 133-145, 1987.
9. G. Biswas and T.S. Anand, "An Expert System Shell for Mixed Initiative Reasoning," *Journal of the Indian Institute of Science, Bangalore, India*, vol. 67, pp. 465-490, 1987.
10. G. Biswas, M. Oliff, and A. Sen, "An Expert Decision Support System for Production Control," *Decision Support Systems: The International Journal*, vol. 4, pp. 235-248, 1988.
11. G. Biswas, M. Oliff, and R. Abramczyk, "OASES (Operations Analysis Expert System): An Application in Fiberglass Manufacturing," *International Journal of Expert Systems*, vol. 1, no. 3, pp. 193-216, 1988.
12. P.K. Bose, G. Biswas, and A.M. Rao Padala, "Globe-Trotter: An Intelligent Flight Itinerary Planner," *IEEE Expert*, vol. 4, no. 2, pp. 56-64, 1989.
13. D.M. Scaturro, C. Kendall, J.C. Wendte, G. Biswas, R. Cannon, and J.C. Bezdek, "Judy Creek: A Case Study for a Two Dimensional Sediment Deposition Simulation," *Controls on Carbonate Platform and Basin Development, SEPM Special Publication no. 44*, P.M. Crevello, J.L. Wilson, F.J. Sarg, and J.F. Read, eds., pp. 63-76, 1989.
14. J. Strobel, R. Cannon, C.G.St.C. Kendall, G. Biswas, and J. Bezdek, "Interactive (SEDPACK) Simulation of Clastic and Carbonate Sediments in Shelf to Basin Settings," *Computers and Geosciences*, vol. 15, pp. 1279-1290, 1989.
15. G. Biswas, X. Yu, W.J. Hagins, J. Bezdek, J. Strobel, C.G.St.C. Kendall, and R.L. Cannon, "PLAYMAKER: A Knowledge Based Approach to Characterizing Hydrocarbon Plays," *Intl. Jour. of Pattern Recognition and Artificial Intelligence*, vol. 4, pp. 315-339, 1990.
16. P.P. Shenoy and G. Biswas, "Belief Functions and Belief Maintenance in Artificial Intelligence," Guest Editors introduction, *International Journal of Approximate Reasoning*, vol. 4, nos. 5-6, pp. 319-322, 1990.
17. C. Kendall, J. Strobel, R. Cannon, and G. Biswas, "The Simulation of Sedimentary Fill of Basins," *Journal of Geophysical Research*, vol. 96, pp. 6911-6929, 1991.
18. N. Kaul, G. Biswas, and B. Bhuvra, "Multi-level Qualitative Reasoning applied to CMOS digital circuits," *Intl. Journal of AI in Engineering*, vol. 7, pp. 125-137, 1992.

19. D. Cheong, J. Strobel, G. Biswas, G. Lee, C. Kendall, R. Cannon, and J. Bezdek, "PLAY-MAKER: A Knowledge-Based Expert System," *Geobyte*, vol. 7, no. 6, pp. 28-41, 1992.
20. G. Biswas, S. Manganaris, and X. Yu, "Extending Component Connection Modeling for Analyzing Complex Physical Systems," *IEEE Expert*, vol. 8, no. 1, pp. 48-57, February 1993.
21. A.M. Tharpe, G. Biswas, and J. Hall, "AUDEX: An Expert System for Pediatric Auditory Brainstem Interpretation," *Journal of the American Academy of Audiology*, vol. 4, pp. 163-171, 1993.
22. D.L. Hibler and G. Biswas, "Restriction on Qualitative Models to ensure more Specific Behavior," *Intelligent Systems Engineering*, vol. 2, pp. 133-144, 1993.
23. D. Fisher, L. Xu, J. Carnes, Y. Reich, S. Fenves, J. Chen, R. Shiavi, G. Biswas, and J. Weinberg, "Applying AI Clustering to Engineering Tasks," *IEEE Expert*, vol. 8, no. 6, pp. 51-60, December 1993.
24. N. Kaul, G. Biswas, and B. Bhuvra, "An AI Approach to Multi-Level, Mixed-mode qualitative simulation of CMOS ICs," *Computers and Electrical Engineering, An International Journal*, vol. 20, pp. 369-382, 1994.
25. A.M. Tharpe, J.A. Rassi, and G. Biswas, "Problem-based Learning: An Innovative Approach to Audiology Education," *American Journal of Audiology*, vol. 4, pp. 19-25, 1995.
26. G. Biswas, K. Kawamura, A. Saad, and M. Curtin, "Intelligent and Environmentally Conscious Manufacturing: State of the Art," *Intl. Journal of Environmentally Conscious Design and Manufacturing*, vol. 4, no. 2, pp. 1-10, 1995.
27. S. Bagchi, G. Biswas, and K. Kawamura, "Interactive Task Planning under Uncertainty and Goal Changes," *Robotics and Autonomous Systems*, vol. 18, nos. 1-2, pp. 157-168, 1996.
28. G. Biswas, T. Arai and M. Iskarous, "Intelligence Group Report," *Robotics and Autonomous Systems*, vol. 18, nos. 1-2, pp. 141-148, pp. 141-148, 1996.
29. G. Biswas, R. Kapadia, and X. Yu, "Combined Qualitative-Quantitative Steady State Diagnosis of Continuous-valued Systems," *IEEE Transactions on Systems, Man, and Cybernetics*, vol. 27, PART A, no. 2, pp. 167-185, 1997.
30. A.M. Tharpe and G. Biswas, "Characterization of Problem Solving in Audiology: Implications for Training," *American Journal of Audiology*, vol. 6, no. 1, pp. 31-42, March 1997.
31. A. Saad, G. Biswas, and K. Kawamura, "Performance Evaluation of Contract Net Based Heterarchical Scheduling for Flexible Manufacturing Systems," *Jour. of Intelligent Automation and Soft Computing*, vol. 3, no. 3, pp. 233-252, 1997.
32. T.R. Crews, G. Biswas, S.R. Goldman, and J.D. Bransford, "Anchored Intelligent Learning Environments," *Intl. Journal of Artificial Intelligence in Education*, vol. 8, pp. 142-178, 1997.
33. G. Biswas, H. Haftbadaran, K. Kawamura, R. Dhingra, D. Hunkeler, J. Lantz, M. Shahinpoor, and T. Quinn, "An Environmentally Conscious Decision Support System Based on a Streamlined LCA and a Cost Residual Risk Evaluation: Fluorescent Light Bulb Case Study," *Intl. Journal of Environmentally Conscious Design and Manufacturing*, vol. 6, no. 3, pp. 9-24 1997.

34. P.J. Mosterman and G. Biswas, "A Theory of Discontinuities in Physical System Models," *Journal of the Franklin Institute: Engineering and Applied Mathematics*, vol. 335B, no. 3, pp. 401-439, Jan. 1998.
35. G. Biswas, J. Weinberg, and D.H. Fisher, "ITERATE: A Conceptual Clustering Algorithm for Data Mining," *IEEE Transactions on Systems, Man, and Cybernetics*, vol. 28C, no. 2, pp. 219-230, May 1998.
36. G. Biswas, K. Kawamura, D. Hunkeler, R. Dhingra, E. Huang, and M. Curtin, "An Environmentally Conscious Decision Support System for Life Cycle Management," *Journal of Industrial Ecology*, vol. 2, no. 1, pp. 127-142, Jan. 1998.
37. P.J. Mosterman, G. Biswas, and J. Sztipanovits, "A Hybrid Modeling and Verification Paradigm for Embedded Control Systems," *Control Engineering Practice: An IFAC Journal*, vol. 6, no. 4, pp. 511-521, Apr. 1998.
38. G. Biswas, R. Clift, J. Ehrenfeld, R. Forster, O. Jolliet, I. Kneopfel, U. Luterbacher, D. Russell, and D. Hunkeler, "Ecometrics: Identification, Categorization, and Life Cycle Validation," *Intl. Journal of Life Cycle Assessment*, vol. 3, pp. 184-, 1998.
39. S.R. Goldman, L.K. Zech, G. Biswas, T. Noser, and CTGV, "Computer Technology and Complex Problem Solving: Issues in the study of complex cognitive activity," *Instructional Science*, special issue on "User-System Interactions," Rouet, Dillenbourg, Steffens, and van Oostendorp, eds., vol. 27, pp. 235-268, 1999.
40. P.J. Mosterman and G. Biswas, "Diagnosis of Continuous Valued Systems in Transient Operating Regions," *IEEE Transactions on Systems, Man, and Cybernetics*, vol. 29, no. 6, pp. 554-565, Nov. 1999.
41. E.J. Manders, G. Biswas, P.J. Mosterman, L. Barford, and J. Barnett, "Signal Interpretation for Monitoring and Diagnosis: A Cooling System Testbed," *IEEE Trans. on Instrumentation and Measurement*, vol. 49, no. 3, pp. 503-509, 2000.
42. P.J. Mosterman and G. Biswas, "A Comprehensive Methodology for Building Hybrid Models of Physical Systems," *Artificial Intelligence Journal*, vol. 121, pp. 171-209, 2000.
43. S.U. Egarievwe, A.O. Ojiboye, G. Biswas, et al., "Internet Application of Labview in Computer Based Learning," *European Journal of Open and Distance Learning (EURODL)*, an Internet Journal (<http://www1.nks.no/eurodl/eurodlen/index.html>), Thematic Issue: ICL 2000, November 2000.
44. D. Hunkeler and G. Biswas, "Return on Environment: An Objective Indicator to Validate Life Cycle Assessments?" *Intl. Journal of Life Cycle Assessment*, vol. 5, no. 6, pp. 358-362, 2000.
45. M.M. Matthews, W. Pharr, G. Biswas, and H. Neelakandan, "USCSH: An Active Intelligent Assistance System," *Journal of Artificial Intelligence Review*, vol. 14, pp. 121-141, 2000.
46. S. Bagchi, G. Biswas, and K. Kawamura, "Task Planning under Uncertainty using a Spreading Activation Network," *IEEE Trans. on Systems, Man, and Cybernetics*, vol. 30, no. 6, pp. 639-650, 2000.

47. X.W. Yu, G. Biswas, and J. Weinberg, "MDS – An Integrated Architecture for Associational and Model-Based Diagnosis," *Applied Intelligence: An International Journal*, vol. 14, no. 2, pp. 179-195, 2001.
48. P.J. Mosterman and G. Biswas, "A Hybrid Modeling and Simulation Methodology for Dynamic Physical Systems," *SIMULATION: Transactions of the Society for Modeling and Simulation International*, vol. 78, no. 1, pp. 5-17, Jan. 2002.
49. E.J. Manders, L.A. Barford, and G. Biswas, "An Approach for Fault Detection and Isolation in Dynamic Systems from Distributed Measurements," *IEEE Transactions on Instrumentation and Measurement*, vol. 51, no. 2, pp. 235-240, April 2002.
50. C. Li and G. Biswas, "Unsupervised Learning with Mixed Numeric-and-Nominal Mixed Data," *IEEE Trans. on Knowledge and Data Engineering*, vol. 14, no. 4, pp. 673-690, 2002.
51. C. Li and G. Biswas, "A Bayesian Approach for Learning Hidden Markov Models from Data", special issue on *Markov Chain and Hidden Markov Models, Scientific Programming*, vol. 10, no. 3, pp. 201-219, 2002.
52. C. Li and G. Biswas, "Applying the Hidden Markov Methodology for Unsupervised Learning of Temporal Data," special issue of *International Jour. of Knowledge Based Intelligent Engineering Systems*, M. Aledjem and F. Steimann, Guest Eds., vol. 6, no. 3, pp. 152-160, July 2002.
53. C. Li, G. Biswas, M. Dale, and P. Dale, "Matryoshka: A HMM Based Temporal Data Clustering Methodology for Modeling System Dynamics," *Intelligent Data Analysis*, vol. 6, no. 3, pp. 281-308, 2002.
54. M. Dale, P. Dale, C. Li, and G. Biswas, "Assessing Impacts of Small Perturbations using a Model-based Approach," *Ecological Modeling*, vol. 156, no. 2-3, pp. 185-199, Nov. 2002.
55. M. Ji, Z. Zhang, G. Biswas, and N. Sarkar, "Hybrid Fault Adaptive Control of a Wheeled Mobile Robot," *IEEE Transactions on Mechatronics*, vol. 8, no. 2, pp. 226-233, June 2003.
56. G. Biswas, E.J. Manders, J.W. Ramirez, N. Mahadevan, and S. Abdelwahed, "Online Model-Based Diagnosis to Support Autonomous Operation of an Advanced Life Support System," *Habitation: International Journal of Human Support Research*, vol. 10, no. 1, pp. 21-38, 2004.
57. G. Biswas, M.O. Cordier, J. Lunze, L. Trave-Massuyes, and M. Staroswiecki, "Diagnosis of Complex Systems: Bridging the Gap between the FDI and DX communities," Guest Editorial, special issue of *IEEE Trans. on Systems, Man, and Cybernetics, Part B*, vol. 34, no. 5, pp. 2139-2142, Oct. 2004.
58. S. Abdelwahed, J. Wu, G. Biswas, J. Ramirez, and E.J. Manders, "Online Fault-Adaptive Control for Efficient Resource Management in Advanced Life Support Systems," *Habitation: International Journal of Human Support Research*, vol. 10, no. 2, pp. 105-115, 2005.
59. G. Biswas, D. Schwartz, K. Leelawong, N. Vye, and TAG-V, "Learning by Teaching: A New Agent Paradigm for Educational Software," *Applied Artificial Intelligence*, special issue on Educational Agents, vol. 19, no. 3-4, pp. 363-392, March 2005.

60. J. Sztipanovits, G. Biswas, K. Frampton, A. Gokhale, L. Howard, G. Karsai, J. Koo, X. Koutsoukos, and D. Schmidt, "Introducing Embedded Software and Systems Education and Advanced Learning Technology in an Engineering Curriculum," special issue, *ACM Trans. on Embedded Systems (TECS)*, vol. 4, no. 3, pp. 549-568, August 2005.
61. K. Blair, D. Schwartz, G. Biswas, and K. Leelawong, "Pedagogical Agents for Learning by Teaching: Teachable Agents," *Special issue of Educational Technology on "Pedagogical Agents,"* vol. 47, no. 1, pp. 56-61, January 2007.
62. M. Daigle, X. Koutsoukos, and G. Biswas, "Distributed Diagnosis in Formations of Mobile Robots," *IEEE Transactions on Robotics (T-RO)*, vol. 23, no. 2, pp. 353-369, April 2007.
63. S. Narasimhan and G. Biswas, "Model-based Diagnosis of Hybrid Systems," *IEEE Trans. on Systems, Man, and Cybernetics, Part A,* vol. 37, no. 3, pp. 348-361, May 2007.
64. S.D. Pathak, D.M. Dilts, and G. Biswas, "On the Evolutionary Dynamics of Supply Network Topologies," *IEEE Transactions on Engineering Management*, vol. 54, no. 4, pp. 662-672, November 2007.
65. K. Leelawong and G. Biswas, "Designing Learning by Teaching Agents: The Betty's Brain System," *International Journal of Artificial Intelligence in Education*, vol. 18, no. 3, pp. 181-208, 2008.
66. G. Biswas and X. Koutsoukos, "Report of the Eighteenth International Workshop on Principles of Diagnosis," *Artificial Intelligence Magazine*, pp. 95-97, Spring 2008.
67. I. Roychoudhury, M. Daigle, G. Biswas, and X. Koutsoukos, "An Efficient Method for Simulating Complex Systems with Switching Behaviors Using Hybrid Bond Graphs," *Simulation News Europe*, October 2008.
68. I. Roychoudhury, G. Biswas, and X. Koutsoukos, "Designing Distributed Diagnosers for Continuous Systems," *IEEE Transactions on Automation Science and Engineering*, vol. 6, no. 2, pp. 277-290, April 2009.
69. M. Daigle, X. Koutsoukos, and G. Biswas, "A Qualitative Event-based Approach to Continuous Systems Diagnosis," *IEEE Transactions on Control Systems Technology*, vol. 17, no. 4, pp. 780-793, July 2009.
70. N. Shankaran, J.S. Kinnebrew, X. Koutsoukos, C. Lu, D.C. Schmidt, and G. Biswas, "An Integrated Planning and Adaptive Resource Management Architecture for Distributed Real-time Embedded Systems," *IEEE Transactions on Computers: Special Issue on Autonomic Network Computing*, vol. 58, no. 11, pp. 1485-1499, November 2009.
71. B. Bodenheimer, B. Williams, M.R. Kramer, K. Viswanath, R. Balachandran, K. Belyne, G. Biswas, "Construction and Evaluation of Animated Teachable Agents," *Educational Technology and Society Journal*, vol. 12, no. 3, pp. 191-205, 2009.
72. A. Moustafa, S. Mahadevan, M. Daigle, and G. Biswas, "Structural and Sensor Damage Identification using the Bond Graph Approach," *Structural Control and Health Monitoring*, vol. 17, no. 2, pp. 178-197, March 2010.

73. M. Daigle, X. Koutsoukos, and G. Biswas, "An Event-based Approach to Integrated Parametric and Discrete Fault Diagnosis in Hybrid Systems," *Transactions of the Institute of Measurement and Control, Special Issue on Hybrid and Switched Systems*, vol. 32, no. 4, August 2010.
74. M. Daigle, I. Roychoudhury, G. Biswas, X. Koutsoukos, A. Patterson-Hine, and S. Poll, "A Comprehensive Diagnosis Methodology for Complex Hybrid Systems: A Case Study on Spacecraft Power Distribution Systems," *IEEE Transactions on System, Man, and Cybernetics, Part A: Special issue on "Model-based Diagnosis: Facing Challenges in Real-world Applications"*, vol. 40, no. 5, pp. 917-931, Sept. 2010.
75. P. Struss, G. Provan, J. deKleer, and G. Biswas, "Guest Editorial: Special Issue on Model-Based Diagnostics," *IEEE Transactions on Systems, Man, and Cybernetics*, vol. 40, no. 5, pp. 870-873, Sept. 2010.
76. G. Biswas, H. Jeong, H., J. Kinnebrew, B. Sulcer, and R. Roscoe, "Measuring Self-regulated Learning Skills through Social Interactions in a Teachable Agent Environment," *Research and Practice in Technology-Enhanced Learning*, vol. 5, no. 2, pp. 123-152, 2010.
77. I. Roychoudhury, M.J. Daigle, G. Biswas, and X. Koutsoukos, "Efficient Simulation of hybrid systems: A hybrid bond graph approach," *Simulation: Transactions of the Society for Modeling and Simulation International*, vol. 87, no. 6, pp. 467-498, June 2011.
78. J.S. Kinnebrew and G. Biswas, "Modeling and Measuring Self-Regulated Learning in Teachable Agent Environments," *Journal of e-Learning and Knowledge Society, English Edition*, vol. 7, no. 2, pp. 19-35, 2011.
79. B. Stratman, S. Mahadevan, C. Li, and G. Biswas, "Identification of Critical Inspection Samples among Railroad Wheels by Similarity-based Agglomerative Clustering," *Integrated Computer-Aided Engineering*, vol. 18, pp. 203-219, 2011.
80. Tantawy, A., X. Koutsoukos, and G. Biswas, "Aircraft Power Generators: Hybrid Modeling and Simulation for Fault Detection," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 48, no. 1, pp. 552-571, January 2012.
81. A. Bregon, G. Biswas, and B. Pulido, A Decomposition Method for Nonlinear Parameter Estimation in TRANSCEND, *Proc. IEEE Transactions on Systems, Man, and Cybernetics, Part A*, vol. 42, no. 3, pp. 751-763, 2012.
82. E. Frisk, A. Bregon, J. Aslund, M. Krysander, B. Pulido, and G. Biswas, "Diagnosability Analysis Considering Causal Interpretations for Differential Constraints," *Proc. IEEE Transactions on Systems, Man, and Cybernetics, Part A*, vol. 42, no. 5, pp. 1216-1229, September 2012.
83. Z.H. Chen, Zhi-Hong, C.Y. Chou, G. Biswas, and T.W. Chan, "Substitutive competition: Virtual pets as competitive buffers to alleviate possible negative influence on pupils," *British Journal of Educational Technology*, vol. 43, no. 2, pp. 247-258, 2012.
84. J.R. Segedy, J.S. Kinnebrew, and G. Biswas, "The Effect of Contextualized Conversational Feedback in a Complex Open-Ended Learning Environment," *Educational Technology Research and Development*, vol. 61, no. 1, pp. 71-89, 2013 (online version: DOI: 10.1007/s11423-012-9275-0).

85. Roscoe, R.D., Segedy, J.R., Sulcer, B., Jeong, H., and Biswas, G., "Shallow Strategy Development in a Teachable Agent Environment Designed to Support Self-Regulated Learning," *Computers and Education*, vol. 62, pp. 286-297, 2013.
86. Sengupta, P., Kinnebrew, J.S., Basu, S., Biswas, G., and Clark, D., "Integrating Computational Thinking with K-12 Science Education Using Agent-based Computation: A Theoretical Framework," *Education and Information Technologies*, vol. 18, no. 2, pp. 351-380, 2013.
87. J.S. Kinnebrew, J.S., K.M. Loretz, and G. Biswas, "A Contextualized, Differential Sequence Mining Method to Derive Students' Learning Behavior Patterns," *Journal of Educational Data Mining* (ISSN 2157-2100), vol. 5, no. 1, pp. 190-219, 2013.
88. Celaya, J., C.S. Kulkarni, G. Biswas, and K. Goebel, "Prognostic Studies and Physics of failure modeling under High Electrical Stress for Electrolytic Capacitors," *International Journal on Prognostics and Health Management, IJPHM* (ISSN 2153-2648, 2013 005), vol. 4, no. 1, 2013. (http://www.phmsociety.org/sites/phmsociety.org/files/phm_submission/2012/ijphm_13_005.pdf)
89. A. Bregon, M. Daigle, I. Roychoudhury, G. Biswas, X. Koutsoukos, X., and B. Pulido, "An event-based distributed diagnosis framework using structural model decomposition," *Artificial Intelligence Journal*, vol. 210, pp. 1-35, 2014.
90. J.R. Segedy, G. Biswas, and B. Sulcer, "A Model-Based Behavior Analysis Approach for Open-Ended Environments," *Journal of Educational Technology and Society*, vol. 17, no. 1, pp. 272-282, 2014.
91. A. Bregon, G. Biswas, B. Pulido, C. Alonso-Gonzalez, and H. Khorasgani, "A Common Framework for Compilation Techniques Applied to Diagnosis of Linear Dynamic Systems," *IEEE Transactions on Systems, Man, and Cybernetics, Systems*, vol. 44, no. 7, pp. 863-876, 2014.
92. J.S. Kinnebrew, J.R. Segedy, and G. Biswas, "Analyzing the Temporal Evolution of Students' Behaviors in Open-Ended Learning Environments," *Metacognition and Learning*, vol. 9, pp. 187-215, 2014.
93. A. Tantawy, X.D. Koutsoukos, and G. Biswas, "Cross-layer design for decentralized detection in Wireless Sensor Networks," *EURASIP Journal of Advanced Signal Processing*, vol. 43, no. 1, pp. 1-29, 2014.
94. Ould Bouamama, B., Biswas, G., Loureiro, R., and Merzouki, R., "Graphical methods for diagnosis of dynamic systems: Review," *Annual Reviews in Control*, vol. 38, no. 2, pp. 199-219, 2014.
95. C. Ye and G. Biswas, "Early Prediction of Student Dropout and Performance in MOOCs using Higher Granularity Temporal Information," *Journal of Learning Analytics*, vol. 1, no. 3, pp. 169-172, 2014.
96. S. Basu, P. Sengupta, and G. Biswas, "A scaffolding framework to support learning of emergent phenomena using multi-agent based simulation environments," *Research in Science Education*, vol. 45, no. 2, pp. 293-324, 2015.
97. J.R. Segedy, J.S. Kinnebrew, and G. Biswas, "Using Coherence Analysis to Characterize Self-Regulated Learning Behaviors in Open-Ended Learning Environments," *Journal of Learning Analytics*, Special section: Self-regulated learning and learning analytics, Guest Editors, I. Roll and P.H. Winne, vol. 2, no. 1, pp. 13-48, 2015.

98. F. Caglar, S. Shekhar, A. Gokhale, S. Basu, T. Rafi, J. Kinnebrew, and G. Biswas, "Cloud-hosted Simulation-as-a-Service for High School STEM Education," *Simulation Modeling Practice and Theory*, vol. 58, no. 2, pp. 255–273, 2015.
99. A. Tantawy, X. Koutsoukos, and G. Biswas, "Model-Based Design of Tree WSNs for Decentralized Detection," *Sensors*, vol. 15, no. 8, pp. 20608-20647, 2015.
100. G. Biswas, J.R. Segedy, and K. Bunchongchit, "From Design to Implementation to Practice - A Learning by Teaching System: Betty's Brain," *International Journal of Artificial Intelligence in Education*, vol. 26, pp. 350–364, 2016.
101. D.B. Clark, S. Virk, P. Sengupta, C. Brady, M. Martinez-Garza, K. Krinks, S. Killingsworth, J. Kinnebrew, G. Biswas, J. Barnes, J. Minstrell, B. Nelson, K. Slack, and C. DAngelo, "SURGEs evolution deeper into formal representations: The sirens call of popular game-play mechanics," *International Journal of Designs for Learning*, vol. 7, no. 1, pp. 107–146, 2016.
102. M.J. Daigle, A. Bregon, X. Koutsoukos, G. Biswas, and B. Pulido, "A qualitative event-based approach to multiple fault diagnosis in continuous systems using structural model decomposition," *Engineering Applications of Artificial Intelligence*, vol. 53, pp. 190-206, 2016.
103. G. Zhou, G. Biswas, W. Zhang, Q. Zhao, W. Feng, "Comparison of State Estimation Techniques for Nonlinear Hybrid Systems," *Simulation*, vol. 92, no. 4, pp. 357–376, 2016.
104. J.D. Carl and G. Biswas, "An Approach to Parallel Simulation of Ordinary Differential Equations," *Journal of Software Engineering Applications*, vol. 9, pp. 250–290, 2016. (<http://dx.doi.org/10.4236/jsea.2016.95019>)
105. S. Basu, G. Biswas, P. Sengupta, A. Dikes, J.S. Kinnebrew, and D.B. Clark, "Identifying middle school students challenges in Computational Thinking based Science learning," *Research and Practice in technology-Enhanced learning*, vol. 11, pp. 1–35, Dec. 2016.
106. H. Khorasgani, G. Biswas, and S. Sankararaman, "Methodologies for System-level Remaining Useful Life Prediction," *Reliability Engineering and System Safety*, vol. 154, pp. 8–18, 2016.
107. G. Biswas, H. Khorasgani, G. Stanje, A. Dubey, S. Deb, and S. Ghoshal, "An Approach To Mode and Anomaly Detection with Spacecraft Telemetry Data," *International Journal of Prognostics and Health Management*, vol. 7 (Special Issue on Big Data Analytics), 2016.
108. D.L.C. Mack, G. Biswas, X. Koutsoukos, and D. Mylaraswamy, "Learning Bayesian Network Structures to Augment Aircraft Diagnostic Reference Models," *IEEE Transactions on Automation Science and Engineering*, vol. 14, no. 1, pp. 358-269, 2017.
109. J.S. Kinnebrew, S.S. Killingsworth, D.B. Clark, G. Biswas, P. Sengupta, J. Minstrell, M. Martinez-Garza, and K. Krinks, "Contextual Markup and Mining in Digital Games for Science Learning: Connecting Player Behaviors to Learning Goals," *IEEE Transactions on Learning Technologies*, vol. 10, no. 1, pp. 93-103, 2017.
110. S. Basu, G. Biswas, and J.S. Kinnebrew, "Learner modeling for adaptive scaffolding in a Computational Thinking-based science learning environment," *User Modeling and User-Adapted Interaction*, vol. 27, no. 1, pp. 5-53, 2017.

111. J.S. Kinnebrew, J.R. Segedy, and G. Biswas, "Integrating Model-Driven and Data-Driven Techniques for Analyzing Learning Behaviors in Open-Ended Learning Environments," *IEEE Transactions on Learning Technologies*, vol. 10, no. 2, pp. 140-153, 2017.
112. H. Khorasgani and G. Biswas, "Structural Fault Detection and Isolation in Hybrid Systems," *IEEE Transactions in Automation Science and Engineering*, online version: DOI: 10.1109/TASE.2017.2749447.
113. D.L. Mack, G. Biswas, H. Khorasgani, D. Mylaraswamy, and R. Bharadwaj, "Combining expert knowledge and unsupervised learning techniques for anomaly detection in aircraft flight data," *at-Automatisierungstechnik*, vol. 66, no. 4, pp. 291-307, 2018.
114. D. Jung, Y. Dong, E. Frisk, M. Krysander and G. Biswas, "Sensor selection for fault diagnosis in uncertain systems," *International Journal of Control*, 2018. online version: DOI: 10.1080/00207179.2018.148417.
115. H. Khorasgani and G. Biswas, "A Methodology for Monitoring Smart Buildings with Incomplete Models," *Intl. Journal on Soft Computing*, in review, vol. 71, pp. 396-406, 2018.
116. Taub, Michelle and Azevedo, Roger and Rajendran, Ramkumar and Cloude, Elizabeth B and Biswas, Gautam and Price, Megan J., "How are students emotions related to the accuracy of cognitive and metacognitive processes during learning with an intelligent tutoring system?," *Learning and Instruction*, 2019.
117. Khorasgani, Hamed and Biswas, Gautam and Jung, Daniel, "Structural Methodologies for Distributed Fault Detection and Isolation," *Applied Sciences*, vol. 9, no. 7, pp. 1286- (25 pages), 2019, Multidisciplinary Digital Publishing Institute.
118. Jaeger, Christopher Brett and Hymel, Alicia M and Levin, Daniel T and Biswas, Gautam and Paul, Natalie and Kinnebrew, John, "The interrelationship between concepts about agency and students use of teachable-agent learning technology," *Cognitive research: principles and implications*, vol. 4, no. 1, pp. 14-, 2019. Springer.

Invited Papers (Book Chapters)

1. M. Oliff and G. Biswas, "OASES: An Expert System for Operations Analysis," *Applied Expert Systems*, E. Turban and P.R. Watkins, eds., Elsevier Science Publishers (North Holland), pp. 205-229, 1988.
2. G. Biswas and T.S. Anand, "Using the Dempster-Shafer Scheme in a Mixed-Initiative Expert System Shell," *Uncertainty in Artificial Intelligence 3*, L.N. Kanal, T.S. Levitt, and J.F. Lemmer, eds., Elsevier Science Publishers (North Holland), Amsterdam, pp. 223-239, 1989.
3. J. Strobel, F. Soewito, C. Kendall, G. Biswas, J. Bezdek, and R. Cannon, "Interactive Simulation (SEDPACK) of Clastic and Carbonate Sedimentation in Shelf to Basin Settings, *Quantitative Dynamic Stratigraphy*, T.A. Cross, ed., Prentice Hall, Englewood Cliffs, NJ, pp. 433-444, 1989.
4. G. Biswas and M. Oliff, "Expert Systems for Operations Analysis," *Systems and Control Encyclopedia (First Supplement)*, M.G. Singh, ed., Pergamon Press, Oxford, pp. 236-243, 1990.

5. P.K. Basu and G. Biswas, "CAAD in expert mode," *Expert Systems for Management and Engineering*, E. Balagurusamy and J. Howe, eds., Ellis Horwood, London, UK, pp. 209-222, 1990.
6. C. Kendall, P. Moore, J. Strobel, R. Cannon, M. Perlmutter, J. Bezdek, and G. Biswas, "Simulation of the Sedimentary Fill of Basins," *Sedimentary Modeling: Computer Simulations and Methods for Improved Parameter Definition*, Kansas Geological Survey, Lawrence, KS, Bulletin no. 233, E.K. Franseen, et al., eds., pp. 9-30, 1991.
7. J. Weinberg, S. Uckun, G. Biswas, and S. Manganaris, "Qualitative Vector Algebra," *Recent Advances in Qualitative Physics*, B. Faltings and P. Struss, eds., MIT Press, pp. 193-208, 1992.
8. D.L. Hibler and G. Biswas, "TEPS: Thought Experiments and Qualitative Physics Problem Solving," *Recent Advances in Qualitative Physics*, B. Faltings and P. Struss, eds., MIT Press, pp. 345-360, 1992.
9. G. Biswas, J. Weinberg, and G.R. Koller, "Data Exploration in Non-numeric Databases," *Advances in Databases and Artificial Intelligence*, vol. 1, F.E. Petry and L.M. Delcambre, eds., Jai Press, Greenwich, CT, pp. 145-165, 1995.
10. G. Biswas, S.R. Goldman, D. Fisher, B. Bhuva, and G. Glewwe, "Assessing Design Activity in Complex CMOS Circuit Design," *Cognitively Diagnostic Assessment*, P. Nicholls, S. Chipman, and R. Brennan, eds., Lawrence Erlbaum, Hillsdale, NJ, pp. 167-188, 1995.
11. G. Biswas, J. Weinberg, and C. Li, "ITERATE: A Conceptual Clustering Method for Knowledge Discovery in Databases," *Artificial Intelligence in the Petroleum Industry*, B. Braunschweig and R. Day, eds., Editions Technip, Paris, France, pp. 111-139, 1995.
12. Mosterman, P.J., Zhao, F., and Biswas, G., "Sliding Mode Model Semantics and Simulation for Hybrid Systems," *Lecture Notes in Computer Science, Hybrid Systems V*, vol. 1567, Springer Verlag, Heidelberg, Germany, pp. 218-237, 1999.
13. Schwartz, D., Biswas, G., Brophy, S.P., Bransford, J.D., Balac, T., and Bhuva, B., "Computer Tools that Link Assessment and Instruction: Investigating What Makes Electricity Hard to Learn," in S. Lajoie (ed.), *Computers as cognitive tools Volume II No more walls: Theory change, paradigm shifts and their influence on the use of computers for instructional purposes*, Lawrence Erlbaum Assoc., NJ, pp. 273-307, 2000.
14. G. Biswas, D. Schwartz, J. Bransford, and the Teachable Agent Group at Vanderbilt (TAG-V), "Technology Support for Complex Problem Solving: From SAD Environments to AI," in K.D. Forbus and P.J. Feltovich (eds.), *Smart Machines in Education: The Coming Revolution in Educational Technology*, pp. 71-97 (Ch. 3), AAAI/MIT Press, Menlo Park, CA, 2001.
15. G. Karsai, G. Biswas, S. Narasimhan, T. Szemethy, G. Peceli, G. Simon, and T. Kovacsazy, "Towards Fault-Adaptive Control of Complex Dynamic Systems," *Software-Enabled Control: Information Technologies for Dynamical Systems*, T. Samad and G. Balas, eds., IEEE Press, pp. 347-368, 2003.
16. D.L. Schwartz, K.P. Blair, G. Biswas, and K. Leelawong, "Animations of Thought: Interactivity in the Teachable Agent Paradigm," in *Learning with Animation: Research and Implications for Design*. R. Lowe and W. Schnotz (eds), UK: Cambridge University Press, pp. 114-140, 2007.

17. D.L. Schwartz, C. Chase, D. Chin, M. Oppedizzo, H. Kwong, S. Okita, G. Biswas, R.D. Roscoe, H. Jeong, and J.D. Wagster, "Interactive Metacognition: Monitoring and Regulating a Teachable Agent," *Handbook of Metacognition in Education*, D.J. Hacker, J. Dunlosky, A.C. Graesser (eds.), Routledge Press, pp. 340-358, April 2009.
18. A. Patterson-Hine, G. Aaseng, G. Biswas, S. Narasimhan, and K. Pattipati, "Diagnosis," *System Health Management with Aerospace Applications*, S. Johnson, et al., editors, Chapter 16, pp. 346-366, John Wiley, 2011.
19. D. Kortenkamp, G. Biswas, and E.J.-Manders, "Life Support Health Management," *System Health Management with Aerospace Applications*, S. Johnson, et al., editors, Chapter 31, pp. 614-629, John Wiley, 2011.
20. Clark, D. B., Martinez-Garza, M. M., Biswas, G., Luecht, R. M., and Sengupta, P., "Driving Assessment of Students' Explanations in Game Dialog Using Computer-Adaptive Testing and Hidden Markov Modeling," *Assessment in Game-Based Learning*, D. Ifenthaler, D. Eseryl, and X. Ge, eds., Springer, New York, pp. 173-200, 2012.
21. Kinnebrew, J.S., Biswas, G., Sulcer, B. and Taylor, R.S., "Investigating Self-Regulated Learning in Teachable Agent Environments," Azevedo, R. and Alevin, V. (Eds.), *International Handbook of Metacognition and Learning Technologies*, pp. 451-470. New York: Springer, 2013.
22. Biswas, G., Segedy, J. R., and Kinnebrew, J. S., "A Combined Theory-and Data-Driven Approach for Interpreting Learners Metacognitive Behaviors in Open-Ended Tutoring Environments," *Design Recommendations for Intelligent Tutoring Systems, vol. 2: Instructional Management*, pp. 135-150, 2014.
23. Segedy, J. R., Kinnebrew, J. S., Goldberg, B. S., Sottolare, R. A., and Biswas, G., "Designing Representations and Support for Metacognition in the Generalized Intelligent Framework for Tutoring," In *Foundations of Augmented Cognition*, Springer International Publishing, pp. 663-674, 2015.
24. Biswas, G., Paquette, L. and Baker, R.S., "Educational Data Mining: Data Mining Methods for Assessing Self-Regulated Learning," *Handbook of Self-Regulation of Learning and Performance (2e)*, D.H. Schunk and J.A. Greene (eds.), pp. 388-404, Routledge, New York, NY, 2017.
25. Niggemann, O., Biswas, G., Kinnebrew, J. S., Khorasgani, H., Volgmann, S., & Bunte, A. "Datenanalyse in der intelligenten Fabrik," *Handbuch Industrie 4.0 Bd. 2*, pp. 471-490. Springer Verlag, Berlin, Heidelberg.
26. Zhang, Ningyu and Biswas, Gautam, "Defining and Assessing Students Computational Thinking in a Learning by Modeling Environment," *Computational Thinking Education*, pp. 203-221, Springer, 2019.
27. Khorasgani, H. and Biswas, G. "Mode Detection and Fault Diagnosis in Hybrid Systems," *Fault Diagnosis of Dynamic Systems*, Escobet T., Bregon A., Pulido B., Puig V. (eds). pp. 319-345, Springer, Cham, 2019.

Papers Published in Refereed Conference Proceedings

1. G. Biswas and R.C. Dubes, "Two dimensional Inference Experiments with Noisy and Distorted Patterns," *Proc. IEEE Intl. Conf. on Systems, Man and Cybernetics*, Dec. 1983-Jan. 1984, pp. 398-402.
2. A. Sen and G. Biswas, "A Framework for Expert Decision Support Systems Design," *IEEE Intl. Conf. on Computers, Systems and Signal Processing*, India, Dec. 1984, pp. 1177-1181.
3. M.M. Matthews and G. Biswas, "ORACLE: A Knowledgeable User Interface," *IEEE Computer Society's Ninth Annual Software and Applications Conference (Compsac85)*, Chicago, IL, October 9-11, 1985, pp. 287-294.
4. G. Biswas, V. Subramanian, M. Marques, and J.C. Bezdek, "A Document Retrieval System using a Fuzzy Expert Systems Approach," *IEEE Intl. Conference on Systems, Man and Cybernetics, Tuscon, AZ*, Nov. 12-15, 1985, pp. 126-130.
5. G. Biswas, C.T. Matthews, M.M. Matthews, P. Rabon, and R. Wilhite, "An Active Assistance System for Vi," *IEEE Intl. Conference on Systems, Man and Cybernetics, Tuscon, AZ*, Nov. 12-15, 1985, pp. 746-750.
6. G. Biswas, M. Oliff, and A. Sen, "Design of an Expert System in Operations Analysis," *IEEE Intl. Conference on Systems, Man and Cybernetics, Tuscon, AZ*, Nov. 12-15, 1985, pp. 121-125.
7. M. Oliff, A. Sen, and G. Biswas, "An Expert System in Operations Analysis: An Opportunity for Productivity Improvement," *American Inst. of Decision Sciences (AIDS) Annual Meeting*, Las Vegas, Nov. 11-13, 1985, pp. 111-113.
8. M.M. Matthews and G. Biswas, "Raising User Proficiency Through Active Assistance: An Intelligent Editor," *Second Conf. on AI Applications (IEEE)*, Miami Beach, Dec. 11-13, 1985, pp. 358-363.
9. G. Biswas, V. Subramanian, and J.C. Bezdek, "A Knowledge Based Systems Approach to Document Retrieval," *Second Conf. on AI Applications (IEEE)*, Miami Beach, Dec. 11-13, 1985, pp. 455-460.
10. C.L. Baker, R.L. Oakman, G. Biswas, and J.C. Bezdek, "Constructing Synonym and Implication Relations of Concept Terms," *Third Annual USC CS Symposium on Knowledge Based Systems: Theory and Applications*, Columbia, March 31 and April 1, 1986.
11. G. Biswas, R. Abramczyk, M. Oliff, and A. Sen, "OASES: An Expert System for Operations Analysis," *Third Annual USC CS Symposium on Knowledge Based Systems: Theory and Applications*, Columbia, March 31 and April 1, 1986.
12. M.M. Matthews and G. Biswas, "ORACLE: An Active Assistance System for Unix," *Third Annual USC CS Symposium on Knowledge Based Systems: Theory and Applications*, Columbia, March 31 and April 1, 1986.
13. G. Biswas, J.C. Bezdek, and R.L. Oakman, "Online Document Retrieval System Design Using Knowledge-Based Techniques," *Proceedings of the ACM Sigart Intelligent Symposium on Methodologies for Intelligent Systems*, Knoxville, Tennessee, October 1986, pp. 112-120.

14. G. Biswas, "A Diagnostic Expert System Shell," *Platinum Jubilee Conf. on Systems and Signal Processing*, Indian Institute of Science, Bangalore, India, December 1986, pp. 25-28.
15. A. M. Rao, G. Biswas, and P.K. Bose, "Assumption Based Reasoning Applied to Personal Flight Planning," *Third IEEE Conference on AI Applications*, Orlando, FL, February 1987, pp. 266-271.
16. G. Biswas, M.M. Matthews, and A. Huang, "An Assistance System for Unix Text Formatters," *ACM Computer Science Conference*, St. Louis, Missouri, February 1987, pp. 53-57.
17. R. Sobczak, M.M. Matthews, and G. Biswas, "A Response Generation Mechanism for an Intelligent Active Assistance System," *ACM Computer Science Conference*, St. Louis, Missouri, February 1987, pp. 128-132.
18. G. Biswas, J.C. Bezdek, and L. Huang, "Thesaurus Building with Transitive Closures for KADRE," *Applications of Artificial Intelligence V*, SPIE, Orlando, Florida, 1987, pp. 432-438.
19. R.L. Sobczak, M.M. Matthews, and G. Biswas, "A Mechanism to Automate the Production of a Keyword table for an Intelligent Active Assistance System," *Applications of Artificial Intelligence V*, SPIE, Orlando, Florida, 1987, pp. 444-447.
20. G. Biswas and T.S. Anand, "Using the Dempster Shafer Scheme in a Diagnostic Expert System Shell," *Workshop on Uncertainty in AI (sponsored by AAAI)*, Seattle, WA, July 1987, pp. 98-105. (revised form appeared as a book chapter).
21. P. Morgan, J.C. Bezdek, G. Biswas, and C.G.St.C. Kendall, "MAGIK: Management and Application of Geological Information and Expert Knowledge," *Proc. Denver GeoTech Computer-Aided Methods and Modeling in Geology and Engineering*, D.C. Peters and S.A. Krajewski, eds., October 3-6, Denver, Colorado, 1987, pp. 261-267.
22. M. Pai, G. Biswas, J.C. Bezdek, and C.G.St.C. Kendall, "XX (eXpert eXplorer): A Knowledge Based System Designed for Hydrocarbon Play Analysis," *Proc. Denver GeoTech Computer-Aided Methods and Modeling in Geology and Engineering*, D.C. Peters and S.A. Krajewski, eds., October 3-6, Denver, Colorado, 1987, pp. 269-275.
23. J.S. Strobel, C.G.St.C. Kendall, G. Biswas, and J.C. Bezdek, "Simulation of Two-sided Sedimentation," *Proc. Denver GeoTech Computer-Aided Methods and Modeling in Geology and Engineering*, D.C. Peters and S.A. Krajewski, eds., October 3-6, Denver, Colorado, 1987, pp. 341-349.
24. H. Neelakandan, G. Biswas, and M.M. Matthews, "An Intelligent Assistance System in the Unix Domain," *The Third Expert Annual Expert Systems in Government Conference*, Washington, D.C., October 1987, pp. 55-64.
25. G. Biswas and T.S. Anand, "MIDST: An Expert System Shell for Mixed Initiative Reasoning," *Second International Symposium on Methodologies for Intelligent Systems*, Charlotte, NC, October 1987, pp. 1-8.
26. M. Pai, G. Biswas, C.G.St.C. Kendall, and J.C. Bezdek, "Toward the Design of a Knowledge Based System for Hydrocarbon Play Analysis," *Second International Symposium on Methodologies for Intelligent Systems*, Charlotte, NC, October 1987, pp. 248-255.

27. P. Morgan, G. Biswas, C.G.St.C. Kendall, J.C. Bezdek, and T.S. Anand, "MAGIK: A System for Hydrocarbon Play Analysis," *Applications of Artificial Intelligence VI*, Orlando, April 4-6 1988, pp. 36-43.
28. M.M. Matthews, G. Biswas, and H. Neelakandan, "USCSH: An Active Assistance Interface for Unix," *Proc. Intl. Conf. on Intelligent Tutoring Systems*, Montreal, June 1-3 1988, pp. 334-341.
29. G. Biswas and J.C. Bezdek, "A Linguistic Transitive Closure Method Applied to Thesaurus Building," *Third Intl. Symposium on Methodologies for Intelligent Systems*, Torino, Italy, October 1988, pp. 1-10.
30. G. Biswas and M.D. Oliff, "An Operations Analysis Expert System for Fiberglass Manufacturing," *Third Intl. Conf. on CAD/CAM Robotics and Factories of the Future*, Detroit, August 14-17, 1988, Springer Verlag (Berlin, Heidelberg, 1989), pp. 240-244.
31. G. Biswas and X. Yu, "A Rule Network for Efficient Implementation of a Mixed-Initiative Reasoning Scheme," *ACM Computer Science Conference*, Louisville, KY, February 1989, pp. 123-130.
32. J. Smith and G. Biswas, "Multilevel Models for Diagnosis of Complex Electromechanical Systems," *Applications of Artificial Intelligence (SPIE)*, Orlando, Florida, M.M. Trivedi, ed., March 1989, pp. 346-356.
33. R.L. Cannon, J. Strobel, P. Moore, D. Tansathein, G. Biswas, C. Kendall, and J. Bezdek, "An Expert System as an Integrated System for Oil Exploration," *Proc. Southeastcon*, Columbia, S.C., April 1989, pp. 32-35.
34. G. Biswas, K. Debelak, and K. Kawamura, "Applications of Qualitative Modeling in Knowledge-Based Risk Assessment Studies," *Proceedings Second IEA/AIE-89*, Tullahoma, TN, June 1989, pp. 92-101.
35. J.A. Smith and G. Biswas, "Using Multilevel Models and Reasoning for Diagnosis of a Complex Electro-Mechanical System," *Proceedings Second IEA/AIE-89*, Tullahoma, TN, June 1989, pp. 161-170.
36. J. Xia and G. Biswas, "An Intelligent Tutoring System for Teaching Set Theory," *Proceedings Second IEA/AIE-89*, Tullahoma, TN, June 1989, pp. 1008-1017.
37. N. Kaul, C.J. Kee, and G. Biswas, "Intelligent Tutoring System for CMOS Digital Design," *Proceedings Second IEA/AIE-89*, Tullahoma, TN, June 1989, pp. 1018-1026.
38. D.L. Hibler and G. Biswas, "The Thought Experiment Approach to Qualitative Physics," *Proc. Eleventh IJCAI*, Detroit, MI, August 1989, pp. 1279-1284.
39. J. Weinberg, W. Hagins, and G. Biswas, "Extending Temporal Reasoning in Process-Oriented Qualitative Reasoning," *Proc. IJCAI-89 Workshop on Model-Based Reasoning*, Detroit, MI, August 1989, pp. 198-201.
40. K.A. Debelak, G. Biswas, and W.J. Hagins, "Qualitative Modeling in Chemical Engineering Applications," *American Inst. of Chemical Engineers: 1989 Summer National Meeting*, August 1989.

41. G. Biswas, W.J. Hagins, and K.A. Debelak, "Qualitative Modeling in Engineering Applications," *1989 IEEE Conference on Systems, Man, and Cybernetics*, Cambridge, MA, Nov. 1989, pp. 997-1002.
42. J. B. Weinberg, G. Biswas, and L.A. Weinberg, "Adventures in Qualitative Modeling: A Qualitative Model of the Heart," *1989 IEEE Conference on Systems, Man, and Cybernetics*, Cambridge, MA, Nov. 1989, pp. 1003-1008.
43. G. Biswas, X. Yu, W.J. Hagins, J.S. Strobel, C. Kendall, R.L. Cannon, and J.C. Bezdek, "PLAYMAKER: A Knowledge-Based Approach to Characterizing Hydrocarbon Plays," *Applications of AI VIII (SPIE)*, Orlando, FL, April 1990, pp. 460-471.
44. G. Lee and G. Biswas, "Multiple Fault Diagnosis using Multiple Context Spaces," *Applications of AI VIII (SPIE)*, Orlando, FL, April 1990, pp. 994-1002.
45. P.T. Reed, R.L. Cannon, G. Biswas, J.C. Bezdek, and C.G.St.C. Kendall, "Syntactic Learning by Induction from Examples and Experiments," *Applications of AI VIII (SPIE)*, Orlando, FL, April 1990, pp. 645-653.
46. J. Weinberg, S. Uckun, and G. Biswas, "Qualitative Vector Algebra," *Fourth Intl. Workshop on Qualitative Physics*, Lugano, Switzerland, July 1990, pp. 82-96.
47. J.L. Larota, G. Biswas, and P.K. Basu, "A Model-Based Approach to Structural Design," *Fifth Intl. Conf. on Applications of AI in Engineering (AIENG 90)*, Boston, MA, July 1990, pp. 3-22.
48. J. Weinberg, G. Biswas, and S. Uckun, "The Continuing Adventures in Qualitative Modeling: A Qualitative Heart Model," *Third Intl. IEA/AIE-90 Conf.*, Charleston, S.C., July 1990, pp. 416-425.
49. S. Uckun, B. Dawant, G. Biswas, and K. Kawamura, "A Belief Management Architecture for Diagnostic Problem Solving," *Third Intl. IEA/AIE-90 Conf.*, Charleston, S.C., July 1990, pp. 519-527.
50. X. Yu and G. Biswas, "CHECKER: An Efficient Algorithm for Knowledge Base Verification," *Third Intl. IEA/AIE-90 Conf.*, Charleston, S.C., July 1990, pp. 735-744.
51. W.J. Hagins, G. Biswas, and X. Yu, "Model-Based Diagnosis in the Process-Ontology Framework," *Second AAAI Workshop on Model-Based Reasoning (Working Papers)*, Boston, MA, July 30, 1990, pp. 119-123.
52. S. Uckun, G. Biswas, and B.M. Dawant, "A Process Ontology for Qualitative Reasoning in Biomedicine," *Second AAAI Workshop on Model-Based Reasoning (Working Papers)*, Boston, MA, July 30, 1990, pp. 143-148.
53. S. Uckun, J. Weinberg, G. Biswas, and S. Manganaris, "Towards the Development of a Qualitative Problem Solver in Mechanics," *Second AAAI Workshop on Model-Based Reasoning (Working Papers)*, Boston, MA, July 30, 1990, pp. 149-156.
54. G. Biswas, K. Krishnamurthy, and P.K. Basu, "Applying Qualitative Reasoning Techniques for Analysis and Evaluation in Structural Design," *Seventh IEEE Conference on AI Applications*, Miami Beach, FL, Feb. 26-28, 1991, pp. 265-268.

55. C.J. Kee, N. Kaul, G. Biswas, B. Bhuvva, and J.E. Vargas, "A Student Modeling System for ITCDD: An Intelligent Tutor for CMOS Digital Design," *Proc. 23rd Southeastern Symposium on System Theory*, Columbia, S.C., pp. 373-378, March 10-12, 1991.
56. N. Kaul and G. Biswas, "Multi-level Qualitative Reasoning in CMOS Circuit Analysis," *Applications of AI IX*, Orlando, FL, April 2-4, 1991, pp. 204-215.
57. D. Hibler and G. Biswas, "Restrictions of Qualitative Models to enable more Specific Behavior," *Fifth Intl. Workshop on Qualitative Reasoning about Physical Systems*, Austin, TX, May 19-22, 1991, pp. 109-123.
58. X. Yu, S. Manganaris and G. Biswas, "A Component Connection (CC) Modeling Case Study: Results and Future Directions," *Fifth Intl. Workshop on Qualitative Reasoning about Physical Systems*, Austin, TX, May 19-22, 1991, pp. 326-350.
59. G. Biswas, J. Weinberg, Q. Yang, and G. Koller, "Conceptual Clustering and Exploratory Data Analysis," *Proc. of the Eighth Intl. Workshop on Machine Learning*, Evanston, IL, L. Birnbaum and G. Collins, eds., June 1991, pp. 591-595.
60. X. Yu and G. Biswas, "A Candidate Generation Method for Model-Based Diagnosis of Continuous-valued Systems," *Third AAAI Workshop on Model-Based Reasoning*, Anaheim, CA, July 1991.
61. H. Vandermolen, C.M. James, S.R. Goldman, G. Biswas, and B. Bhuvva, "Assessing Expertise in Simple Digital Circuits," *Proc. 4th Midwest AI and Cognitive Science Society Conference*, IL, 1992, pp. 47-51.
62. X. Yu and G. Biswas, "A Multi-level Diagnosis Methodology for Complex Systems," *Eighth IEEE Conference on Artificial Intelligence for Applications*, Monterey, CA, March 1992, pp. 81-87.
63. J. Weinberg, G. Biswas, and G. Koller, "Conceptual Clustering with Systematic Missing Values," *Ninth International Machine Learning Conference - ML92*, Aberdeen, Scotland, July 1992, pp. 464-469.
64. D. Hibler and G. Biswas, "Simplifications as a Tool for Abstraction and Approximation in the Thought Experiment Framework," *AAAI Workshop Notes - Approximation and Abstraction of Computational Theories*, San Jose, CA, July 1992, pp. 97-104.
65. G. Lee and G. Biswas, "A New Version of MIDST for Building PLAYMAKER - A Knowledge-Based System for Characterizing Hydrocarbon Plays," *1992 Conf. on AI in Petroleum Exploration and Production*, Houston, TX, July 1992, pp. 138-146.
66. D. Hibler and G. Biswas, "Thought Experiments as a Framework for Multi-level Reasoning," *Working Papers - Sixth International Workshop on Qualitative Reasoning about Physical Systems*, Edinburgh, Scotland, August 1992, pp. 68-81.
67. G. Biswas, X. Yu, and K. Debelak, "A Formal Modeling Scheme for Continuous-valued Systems: Focus on Diagnosis," *Working Papers - Sixth International Workshop on Qualitative Reasoning about Physical Systems*, Edinburgh, Scotland, August 1992, pp. 302-321.
68. X. Yu, and G. Biswas, "A Method for Diagnosis of Continuous-valued Systems," *Working Papers - Third International Workshop on Principles of Diagnosis*, Rosario, WA, October 12-14, 1992, pp. 57-65.

69. H. Vandermolen, G. Biswas, J.R. Bourne, and A. Brodersen, "New Directions for Teaching Design in Engineering," *22nd. IEEE Annual Conference on Frontiers in Education: Facing the Future in Engineering Education*, Nashville, TN, November 1992, pp. 84-88.
70. G. Biswas, G. Lee, and J.B. Weinberg, "Concept Formation using ITERATE: Building Rule Models for Efficient Reasoning," *Proc. Applications of AI XI*, Orlando, FL, April 14-16 1993, pp. 2-13.
71. T. Crews and G. Biswas, "Toward an Optimal Planner for Tutoring Systems," *Proc. 5th Midwest AI and Cognitive Science Conference*, Chesterton, IN, April 18-19 1993, pp. 46-52.
72. G. Biswas, "ITERATE: A Conceptual Clustering Method for Knowledge Discovery in Databases," *1993 Conf. on AI in Petroleum Exploration and Production*, Dallas, TX, May 1993, pp. 130-140.
73. G. Biswas and X. Yu, "A Formal Modeling Scheme for Continuous Systems: Focus on Diagnosis," *IJCAI-93*, France, August 1993, pp. 1474-1479.
74. T. Crews and G. Biswas, "A Tutor for Trip Planning: Combining Planning and Mathematics Problem Solving," *World Congress on AI in Education*, Edinburgh, Scotland, August 1993, pp. 346-353.
75. G. Biswas and D. Mularkey, "Background Paper: Towards Clean and Intelligent Manufacturing for the Process Industry," *Workshop on Clean and Intelligent Manufacturing for the Process Industry*, Nashville, TN, October 1993.
76. G. Biswas and T. Kiriyaama, "Discussion Paper: Towards Clean and Intelligent Manufacturing for the Process Industry," *Workshop on Clean and Intelligent Manufacturing for the Process Industry*, Nashville, TN, October 1993.
77. G. Biswas and G. Lee, "Knowledge Reorganization: A Rule Model Scheme for Efficient Reasoning," *Tenth IEEE Conf. on AI for Applications*, San Antonio, TX, March 1994 pp. 312-318.
78. S. Bagchi, G. Biswas, and K. Kawamura, "A Spreading Activation Mechanism for Decision-Theoretic Planning," *Working Papers, AAAI 1994 Spring Symposium on Decision-Theoretic Planning*, Stanford, CA, March 1994.
79. G. Biswas, X. Yu, R. Kapadia, C. Robertson, and T. Hill, "DOC: Diagnoser of Complex Continuous Systems – Application to a Thermal Bus," *Applications of AI XII*, Orlando, FL, April 1994, pp. 105-116.
80. G. Biswas, K. Kawamura, and A. Saad, "Intelligent Manufacturing Systems: State of the Art," *Paper no. 94-503, TABES-94 (Huntsville Association for Technical Societies)*, May 1994.
81. S. Bagchi, G. Biswas, and K. Kawamura, "Generating Plans that Maximize Probability of Success," *Proc. Second Intl. Conf. on AI in Planning*, K. Hammond, ed., Chicago, IL, June 1994, pp. 1-6.
82. R. Kapadia, G. Biswas, and C. Robertson, "A Framework for Monitoring and Diagnosis of Continuous-valued Systems," *Fifth Intl. Principles of Diagnosis Workshop*, New Paltz, NY, Oct. 1994, pp. 140-147.

83. P.J. Mosterman and G. Biswas, "Behavior Generation Using Model Switching: A Hybrid Modeling technique," *International Conference on Bond Graph Modeling*, Las Vegas, Nevada, Jan. 1995, pp. 177-182.
84. C. Li and G. Biswas, "A Framework for Scientific Discovery in Geological Databases," *AAAI Spring Symposium Series on Systematic Methods for Scientific Discovery*, Stanford, CA, March 1995.
85. M. Curtin and G. Biswas, "An Environmentally Conscious Manufacturing Decision Making Framework for Management," *Proc. Third Intl. Conf. on Environmentally Conscious Design and Manufacturing*, Las Cruces, NM, pp. 99-111, March 1995.
86. R. Dhingra and G. Biswas, "Functional Redundancy as a Means of Achieving Optimum Results in Remanufacturing Operations," *Proc. Third Intl. Conf. on Environmentally Conscious Design and Manufacturing*, Las Cruces, NM, pp. 393-400, March 1995.
87. P.J. Mosterman and G. Biswas, "Modeling Discontinuous Behavior with Hybrid Bond Graphs," *Ninth Qualitative Reasoning Workshop*, Amsterdam, pp. 139-147, May 1995.
88. A. Saad, K. Kawamura, G. Biswas, M.E. Johnson, and A. Salama, "Evaluating a Contract Net Based Heterarchical Scheduling Approach for Flexible Manufacturing," *IEEE Intl. Symposium on Assembly and Task Planning (ISATP'95)*, pp. 147-152, Pittsburgh, PA, August 1995.
89. T. Crews, G. Biswas, M. Nathan, S. Varma, S. Goldman, and J. Bransford, "AdventurePlayer: Macrocontext Plus Microworlds," *Intl. Conf. on AI in Education, AI-ED'95*, Washington, D.C., pp. 381-388, August 1995.
90. S. Owens, G. Biswas, M. Nathan, L. Zech, J. Bransford, and S. Goldman, "SmartTools: A Multi-Representational Approach to Teaching Functional Relations," *Intl. Conf. on AI in Education, AI-ED'95*, Washington, D.C., pp. 589, August 1995.
91. A. Saad, K. Kawamura, G. Biswas, M.E. Johnson, and A. Salama, "Evaluating a Contract Net Based Heterarchical Scheduling Approach for Flexible Manufacturing," *IJCAI-95 Workshop Notes on Intelligent Manufacturing Systems*, Montreal, Canada, pp. 310-321, August 1995.
92. C. Li and G. Biswas, "Knowledge-based Scientific Discovery in Geological Databases," *Proc. The First Intl. Conf. on Knowledge Discovery and Data Mining*, Montreal, Canada, pp. 204-209, August 1995.
93. S. Goldman, L. Zech, T. Noser, and G. Biswas, "Computer Technology and Complex Problem Solving: Issues in the Study of Complex Cognitive Activity," *1995 EARLI Symposium*, August 1995.
94. J.B. Weinberg and G. Biswas, "The Functional Modularity of Diagnosis Domain Structure," *Sixth Intl. Workshop on Principles of Diagnosis*, W. Nejdl, ed., Goslar, Germany, pp. 123-130, Oct. 1995.
95. P.J. Mosterman, R. Kapadia, and G. Biswas, "Using Bond Graphs for Diagnosis of Complex Dynamic Systems," *Sixth Intl. Workshop on Principles of Diagnosis*, W. Nejdl, ed., Goslar, Germany, pp. 81-85, Oct. 1995.

96. M. Curtin and G. Biswas, "A Management Decision Making Framework for Environmentally Conscious Manufacturing," *Intl. Conf. on Industrial Waste Minimization '95*, P.C. Chiang, ed., Taipei, Taiwan, pp. 121-132, Nov. 25-29, 1995.
97. P.J. Mosterman and G. Biswas, "Analyzing Discontinuities in Physical System Models," *Tenth Intl. Workshop on Qualitative Reasoning, AAAI Tech. Report 96-01*, Y. Iwasaki and A. Farquhar, eds., Stanford Sierra Camp. CA, pp. 164-173, May 1996.
98. P.J. Mosterman and G. Biswas, "A Formal Hybrid Modeling Scheme for Handling Discontinuities in Physical Systems," *Proc. AAAI-96*, Portland, OR, pp. 985-990, Aug. 1996.
99. P.J. Mosterman and G. Biswas, "An Integrated Architecture for Model Based Diagnosis of Dynamic Physical Systems," *Proc. Seventh Intl. Workshop of Principles of Diagnosis (DX-96)*, S. Abu-Hakima, ed., Val Morin, Quebec, Canada, pp. 167-174, Oct. 1996.
100. P.J. Mosterman and G. Biswas, "Verification of Hybrid Physical System Models," *Proc. of the ASM Dynamic Systems and Control Division, ASME-96*, DSC-vol. 58, pp. 707-714, Atlanta, GA, Nov. 1996.
101. C. Li and G. Biswas, "Unsupervised Clustering with Mixed Numeric and Nominal Features — A New Similarity Based System SBAC," *AI and Statistics Workshop*, Florida, Jan. 1997.
102. P.J. Mosterman and G. Biswas, "Hybrid Modeling Specifications for Dynamic Physical Systems," *Proc. of ICBGM'97, 3rd International Conference on Bond Graph Modeling and Simulation*, Phoenix, AZ, pp. 162-167, January 12-15, 1997.
103. C. Li and G. Biswas, "Unsupervised Clustering with Mixed Numeric and Nominal Features — A New Similarity Based System," *KDD: Techniques and Applications – Proc. First Pacific-Asia Conference on Knowledge Discovery and Data Mining*, H. Lu, H. Motoda, and H. Liu, eds., World Scientific Publishers, Singapore, pp. 35-48, February 1997.
104. P.J. Mosterman, G. Biswas, and J. Sztipanovits, "Hybrid Modeling and Verification of Embedded Control Systems," *7th Symposium on Computer Aided Control Systems Design (CACSD '97) International Federation of Automatic Control Conf.*, pp. 21-26, Ghent, Belgium, April 28-30, 1997.
105. R. Kapadia, G. Biswas, and M. Fromherz, "Hybrid Modeling for Smart Systems Design," *Models and Applications for Design*, Special Track at FLAIRS '97, pp. 111-115, Daytona Beach, FL, May 1997.
106. R.T. Pack, M. Wilkes, G. Biswas, and K. Kawamura, "Intelligent Machine Architecture for Object-Based System Integration," *IEEE/ASME Intl. Conf. on Mechatronics*, Waseda Univ., Japan, June 1997.
107. P.J. Mosterman and G. Biswas, "Formal Specifications from Hybrid Bond Graph Models," *Proc. 11th Intl. Wkshp. on Qualitative Reasoning, QR-97*, pp. 131-142, Cortona, Italy, June 3-6, 1997.
108. P.J. Mosterman and G. Biswas, "Monitoring, Prediction, and Fault Isolation in Dynamic Physical Systems," *Proc. AAAI-97*, pp. 100-105, Providence, RI, July 1997.
109. P.J. Mosterman and G. Biswas, "Formal Specifications for Hybrid Dynamical Systems," *Proc. IJCAI-97*, pp. 568-573, Nagoya, Japan, August 1997.

110. P.J. Mosterman, G. Biswas, N. Sriram, T. Washio, and S. Yoshikawa, "Process Diagnosis in Transient Operating Regions: Fault detection and Isolation in a Liquid Sodium Cooling System," *Working papers - Third Workshop on Engineering Problems for Qualitative Reasoning*, pp. 45-54, IJCAI-97, Nagoya, Japan, August 1997.
111. P.J. Mosterman, G. Biswas, and N. Sriram, "Measurement Selection and Diagnosability of Complex Physical Systems," *Eighth Intl. Workshop on Principles of Diagnosis (DX-97)*, pp. 79-86, Mont. St. Michel, France, Sept. 15-18, 1997.
112. P.J. Mosterman and G. Biswas, "Model Based Diagnosis of Dynamic Systems," *Seventh Journees du L.I.P.N.*, pp. 143-154, Univ. of Paris-Nord, Villetaneuse, France, Sept. 18-19, 1997.
113. P.J. Mosterman and G. Biswas, "Principles for Modeling, Verification, and Simulation of Hybrid Dynamic Systems," *Fifth Intl. Workshop on Hybrid Systems (HS97)*, pp. 21-27, Notre Dame, IN, Sept. 11-13, 1997.
114. P.J. Mosterman, F. Zhao, and G. Biswas, "Model Semantics and Simulation for Hybrid Systems Operating in Sliding Regimes," *AAAI Fall Symposium on Model-Directed Autonomous Systems*, Boston, MA, Oct. 1997.
115. A. Saad, G. Biswas, K. Kawamura, and E.M. Johnson, "Effectiveness of Dynamic Rescheduling in Agent-Based Flexible Manufacturing Systems," *Proc. SPIE Conf. on Architectures, Networks, and Intelligent Systems for Manufacturing Integration*, Pittsburgh, PA, pp. 88-99, Oct. 15-16, 1997.
116. P. Kanchanasevee, G. Biswas, K. Kawamura, and S. Tamura, "Contract-Net Based Scheduling for Holonic Manufacturing Systems," *Proc. SPIE Conf. on Architectures, Networks, and Intelligent Systems for Manufacturing Integration*, Pittsburgh, PA, pp. 108-115, Oct. 15-16, 1997.
117. P.J. Mosterman, J.F. Broenink and G. Biswas, "Model Semantics and Simulation of Time Scale Abstractions in Collision Models," *Proc. of Eurosim '98*, Helsinki, Finland, pp. 230-237, April 1998.
118. P.J. Mosterman, G. Biswas, and Eric Manders, "A Comprehensive Framework for Model Based Diagnosis," *Ninth Intl. Workshop on Principles of Diagnosis (DX-98)*, Cape Cod, MA, pp. 86-93, May 24-27, 1998.
119. S. Narasimhan, P.J. Mosterman and G. Biswas, "A Systematic Analysis of Measurement Selection Algorithms for Fault Isolation in Dynamic Systems," *Ninth Intl. Workshop on Principles of Diagnosis (DX-98)*, Cape Cod, MA, pp. 94-101, May 24-27, 1998.
120. P.J. Mosterman, F. Zhao, and G. Biswas, "A Study of Transitions in Dynamic Behavior of Physical Systems," *Proc. 12th Intl. Workshop on Qualitative Reasoning (QR-98)*, Cape Cod, MA, pp. 96-105, May 26-29, 1998.
121. P.J. Mosterman, G. Biswas, and M. Otter, "Simulation of Discontinuities in Physical System Models based on Conservation Principles," *Proc. of the Summer Computer Simulation Conference*, Reno, Nevada, pp. 320-325, July 1998.
122. P.J. Mosterman, F. Zhao, and G. Biswas, "An Ontology of Transitions in Physical System Dynamics," *AAAI-98*, Madison, WI, pp. 219-224, July 1998.

123. S. Brophy, D. Schwartz, G. Biswas, and J. Bransford, "Learning Through Programmable Agents," *ITS'98 Workshop on Pedagogical Agents*, San Antonio, TX, Aug. 1998.
124. P.J. Mosterman and G. Biswas, "Hybrid Automata for Modeling Discrete Transitions in Complex Dynamic Systems," *Proc. AIRTC '98*, Grand Canyon, AZ, Oct. 98.
125. P.J. Mosterman and G. Biswas, "A Java Implementation of an Environment for Hybrid Modeling and Simulation of Dynamic Physical Systems," *Proc. ICBGM '99*, pp. 157-162, San Francisco, CA, Jan. 1999.
126. P.J. Mosterman and G. Biswas, "Hybrid Automata for Modeling Discrete Transitions in Complex Dynamic Systems," *Hybrid Systems and AI: AAAI 1999 Spring Symposium Series*, Stanford, CA, pp. 136-141, March 1999.
127. P.J. Mosterman and G. Biswas, "Building Hybrid Observers for Complex Dynamic Systems using Model Abstractions," *Hybrid Systems: Computation and Control, Lecture Notes in Computer Science*, vol. 1569, Springer Verlag, The Netherlands, pp. 178-192, March 1999.
128. C. Li and G. Biswas, "Clustering Sequence Data using Hidden Markov Model Representation," *SPIE'99 Conference on Data Mining and Knowledge Discovery: Theory, Tools, and Technology*, pp. 14-21, Orlando, FL, April, 1999.
129. L. Barford, E.J. Manders, G. Biswas, P.J. Mosterman, V.V. Ram, and J. Barnett, "Derivative Estimation for Diagnosis," *Proc. IEEE Intl. Workshop on Emergent Technologies (EMTECH'99)*, pp. 9-12, Venice, Italy, May 1999.
130. E.J. Manders, G. Biswas, P.J. Mosterman, L. Barford, V.V. Ram, and J. Barnett, "Signal Interpretation for Monitoring and Diagnosis," *Proc. IEEE Intl. Measurement and Technology Conference (IMTC'99)*, pp. 498-503, Venice, Italy, May 1999.
131. B. Howley, M. Cutkosky, and G. Biswas, "Composing and Sharing Dynamic Models in an Agent-Based Concurrent Engineering Environment," *Proc. 1999 American Control Conference*, pp. 3147-3153, San Diego, CA, June 2-4, 1999.
132. P.J. Mosterman and G. Biswas, "Deriving Discontinuous State Changes for Reduced Order Systems and the effect on Compositionality," *13th Intl. Workshop on Qualitative Reasoning*, Loch Awe, Scotland, pp. 160-168, June 1999.
133. E.J. Manders, P.J. Mosterman, and G. Biswas, "Signal to Symbol Transformation Techniques for Robust Diagnosis in TRANSCEND," *Tenth Intl. Workshop on Principles of Diagnosis*, Loch Awe, Scotland, pp. 155-165, June 1999.
134. S. McIlraith, G. Biswas, D. Clancy, and V. Gupta, "Towards Diagnosing Hybrid Systems," *Tenth Intl. Workshop on Principles of Diagnosis*, Loch Awe, Scotland, pp. 193-203, June 1999.
135. R. Kapadia and G. Biswas, "Model-based Support for Mutable Parametric Design Optimization," *Proc. AAAI-99*, Orlando, FL, pp. 410-415, July 1999.
136. S. Brophy, G. Biswas, T. Katzlberger, J. Bransford, and D. Schwartz, "Teachable Agents: Combining Insights from Learning Theory and Computer Science," *Intl. Conf. on AI in Education*, Le Mans, France. (S.P. Lajoie and M. Vivet (eds.), *Artificial Intelligence in Education*, vol. 50

- of J. Breuker, R. Lopez de Mantaras, S. Ohsuga, and W. Swartout (series eds.), *Frontiers in Artificial Intelligence and Applications*, pp. 21-28, Amsterdam, IOS Press). July 1999.
137. C. Li and G. Biswas, "Profiling of Dynamic System Behaviors using Hidden Markov Model Representation", *ICSC'99 Advances in Intelligent Data Analysis(AIDA'99)*, Rochester, NY, June, 1999.
 138. C. Li and G. Biswas, "Temporal pattern generation using Hidden Markov Model based Un-supervised Classification", *Advances in Intelligent Data Analysis, Lecture Notes in Computer Science*, vol. 1642, D. Hand, J. Kok, and M. Berthold, eds., Springer, New York, NY, August 1999.
 139. D. Hunkeler, E. Vanakari, G. Biswas, K. Kawamura, R. Dhingra, L. Caffey, and E. Huang, "A Decision Support System for Life Cycle Management," *First Intl. Symp. on Ecodesign*, pp. 728-732, 1999.
 140. P.J. Mosterman and G. Biswas, "Building Hybrid Automata of Complex Physical Systems for Real-time Applications," *38th IEEE Conference on Decision and Control (CDC)*, Phoenix, AZ, pp. 3514-3519, Dec. 1999.
 141. P.J. Mosterman and G. Biswas, "Towards Procedures for Systematically Deriving Hybrid Models of Complex Systems," *Hybrid Systems: Computation and Control – Third Intl. Workshop, HSCC 2000*, Lecture Notes in Computer Science, vol. 1790, N. Lynch and B.H. Krogh, eds., Springer Verlag, Berlin, Germany, pp. 324-337, March 2000.
 142. S. McIlraith, G. Biswas, D. Clancy, and V. Gupta, "Hybrid Systems Diagnosis," *Hybrid Systems: Computation and Control – Third Intl. Workshop, HSCC 2000*, Lecture Notes in Computer Science, vol. 1790, N. Lynch and B.H. Krogh, eds., Springer Verlag, Berlin, Germany, pp. 282-295, March 2000.
 143. P.J. Feenstra, E.J. Manders, P.J. Mosterman, G. Biswas, and J. Barnett, "Modeling and Instrumentation for Fault Detection and Isolation of a Cooling System," *Proc. IEEE Southeast Conference*, Nashville, TN, pp. 365-372, March 2000.
 144. E.J. Manders, S. Narasimhan, G. Biswas, and P.J. Mosterman, "A Combined Qualitative/Quantitative Approach for Fault Isolation in Continuous Dynamic Systems," *4th Symposium on Fault Detection, Supervision and Safety for Technical Processes (Safeprocess 2000)*, Budapest, Hungary, pp. 512-517, June 2000.
 145. S. Narasimhan, F. Zhao, G. Biswas, and E. Hung, "Fault Isolation in Hybrid Systems combining Model Based Diagnosis and Signal Processing," *4th Symposium on Fault Detection, Supervision and Safety for Technical Processes (Safeprocess 2000)*, Budapest, Hungary, pp. 1074-1079, June 2000.
 146. C. Li and G. Biswas, "A Bayesian Approach to Temporal Data Clustering using Hidden Markov Models," *Intl. Conference on Machine Learning (ICML 2000)*, Stanford, CA, pp. 543-550, June 2000.
 147. P.J. Mosterman, E.J. Manders, and G. Biswas, "Qualitative Dynamic Behavior of Physical System Models with Algebraic Loops," *Eleventh Intl. Workshop on Principles of Diagnosis (DX'00)*, Morelia, Mexico, pp. 155-162, June 2000.

148. S. Narasimhan, F. Zhao, G. Biswas, and E. Hung, "An Integrated Framework for Combining Global and Local Analysis in Diagnosing Hybrid Systems," *Eleventh Intl. Workshop on Principles of Diagnosis (DX'00)*, Morelia, Mexico, pp. 163-170, June 2000.
149. U. Lerner, R. Parr, D. Koller, and G. Biswas, "Bayesian Fault Detection and Diagnosis in Dynamic Systems," *Proc. Seventeenth National Conf. on Artificial Intelligence (AAAI-2000)*, Austin, TX, pp. 531-537, August 2000.
150. C. Li and G. Biswas, "Improving Clustering with Hidden Markov Models using Bayesian Model Selection," *Proc. IEEE Intl. Conf. on Systems, Man, and Cybernetics*, Nashville, TN, pp. 194-199, Oct. 2000.
151. S. Narasimhan, G. Biswas, G. Karsai, T. Pasternak, and F. Zhao, "Building Observers to address Fault Isolation and Control Problems in Hybrid Dynamic Systems," *Proc. IEEE Intl. Conf. on Systems, Man, and Cybernetics*, Nashville, TN, pp. 2393-2398, Oct. 2000.
152. P.J. Feenstra, P.J. Mosterman, G. Biswas, and P.C. Breedveld, "Bond Graph Modeling Procedures for Fault Detection and Isolation of Complex Flow Processes," *Proc. ICBGM '01*, Tempe, AZ, Jan. 2001.
153. S. Narasimhan and G. Biswas, "Efficient Diagnosis of Hybrid Systems using Models of the Supervisory Controller," *Twelfth Intl. Workshop on Principles of Diagnosis*, via Lattea, Italy, pp. 127-134, March 2001.
154. G. Karsai, G. Biswas, T. Pasternak, and S. Narasimhan, "Fault-Adaptive Control: A CBS Application," *Proc. Eighth Annual IEEE Intl. Conf. on Engineering of Computer Based Systems (ECBS'2001)*, Washington, D.C., pp. 205-211, April 17-20, 2001.
155. S. Narasimhan, G. Biswas, and G. Karsai, "An Integrated Approach to Diagnosis of Complex Hybrid Systems," *15th Annual Intl. Symposium on AeroSense (Component and Systems Diagnostics, Prognosis, and Health Management)*, Orlando, FL, pp. 275-286, April 2001.
156. K. Leelawong, Y. Wang, G. Biswas, N. Vye, J. Bransford, and D. Schwartz, "Qualitative Reasoning Techniques to Support Learning by Teaching: The Teachable Agents Project," *Fifteenth Intl. Workshop on Qualitative Reasoning*, San Antonio, TX, pp. 73-80, May 2001.
157. T. Katzlberger, G. Biswas, J. Bransford, and D. Schwartz, and TAG-V, "Extending Intelligent Learning Environments with Teachable Agents to Enhance Learning," *Tenth Intl. Conf. on AI in Education: AI-ED in the Wired and Wireless Future*, J.D. Moore, C.L. Redfield, and W.L. Johnson, eds., IOS Press, Amsterdam, pp. 389-397, May 2001.
158. C. Li and G. Biswas, "Applying the Hidden Markov Methodology for Unsupervised Learning of Temporal Data," *Proc. Intl. ICSC Congress: Computational Intelligence: Methods and Applications (CIMA'2001)*, Bangor, Wales, June 19-22, 2001.
159. S. Narasimhan and G. Biswas, "An Approach to Model-Based Diagnosis of Hybrid Systems," *Hybrid Systems: Computation and Control, Fifth Intl. Workshop*, Stanford, CA, Lecture Notes in Computer Science, vol. LNCS 2289, C.J. Tomlin and M.R. Greenstreet, eds., Springer Verlag, Berlin, pp. 308-322, March 2002.
160. S. Narasimhan, G. Biswas, G. Karsai, T. Szemwthy, T. Bowman, M. Kay, and K. Keller, "Hybrid Modeling and Diagnosis in the Real World: A Case Study," *Intl. Workshop on Principles of Diagnosis*, Simmering, Austria, May 2002.

161. K. Leelawong, J. Davis, N. Vye, G. Biswas, and others, "The Effects of Feedback in Supporting Learning by Teaching in a Teachable Agent Environment," *Fifth Intl. Conf. on Learning Sciences*, Seattle, Washington, pp. 245-252, Oct., 2002.
162. S. Abdelwahed, G. Karsai, and G. Biswas, "Online Safety Control of a Class of Hybrid Systems," *IEEE Conf. on CDC*, 2002.
163. M. Ji, Z. Zhang, G. Biswas, and N. Sarkar, "Hybrid Fault Adaptive Control of a Mobile Robot," *ASME Intl. Mechanical Engineering Congress and Exposition*, New Orleans, LA, Nov., 2002.
164. J. Davis, K. Leelawong, K. Belynnne, B. Bodenheimer, G. Biswas, N. Vye, J. Bransford, "Intelligent User Interface Design for Teachable Agent Systems", *International Conference on Intelligent User Interfaces*, pp. 26-34, Miami, FL, January 2003.
165. R. Su, S. Abdelwahed, G. Karsai, and G. Biswas, "Discrete Abstractions for Continuous Time Systems," *American Control Conference*, 2003.
166. E.J. Manders and G. Biswas, "FDI of abrupt faults with combined statistical detection and estimation and qualitative fault isolation," *5th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes (SAFEPROCESS)*, Washington, D.C., pp. 347-352, June 2003.
167. S. Abdelwahed, G. Karsai, and G., Biswas, "Robust diagnosis of switching systems," *5th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes (SAFEPROCESS)*, Washington, D.C., pp. 843-848, June 2003.
168. G. Biswas, G. Simon, N. Mahadevan, S. Narasimhan, J. Ramirez, G. Karsai, "A robust method for hybrid diagnosis of complex systems," *5th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes (SAFEPROCESS)*, Washington, D.C., pp. 1125-1130, June 2003.
169. G. Biswas, G. Simon, G. Karsai, S. Abdelwahed, N. Mahadevan, T. Szemethy, J. Ramirez, G. Peceli, and T. Kovacsazy, "Self-Adaptive Software for Fault-Adaptive Control," *Third Intl. Workshop on Self-Adaptive Software*, Washington, D.C., June 2003.
170. S. Narasimhan and G. Biswas, "Model-based Diagnosis of Hybrid Systems," *Proc. 18th Intl. Joint Conf. on Artificial Intelligence*, Acapulco, Mexico, pp. 376-381, August 2003.
171. K. Leelawong, K. Viswanath, J. Davis, G. Biswas, N. Vye, K. Belynnne, and J. Bransford, "Teachable Agents: Learning by Teaching Environments for Science Domains," *Proc. 15th Innovative Applications of Artificial Intelligence Conf.*, Acapulco, Mexico, pp. 109-116, August 2003.
172. G. Biswas, E.J Manders, and J. Ramirez, "An Approach to Model Based Diagnosis of ALS subsystems," *Habitation 2004: Conference on Space Habitation Research and Technology Development*, Orlando, FL, Jan. 2004.
173. S. Abdelwahed, J. Wu, and G. Biswas, "Online Multilevel Hybrid Control for Optimal Resource Management in Advanced Life Support Systems," *Habitation 2004: Conference on Space Habitation Research and Technology Development*, Orlando, FL, Jan. 2004.

174. S. Abdelwahed, G. Karsai, and G. Biswas, "System Diagnosis using Hybrid Failure Propagation Graphs," *Proc. 15th Annual Workshop on Principles of Diagnosis*, L. Trave-Massuyes, ed., Carcassonne, France, pp. 99-104, June 2004.
175. E.J. Manders, G. Biswas, J. Ramirez, N. Mahadevan, and J. Wu, "A Model-Integrated Computing Tool Suite for Fault-Adaptive Control," *Proc. 15th Annual Workshop on Principles of Diagnosis*, L. Trave-Massuyes, ed., Carcassonne, France, pp. 137-142, June 2004.
176. S. Gupta, G. Biswas, and J. Ramirez, "An Improved Algorithm for Hybrid Diagnosis of Complex Systems," *Proc. 15th Annual Workshop on Principles of Diagnosis*, L. Trave-Massuyes, ed., Carcassonne, France, pp. 203-208, June 2004.
177. S. Abdelwahed, J. Wu, G. Biswas, J.W. Ramirez, and E.J. Manders, "Online Hierarchical Fault-Adaptive Control for Advanced Life-Support Systems," *Proc. 34th Annual Meeting of Intl. Conf. on Environmental Systems (ICES)*, paper number 2004-01-2441, Colorado Springs, CO, July 2004.
178. G. Biswas, K. Leelawong, K. Belyne, K. Viswanath, N. Vye, D. Schwartz, and J. Davis, "Incorporating Self-Regulated Learning Techniques into Learning by Teaching Environments," *Proc. of the 26th Annual Cognitive Science Conference*, K. Forbus, D. Gentner, and T. Regier, eds., pp. 120-125, August 2004.
179. G. Biswas, "Qualitative Modeling and Cognitive Science," *Symposium Presentation at the 26th Annual Cognitive Science Conference*, Chicago, IL, pp. 13, August 2004.
180. K. Viswanath, B. Adebisi, G. Biswas, and K. Leelawong, "A Multi-Agent Architecture Implementation of Learning by Teaching Systems," *4th IEEE Intl. Conference on Advanced Learning Technologies*, Joensuu, Finland, pp. 61-65, Aug. 31-Sept. 4, 2004.
181. G. Biswas, K. Leelawong, K. Belyne, K. Viswanath, D. Schwartz, and J. Davis, "Developing Learning by Teaching Environments that support Self-Regulated Learning," *Proc. of the 7th International Conference on Intelligent Tutoring Systems*, J.C. Lester, R.M. Vicari, and F. Paraguacu, eds., Maceio, Brazil, pp. 730-740, Aug. 30-Sept. 3, 2004.
182. S.E. Black, K.J. Keller, G. Biswas, and J.R. Davis, "Diagnostic /Prognostic Modeling and Reconfigurable Control," *IEEE Autotestcon*, San Antonio, TX, paper number 2004-107, Sept. 2004.
183. G. Biswas, S. Abdelwahed, X. Koutsoukos, J. Gandhe and E. Manders, "Toward Distributed Diagnosis of Complex Physical Systems," *42nd Annual Allerton Conf. on Communication, Control, and Computing*, paper number 42-303, Urbana-Champaign, IL, Sept. 29-Oct. 1, 2004.
184. I. Roychoudhury, G. Biswas, X. Koutsoukos, and S. Abdelwahed, "Designing Distributed Diagnosers for Complex Physical Systems," *16th International Workshop on Principles of Diagnosis*, Monterey, CA, pp. 31-36, June 2005.
185. S. Abdelwahed, G. Karsai, and G. Biswas, "A Constraint-based Robust Diagnosis System for Temporal Causal Systems," *16th International Workshop on Principles of Diagnosis*, Monterey, CA, pp. 73-80, June 2005.
186. G. Biswas, P. Bonasso, S. Abdelwahed, E.J. Manders, D. Kortenkamp, J. Wu, and S. Bell, "A Proposed Plan Execution Architecture for Advanced Life Support System Control," *ICAPS Workshop on Plan Execution: A Reality Check*, Monterey, CA, pp. 76-79, June 2005.

187. G. Biswas, P. Bonasso, S. Abdelwahed, E.J. Manders, J. Wu, D. Kortenkamp, and S. Bell, "Requirements for an Autonomous Control Architecture for Advanced Life Support Systems," *International Conference on Environmental Systems*, Paper no.2005-01-3010, Rome, Italy, July 2005.
188. E.J.-Manders, S. Bell, G. Biswas, and D. Kortenkamp, "Multi-scale Modeling of Advanced Life Support Systems," *International Conference on Environmental Systems*, Paper no.2005-01-113, Rome, Italy, July 2005.
189. S. Abdelwahed, J. Wu, G. Biswas, and E.J.-Manders, "Hierarchical Online Control Design for Autonomous Resource Management in Advanced Life Support Systems," *International Conference on Environmental Systems*, Paper no. 2005-01-2965, Rome, Italy, July 2005.
190. J. Tan, C. Beers, R. Gupta, and G. Biswas, "Computer Games as Intelligent Learning Environments: A River Ecosystem Adventure," *The Twelfth International Conference on AI in Education*, Amsterdam, The Netherlands, pp. 646-653, July 2005.
191. R. Gupta, Y. Wu, and G. Biswas, "Teaching about Dynamic Processes: A Teachable Agents Approach," *The Twelfth International Conference on AI in Education*, Amsterdam, The Netherlands, pp. 241-248, July 2005.
192. G. Biswas, K. Leelawong, K. Belyne, and B. Adebisi, "Case Studies in Learning by Teaching Behavioral Differences in Directed versus Guided Learning," *The 27th Annual Conference of the Cognitive Science Society*, Stresa, Italy, pp. 274-279, August 2005.
193. J. Wu, G. Biswas, S. Abdelwahed, and E.J. Manders, "A Hybrid Control System Design and Implementation for a Three-tank Testbed," *IEEE Conference on Control Applications*, Toronto, Canada, pp. 645-650, August 2005.
194. M. Daigle, X. Koutsoukos, and G. Biswas, "Relative Measurement Orderings in Diagnosis of Distributed Physical Systems," *43rd Annual Allerton Conference on Communication, Control, and Computing*, September 2005.
195. E.J. Manders, G. Biswas, N. Mahadevan, and G. Karsai, "Component-oriented modeling of hybrid dynamic systems using the Generic Modeling Environment," *Fourth Workshop on Model-Based Development of Computer-Based Systems and Third International Workshop on Model-Based Methodologies for Pervasive and Embedded Software (MBD-MOMPES'06)*, pp. 159-168, March 2006.
196. G. Karsai, G. Biswas, S. Abdelwahed, N. Mahadevan, and E.J. Manders, "Model-Based Software Tools for Integrated Vehicle Health Management," *2nd IEEE International Conference on Space Mission Challenges for Information Technology (SMC-IT'06)*, pp. 435-442, 2006.
197. M. Daigle, X. Koutsoukos, and G. Biswas, "Distributed Diagnosis of Coupled Mobile Robots," *International Conference on Robotics and Automation, (ICRA)*, June 2006.
198. C.D. Beers, E.J. Manders, G. Biswas, and P.J. Mosterman, "Building Efficient Simulations from Hybrid Bond Graph Models," *2nd IFAC Conference on Analysis and Design of Hybrid Systems, (ADHS 06)*, Alghero, Sardinia, Italy, June 2006.
199. J. Tan and G. Biswas, "The Role of Feedback in Preparation for Future Learning: A Case Study in Learning by Teaching Environments," *Intelligent Tutoring Systems: 8th International Conference*, pp. 370-381, Jhongli, Taiwan, June 2006.

200. I. Roychoudhury, G. Biswas, and X. Koutsoukos, "A Bayesian Approach to Efficient Diagnosis of Incipient Faults," *17th International Workshop on Principles of Diagnosis (DX '06)*, pp. 243-264, Penaranda de Duero, Burgos, Spain, June 2006.
201. M. Daigle, X. Koutsoukos, and G. Biswas, "Multiple Fault Diagnosis in Complex Physical Systems," *17th International Workshop on Principles of Diagnosis (DX '06)*, pp. 69-76, Penaranda de Duero, Burgos, Spain, June 2006.
202. D. Suri, A. Howell, N. Shankaran, J. Kinnebrew, W. Otte, D. Schmidt, and G. Biswas, "On-board Processing using the Adaptive Network Architecture," *Proceedings of the Earth-Sun Science Technology Conference*, College Park, MD, June 2006.
203. J. Tan, G. Biswas, and D.L. Schwartz, "Feedback for Metacognitive Support in Learning by Teaching Environments," *The 28th Annual Meeting of the Cognitive Science Society*, pp. 828-833, Vancouver, Canada, July 2006.
204. G. Biswas and E.J. Manders, "Integrated Systems Health Management to achieve Autonomy in Complex Systems," *6th IFAC Symposium on Fault Detection, Supervision, and Safety of Technical Processes (SAFEPROCESS 2006)*, Beijing, China, pp. 1207-1212, Aug.-Sept. 2006.
205. Shankaran, N., Balasubramanian, J., and Schmidt, D., Biswas, G., Lardieri, P., Mulholland, E., and Damiano, T., "A framework for (re) deploying components in distributed real-time and embedded systems," *Proceedings of the 2006 ACM symposium on Applied computing*, pp. 737-738, 2006.
206. I. Roychoudhury, M. Daigle, G. Biswas, X. Koutsoukos, and P.J. Mosterman, "A Method for Efficient Simulation of Hybrid Bond Graphs," *International Conference on Bond Graph Modeling, part of Western Multi Conference on Modeling & Simulation*, San Diego, CA, pp. 177-186, January 2007.
207. J. Tan and G. Biswas, "Simulation-Based Game Learning Environments: Building and Sustaining a Fish Tank," *The first IEEE International Workshop on Digital Game and Intelligent Toy Enhanced Learning*, Jhongli, Taiwan, pp. 73-80, February 2007. **Recipient of Best Student-Authored Paper Award.**
208. J.S. Kinnebrew, N. Shankaran, G. Biswas, and D.C. Schmidt, "A Decision-Theoretic Planner with Dynamic Component Reconfiguration for Distributed Real-time and Embedded Systems," *International Joint Conference on Artificial Intelligence Workshop on Space Applications*, Hyderabad, India, January 2007.
209. D. Suri, A. Howell, D. Schmidt, G. Biswas, J. Kinnebrew, W. Otte, and N. Sankaran, "A Multi-agent Architecture provides Smart Sensing for the NASA Sensor Web," *IEEE Aerospace Conference*, Big Sky, Montana, March 2007.
210. G. Biswas and S. Mahadevan, "A Hierarchical Model-based approach to Systems Health Management," Paper no. 11.10-1215, *IEEE Aerospace Conference*, Big Sky, Montana, March 2007.
211. F. Tu, S. Ghoshal, J. Luo, G. Biswas, L. Jaw, and, K. Navarra , "PHM Integration with Maintenance and Inventory Management Systems," Paper number 11.10-1335, *IEEE Aerospace Conference*, Big Sky, Montana, March 2007.

212. J.S. Kinnebrew, A. Gupta, N. Shankaran, G. Biswas, and D.C. Schmidt, "A Decision-Theoretic Planner with Dynamic Component Reconfiguration for Distributed Real-Time Applications," *The 8th International Symposium on Autonomous Decentralized Systems (ISADS)*, Sedona, AZ, March 2007.
213. J. Tan and G. Biswas, "Simulation-Based Game Learning Environments: Building and Sustaining a Fish Tank," *The First IEEE International Workshop on Digital Game and Intelligent Toy-Enhanced Learning (DIGITEL 2007)*, Jhongli, Taiwan, March 2007.
214. M. Daigle, I. Roychoudhury, G. Biswas, and X. Koutsoukos, "Efficient Simulation of Component-Based Hybrid Models Represented as Hybrid Bond Graphs," *10th International Conference on Hybrid Systems: Computational and Control*, Pisa, Italy, Lecture Notes in Computer Science, vol. 4416, pp. 680-683, Apr 2007.
215. M. Daigle, X. Koutsoukos, and G. Biswas, "A Discrete Event Approach to Diagnosis of Continuous Systems," *18th International Workshop on Principles of Diagnosis*, pp. 259-266, May 2007.
216. S. Poll, A. Patterson-Hine, J. Camisa, D. Garcia, D. Hall, C. Lee, O. Mengshoel, C. Neukom, D. Nishikawa, J. Ossenfort, A. Sweet, S. Yentus, I. Roychoudhury, M. Daigle, G. Biswas, and X. Koutsoukos, "Advanced Diagnostics and Prognostics Testbed," *18th International Workshop on Principles of Diagnosis*, pp. 178-185, May 2007.
217. S. Poll, A. Patterson-Hine, J. Camisa, D. Nishikawa, L. Spirkovska, D. Garcia, D. Hall, C. Neukom, A. Sweet, S. Yentus, C. Lee, J. Ossenfort, I. Roychoudhury, M. Daigle, G. Biswas, X. Koutsoukos, and R. Lutz, "Evaluation, Selection, and Application of Model-Based Diagnosis Tools and Approaches," *AIAA Infotech@Aerospace 2007 Conference and Exhibit*, May 2007.
218. J. Tan, J. Wagster, Y. Wu, and G. Biswas, "Effect of Metacognitive Support on Student Behaviors in Learning by Teaching Environments," *The 13th International Conference on AI in Education*, Marina del Rey, California, July 2007.
219. J. Wagster, J. Tan, G. Biswas, and D.L. Schwartz, "How Metacognitive Feedback Affects Behavior in Learning and Transfer," *The 13th International Conference on AI in Education*, Marina del Rey, California, July 2007.
220. M. Daigle, X. Koutsoukos, and G. Biswas, "A Qualitative Approach to Multiple Fault Isolation in Continuous Systems," *AAAI National Conference (AAAI-2007)*, pp. 293-298, July 2007.
221. M. Daigle, X. Koutsoukos, and G. Biswas, "On Discrete Event Diagnosis Methods for Continuous Systems," *15th Mediterranean Conference on Control and Automation*, July 2007.
222. J. Tan, N. Skirvin, G. Biswas, and K. Catley, "Providing Guidance and Opportunities for Self-Assessment and Transfer in a Simulation Environment for Discovery Learning," *The 29th Annual Meeting of the Cognitive Science Society*, pp. 1539-1544, Nashville, Tennessee, August 2007.
223. J. Wagster, J. Tan, Y. Wu, G. Biswas, and D.L. Schwartz, D. "Do Learning by Teaching Environments with Metacognitive Support Help Students Develop Better Learning Behaviors?" *The 29th Annual Meeting of the Cognitive Science Society*, pp. 695-700, Nashville, Tennessee, August 2007.

224. G. Biswas, "Cognitive Science and Student Learning in the Classroom," *The 29th Annual Meeting of the Cognitive Science Society*, pp. 19-20, Nashville, Tennessee, August 2007.
225. H. Jeong, and G. Biswas, "Mining Student Behavior Models in Learning-by-Teaching Environments," *First International Conference on Educational Data Mining, Montreal*, R. S. Baker, T. Barnes, T., J.E. Beck, (eds.), pp. 127–136, Montreal, Quebec, Canada, June 20-21, 2008.
226. H. Jeong, A. Gupta, R. Roscoe, J. Wagster, G. Biswas, G., and D. Schwartz, "Using Hidden Markov Models to Characterize Student Behavior Patterns in Computer-based Learning-by-Teaching Environments," *Intelligent Tutoring Systems: 9th International Conference, Lecture Notes in Computer Science, vol. 5091*, B. Wolf, et al. (eds.), Springer, Berlin, Heidelberg, pp. 614–625, 2008.
227. J. Wagster, H. Kwong, J. Segedy, G. Biswas, and D. Schwartz, "Bringing CBLEs into Classrooms: Experiences with the Betty's Brain System," *The Eighth IEEE International Conference on Advanced Learning Technologies*, Santander, Cantabria, Spain, July 2008.
228. R. Roscoe, J. Wagster, and G. Biswas, G., "Using Teachable Agent Feedback to Support Effective Learning by Teaching," *The Thirtieth Annual Meeting of the Cognitive Science Society*, Washington, DC, pp. 2381-2386, July 2008.
229. M. Daigle, X. Koutsoukos, and G. Biswas, "An Integrated Approach to Parametric and Discrete Fault Diagnosis in Hybrid Systems," *Hybrid Systems: Computation and Control (HSCC 2008), Lecture Notes in Computer Science*, vol. 4981, pp. 614-617, 2008.
230. N. Shankaran, J.S. Kinnebrew, X.D. Koutsoukos, C. Lu, D.C. Schmidt, and G. Biswas, "Towards an Integrated Planning and Adaptive Resource Management Architecture for Distributed Real-time Embedded Systems", *Proceedings of the Workshop on Adaptive and Reconfigurable Embedded Systems (APRES) at the 14th IEEE Real-Time and Embedded Technology and Applications Symposium*, St. Louis, MO, United States, April 22 - April 24, 2008.
231. N. Roy, J.S. Kinnebrew, N. Shankaran, G. Biswas, and D.C. Schmidt, "Toward Effective Multi-capacity Resource Allocation in Distributed Real-time and Embedded Systems", *The 11th IEEE International Symposium on Object/Component/Service-oriented Real-time Distributed Computing (ISORC 2008)*, Orlando, Florida, May 5-7, 2008.
232. I. Roychoudhury, M. Daigle, G. Biswas, and X. Koutsoukos, "Efficient Simulation of Hybrid Systems: An Application to Electrical Power Distribution Systems," *Proceedings of the 22nd European Conference on Modeling and Simulation (ECMS 2008)*, pp. 471-477, June 2008.
233. H. Jeong and G. Biswas, "Mining Student Behavior Models in Learning-by-Teaching Environments", *First International Conference on Educational Data Mining, Montreal*, R. S. Baker, T. Barnes, T., I.E. Beck, (eds.), pp. 127-136, Montreal, Quebec, Canada, June 20-21, 2008.
234. R. Otte, J.S. Kinnebrew, D.C. Schmidt, G. Biswas, and D. Suri, "Application of Middleware and Agent Technologies to a Representative Sensor Network", *The Eighth Annual NASA Earth Science Technology Conference*, College Park, Maryland, June 24-26, 2008.
235. J. Wagster, H. Kwong, J. Segedy, G. Biswas, and D. Schwartz, "Bringing CBLEs into Classrooms: Experiences with the Betty's Brain System," *The Eighth IEEE International Conference on Advanced Learning Technologies*, pp. 252-256, Santander, Cantabria, Spain, July 2008.

236. A. Bregon, G. Biswas, and B. Pulido, "Compilation Techniques for Fault Detection and Isolation: A Comparison of Three Methods," *Proceedings of the 19th International Workshop on Principles of Diagnosis (DX 2008)*, Blue Mountains, Australia, pp. 39-46, September 2008.
237. M. Daigle, X. Koutsoukos, and G. Biswas, "An Event-based Approach to Hybrid Systems Diagnosability," *Proceedings of the 19th International Workshop on Principles of Diagnosis*, pp. 47-54, September 2008.
238. I. Roychoudhury, G. Biswas, and X. Koutsoukos, "Comprehensive Diagnosis of Continuous Systems Using Dynamic Bayes Nets," *Proceedings of the 19th International Workshop on Principles of Diagnosis (DX 2008)*, Blue Mountains, Australia, pp. 151-158, September 2008.
239. E.R. Gelso, G. Biswas, S.M. Castillo, and J. Armengol, "A Comparison of Two Methods for Fault Detection: A Statistical Decision, and an Interval-based Approach," *Proceedings of the 19th International Workshop on Principles of Diagnosis (DX 2008)*, Blue Mountains, Australia, pp. 261-268, September 2008.
240. A. Tantawy, X. Koutsoukos, and G. Biswas, "Aircraft AC Generators: Hybrid System Modeling and Simulation," *International Conference on Prognostics and Health Management, Denver, Colorado*, October 2008.
241. A. Tantawy, X. Koutsoukos, and G. Biswas, "Maximum Likelihood Detection with Intermittent Observations," *43rd Conference on Information Sciences and Systems (CISS 2009)*, Baltimore, MD, March 18-20, 2009.
242. J. S. Kinnebrew, W. R. Otte, N. Shankaran, G. Biswas, and D. C. Schmidt, "Intelligent Resource Management and Dynamic Adaptation in a Distributed Real-time and Embedded Sensor Web System," *In Proceedings of the 12th International Symposium on Object/Component/Service-oriented Real-time Distributed Computing (ISORC 09)*, Tokyo, Japan, March 17-20, 2009.
243. W.R. Otte, J.S. Kinnebrew, D.C. Schmidt, and G. Biswas, "A Flexible Infrastructure for Distributed Deployment in Adaptive Sensor Webs," *In Proceedings of the 2009 IEEE Aerospace Conference*, Big Sky, Montana, March 7-14, 2009.
244. A. Bregon, B. Pulido, G. Biswas, and X. Koutsoukos. "Generating Possible Conflicts from Bond Graphs Using Temporal Causal Graphs," *European Conference on Modeling and Simulation (ECMS 2009)*, Madrid, Spain, June 9-12, 2009.
245. A. Tantawy, Xenofon Koutsoukos, and Gautam Biswas, "Detection Using Intermittent Observations for Passive Wireless Sensors," *American Control Conference (ACC 2009)*, St. Louis, Missouri, June 10-12, 2009.
246. I. Roychoudhury, G. Biswas, and X. Koutsoukos, "Distributed Diagnosis of Dynamic Systems Using Dynamic Bayesian Networks," *The 20th International Workshop on Principles of Diagnosis (DX-09)*. Stockholm, Sweden, pp. 329-336, June 14-17, 2009.
247. A. Tantawy, X. Koutsoukos, and G. Biswas, "Composite Hypothesis Testing with Intermittent Observations," *7th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes (SAFEPROCESS 2009)*, Barcelona, Spain, pp. 295-299, June 30 - July 3, 2009.
248. I. Roychoudhury, G. Biswas, and X. Koutsoukos, "Efficient Estimation for Diagnosis Using Factored Dynamic Bayesian Networks", *7th IFAC Symposium on Fault Detection, Supervision*

- and Safety of Technical Processes (SAFEPROCESS 2009)*, Barcelona, Spain, pp. 300-305, June 30 - July 3, 2009.
249. I. Roychoudhury, M. Daigle, G. Biswas, X. Koutsoukos, A. Patterson-Hine, and S. Poll, "Comprehensive Diagnosis of Complex Electrical Power Systems", *7th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes (SAFEPROCESS 2009)*, Barcelona, Spain, pp. 722-727, June 30 - July 3, 2009.
 250. G. Biswas, X. Koutsoukos, B. Pulido, and A. Bregon, "Analytic Redundancy, Possible Conflicts, and TCG-Based Fault Signature Diagnosis applied to Nonlinear Dynamic Systems," *7th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes (SAFEPROCESS 2009)*. Barcelona, Spain, pp. 1486-1491, June 30 - July 3, 2009.
 251. A. Tantawy, X. Koutsoukos, and G. Biswas, "Optimal Performance for Detection Systems in Wireless Passive Sensor Networks", *17th IEEE Mediterranean Conference on Control and Automation (MED'09)*. Thessaloniki, Greece, June 24-26, 2009.
 252. J. Linn, Segedy, J., Jeong, H., Podgursky, B., and Biswas, G. "Reconfigurable Architecture for building Intelligent Learning Environments," *The 14th International Conference on Artificial Intelligence in Education*, Brighton, United Kingdom, pp. 115-122, July 6-10, 2009.
 253. J. S. Kinnebrew and G. Biswas, "Efficient Allocation of Hierarchically-Decomposable Tasks in a Sensor Web Contract Net,"? in *Proceedings of the IEEE International Conference on Intelligent Agent Technology (IAT 09)*, Milan, Italy, September 15-18, 2009.
 254. C.S. Kulkarni, G. Biswas, and X. Koutsoukos, "A prognosis case study for electrolytic capacitor degradation in DC-DC converters", *Annual Conference of the Prognostics and Health Management Society 2009 (PHM 2009)*. San Diego, CA September 27 - October 1, 2009. (poster.)
 255. A. Bregon, B. Pulido, and G. Biswas, "Efficient Online Parameter Estimation for TRANSCEND for Nonlinear Systems", *Annual Conference of the Prognostics and Health Management Society 2009 (PHM 2009)*. San Diego, CA September 27 - October 1, 2009.
 256. A. Tantawy, X. Koutsoukos, and G. Biswas, "Robust Differential Protection with Intermittent Cable Faults for Aircraft AC Generators", *Annual Conference of the Prognostics and Health Management Society 2009 (PHM 2009)*. San Diego, CA September 27 - October 1, 2009.
 257. G. Biswas, H. Jeong, R. Roscoe, and B. Sulcer, "Promoting Motivation and Self-Regulated Learning Skills through Social Interactions in Agent-based Learning Environments,? *AAAI Fall Symposium FS-02 on Cognitive and Metacognitive Educational Systems (MCES)*, Arlington, VA, Nov. 4-7, 2009.
 258. G. Biswas, R. Roscoe, H. Jeong, and B. Sulcer, "Promoting Self-Regulated Learning Skills in Agent-based Learning Environments,? *Proc. 17th Intl. Conf. on Computers in Education*, Hong Kong, China, pp. 67-74, Nov. 30-Dec. 4, 2009. **Winner of Best Paper Award.**
 259. I. Roychoudhury, G. Biswas, and X. Koutsoukos, "Factoring Dynamic Bayesian Networks Based On Structural Observability", *48th IEEE Conference on Decision and Control (CDC 2009)*. Shanghai, China, Dec. 16-18, 2009.
 260. J.S. Kinnebrew, D.L.C. Mack, G. Biswas, and D.C. Schmidt, "Coordination of Planning and Scheduling Techniques for a Distributed, Multi-level, Multi-agent System," *The International*

- Conference on Agents and Artificial Intelligence (ICAART 2010)*, Valencia, Spain, January 22-24, 2010.
261. Kulkarni, C., G. Biswas, X. Koutsoukos, K. Goebel, and J. Celaya, "Physics of Failure Models for Capacitor Degradation in DC-DC Converters," *The Maintenance and Reliability Conference, MARCON 2010*, Knoxville, TN, MARCON, February 2010.
 262. Kulkarni, C., G. Biswas, R. Bharadwaj, and K. Kim, "Effects of Degradation in DC-DC Converters on Avionics Systems: A Model Based Approach," *Machinery Failure Prevention Technology Conference, MFPT 2010*, Huntsville, AL, MFPT, pp. 8-13, April 2010.
 263. R. Bharadwaj, K. Kim, C. Kulkarni, and G. Biswas, "Model-Based Avionics System Fault Simulation and Detection," *American Institute of Aeronautics and Astronautics, AI-AA Infotech Aerospace*, (AIAA-2010-3328), April 2010.
 264. Jeong, H., Biswas, G., Johnson, J., and Howard, L., "Analysis of Productive Learning Behaviors in a Structured Inquiry Cycle Using Hidden Markov Models," *Proceedings of the 3rd International Conference on Educational Data Mining*, R.S.j.d. Baker, A. Merceron, and P.I. Pavlik Jr. (Eds.), Pittsburgh, pp.81-90, June 2010.
 265. Segedy, J., Sulcer, B., and Biswas, G., "Are ILEs Ready for the Classroom? Bringing Teachers into the Feedback Loop," *Proceedings of the 10th International Conference on Intelligent Tutoring Systems*, Pittsburgh, PA, pp. 405-407, June 2010.
 266. Biswas, G., and Sulcer, B., "Visual exploratory data analysis methods to characterize student progress in intelligent learning environments," *2010 International Conference on Technology for Education (T4E)*, Mumbai, pp. 114-121, June 2010.
 267. I. Roychoudhury, G. Biswas, and X. Koutsoukos, "Distributed Diagnosis in Uncertain Environments using Dynamic Bayes Nets," *18th Mediterranean Conference on Control and Automation*, Congress Palace Hotel, Marrakech, Morocco, pp. 1531-1536, June 23-25, 2010.
 268. Kulkarni, C., G. Biswas, X. Koutsoukos, J. Celaya, and K. Goebel, "Diagnostic/Prognostic Experiments for Capacitor Degradation and Health Monitoring in DC-DC converters," *ASME 2010 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, Philadelphia, PA, ASME, October 2010.
 269. Kulkarni, C., G. Biswas, X. Koutsoukos, K. Goebel, and J. Celaya, "Experimental studies of ageing in electrolytic capacitors," *Annual Conference of the Prognostics and Health Management Society*, Portland, OR, Prognostics and Health Management Society, October 2010.
 270. B. Podgursky, G. Biswas, and X. Koutsoukos, "Efficient Tracking of Behavior in Complex Hybrid Systems via Hybrid Bond Graphs," *Annual Conference of the Prognostics and Health Management Society*, Portland, OR, Prognostics and Health Management Society, October 2010.
 271. G. Biswas, X. Koutsoukos, D.A. Mylaraswamy, G.D. Hadden, D. Mack, D. Hamilton, "Benchmarking the Vehicle Integrated Prognostic Reasoner," *Annual Conference of the Prognostics and Health Management Society*, Portland, OR, Prognostics and Health Management Society, October 2010.

272. M. Daigle, I. Roychoudhury, G. Biswas, and X. Koutsoukos, "An Event-based Approach to Distributed Diagnosis of Continuous Systems," *21st Annual Workshop on Principles of Diagnosis*, Portland, OR, ISBN: 978-1-936263-02-8, October 2010.
273. E. Frisk, A. Bregon, J. slund, M. Krysender, B. Pulido, and G. Biswas. "Diagnosability Analysis Considering Causal Interpretations for Differential Constraints," *21st Annual Workshop on Principles of Diagnosis*, Portland, OR, ISBN: 978-1-936263-02-8, October 2010.
274. C. J. Alonso-Gonzalez, N. Moya, and G. Biswas, "Factoring Dynamic Bayesian Networks using Possible Conflicts," *21st Annual Workshop on Principles of Diagnosis*, Portland, OR, ISBN: 978-1-936263-02-8, October 2010.
275. N. Moya, G. Biswas, C. J. Alonso-Gonzalez, and X. Koutsoukos, "Structural Observability. Application to decompose a System with Possible Conflicts," *21st Annual Workshop on Principles of Diagnosis*, Portland, OR, ISBN: 978-1-936263-02-8, October 2010.
276. Kulkarni, C., G. Biswas, X. Koutsoukos, J. Celaya, and K. Goebel, "Integrated Diagnostic/Prognostic Experimental Setup for Capacitor Degradation and Health Monitoring," *IEEE AUTOTESTCON*, Orlando, FL, IEEE, pp. 1-7, October 2010. **Winner of Best Student Paper Award.**
277. J. Zander, P.J. Mosterman, J.S. Kinnebrew, and G. Biswas, "Computation of Things for Human Protection and Fulfillment," *Proceedings of the IEEE International Conference on Homeland Security Technologies (IEEE HST 2010)*, Waltham, MA, pp. 153-159, November 8-10, 2010.
278. Kinnebrew, J., Biswas, G., and Sulcer, B., "Measuring Self-regulated Learning Skills through Social Interactions in a Teachable Agent Environment," *The AAAI Fall Symposium on Cognitive and Metacognitive Educational Systems (MCES)*, Arlington, VA, November 2010.
279. Segedy, J.R., Kinnebrew, J.S., and Biswas, G. "Investigating the Relationship Between Dialogue Responsiveness and Learning in a Teachable Agent Environment," *Proceedings of The 15th International Conference on Artificial Intelligence in Education*, G. Biswas, S. Bull, J. Kay, and T. Mitrovic (Eds.), Auckland, New Zealand, pp. 547-549, June–July 2011.
280. M. Mendiburo and G. Biswas, "Virtual Manipulatives in a Computer-Based Learning Environment: How experimental data informs the design of future systems," *Proceedings of The 15th International Conference on Artificial Intelligence in Education*, G. Biswas, S. Bull, J. Kay, and T. Mitrovic (Eds.), Auckland, New Zealand, pp. 510-512, June–July 2011.
281. S. Basu, G. Biswas, and P. Sengupta, "Scaffolding to Support Learning of Ecology in Simulation Environments," *Proceedings of The 15th International Conference on Artificial Intelligence in Education*, G. Biswas, S. Bull, J. Kay, and T. Mitrovic (Eds.), Auckland, New Zealand, pp. 417-419, June–July 2011.
282. Kinnebrew, J.S., and Biswas, G., "Comparative Action Sequence Analysis with Hidden Markov Models and Sequence Mining," *The Knowledge Discovery in Educational Data Workshop at the 17th ACM SIGKDD Conference on Knowledge Discovery and Data Mining*. San Diego, CA., August 2011.
283. A. Hymel, D. Levin, J. Barrett, M. Saylor, and G. Biswas, "The Interaction of Childrens Concepts about Agents and Their Ability to Use an Agent-Based Tutoring System," *Human-Computer Interaction. Users and Applications*, pp. 580-589, 2011.

284. A. Bregon, M. Daigle, I. Roychoudhury, G. Biswas, X. Koutsoukos and B. Pulido, "Improving Distributed Diagnosis Through Structural Model Decomposition," *22nd International Workshop on Principles of Diagnosis (DX-2011)*, Murnau, Germany, Oct. 4-7, 2011.
285. Sengupta, P., Kinnebrew, J.S., Biswas, G., and Clark, D., "Integrating computational thinking with K-12 science education: A theoretical framework," *4th International Conference on Computer Supported Education*, Porto, Portugal, pp. 40-49, 2012.
286. Kinnebrew, J.S. and Biswas, G. "Identifying Learning Behaviors by Contextualizing Differential Sequence Mining with Action Features and Performance Evolution," *Proc. 5th International Conference on Educational Data Mining (EDM 2012)*, Chania, Greece, June 19-21. **Winner of Best Paper Award.**
287. Segedy, J. R., Kinnebrew, J. S., and Biswas, G., "Supporting Student Learning using Conversational Agents in a Teachable Agent Environment," *Proc. 10th International Conference of the Learning Sciences*, Sydney, Australia, July 2-6, 2012.
288. Segedy, J. R., Kinnebrew, J. S., and Biswas, G., "Relating Student Performance to Action Outcomes and Context in a Complex, Choice-Rich Learning Environment," *Proc. 11th International Conference on Intelligent Tutoring Systems*, Chania, Greece, June 14-18, 2012.
289. Kulkarni C.S., J. Celaya, G. Biswas, and K. Goebel, "Prognostics Health Management and Failure Models for Accelerated Life testing in Electrolytic Capacitors," *IEEE - The Annual Reliability and Maintainability Symposium*, Reno, Nevada, pp. 1-6, January 23-26, 2012.
290. Bouchet, F., Kinnebrew, J.S., Biswas, G., and Azevedo, R., "Identifying Students' Characteristic Learning Behaviors in an Intelligent Tutoring System Fostering Self-Regulated Learning," *Proceedings 5th International Conference on Educational Data Mining*, Chania, Greece, pp. 65-72, June 19-21, 2012.
291. Kulkarni C.S., J Celaya, G. Biswas, and K Goebel, "Prognostics Health Management and Physics based failure Models for Electrolytic Capacitors," *American Institute of Aeronautics and Astronautics, AIAA Infotech@Aerospace Conference*, Garden Grove, CA, June 19 - 21 2012.(**Winner of Best Student Paper Award**)
292. Biswas, G., Kinnebrew, J.S., and Segedy, J.R., "Modeling student behaviors in an open-ended learning environment," *Proc. 4th Intl. Conf. on Applied Human Factors and Ergonomics*, San Francisco, CA, pp. 202-211, July 2012.
293. Segedy, J. R., Kinnebrew, J. S., and Biswas, G., "Supporting Student Learning using Conversational Agents in a Teachable Agent Environment," *Proc. 10th International Conference of the Learning Sciences*, Sydney, Australia, July 2-6, 2012.
294. Carl, J.D., A. Tantawy, G. Biswas, and X. Koutsoukos, "Detection and Estimation of Multiple Fault Profiles Using Generalized Likelihood Ratio Tests: A Case Study," *IFAC Symposium on System Identification, SYSID*, Brussels, Belgium, vol. 16, no. 1, pp. 386-391, 2012.
295. Kulkarni C.S., J Celaya, G. Biswas, and K Goebel, "Prognostics of Power Electronics, methods and validation experiments," *IEEE AUTOTESTCON*, Anaheim, CA, pp. 194-199, September 10 - 13,

296. Kulkarni C.S., J Celaya, G. Biswas, and K Goebel, "Accelerated Aging Experiments for Capacitor Health Monitoring and Prognostics," *IEEE AUTOTESTCON*, Anaheim, CA, pp. 356-361, September 10 - 13, 2012.
297. Clark, D. B., Martinez-Garza, M., Hughes, J., Krinks, K., Kinnebrew, J., Sengupta, P., Biswas, G., and Barrett, J., "Beyond Good and Evil: Game design for explicit articulation of mental models," Presentation at invited *Symposium at the National Association of Research in Science Teaching*, Indianapolis, IN, 2012.
298. Kulkarni C.S., J Celaya, G. Biswas, and K Goebel, "Physics Based Electrolytic Capacitor Degradation Models for Prognostic Studies under Thermal Overstress," *1st European Conference of the Prognostics and Health Management Society*, Dresden, Germany, July 3 -5 2012. **(Selected as 10 Best Papers at the conference - Invited Presentation at PHM 12)**.
299. Tantawy, A., X. Koutsoukos, and G. Biswas, "A Cross-Layer Design for Decentralized Detection in Tree Sensor Networks," *IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS 2012)*, Hangzhou, China, pp. 247-256, May 16-18, 2012.
300. Carl, J.D., Mack, D.M., Tantawy, A., Biswas, G., and Koutsoukos, X., "Fault Isolation for Spacecraft Systems: An Application to a Power Distribution Testbed," *16th IFAC International Symposium on Fault Detection, Supervision and Safety for Technical Processes, SAFEPROCESS 2012*, Mexico City, Mexico, August 29-31, 2012.
301. Daigle, M., A. Bregon, G. Biswas, X. Koutsoukos, and B. Pulido, "Improving Multiple Fault Diagnosability using Possible Conflicts," *16th IFAC International Symposium on Fault Detection, Supervision and Safety for Technical Processes, SAFEPROCESS 2012*, Mexico City, Mexico, August 29-31, 2012.
302. Bregon, A., C.J.. Alonso-Gonzalez, G. Biswas, B. Pulido, and N. Moya, "Fault Diagnosis in Hybrid Systems using Possible Conflicts," *16th IFAC International Symposium on Fault Detection, Supervision and Safety of Technical Processes, SAFEPROCESS 2012*, Mexico City, Mexico, August 29-31, 2012.
303. Kulkarni C.S., J Celaya, K Goebel, and G. Biswas, "Bayesian Framework Approach for Prognostic Studies in Electrolytic Capacitor under Thermal Overstress Conditions," *Annual Conference of the Prognostics and Health Management Society (PHM 2012)*, September 23-27, 2012, Minneapolis, MN. ISBN: 978-1-936263-05-9. **(Winner of Best Paper Award)**
304. Moya, N., A. Bregon, C. Alonso-Gonzalez, B. Pulido and G. Biswas, "Extending Hybrid Possible Conflicts to Diagnose Discrete Faults," *23rd International Workshop on Principles of Diagnosis*, Great Malvern, UK, pp. 51-58, August 2012.
305. Weng, J. and G. Biswas, "A Particle Filter Approach for Tracking and Estimating Faults in Nonlinear Dynamic Systems," *23rd International Workshop on Principles of Diagnosis*, Great Malvern, UK, pp. 123-130, August 2012.
306. Basu, S., Kinnebrew, J., Dickes, A., Farris, A.V., Sengupta, P., Winger, J., and Biswas, G., "A Science Learning Environment using a Computational Thinking Approach," *Proceedings of the 20th International Conference on Computers in Education*, pp. 722-729, Singapore, November-December 2012 **(Winner of Best Student Paper Award)**.

307. Basu, S., Dickes, A., Kinnebrew, J.S., Sengupta, P., and Biswas, G. "CTSiM: A Computational Thinking Environment for Learning Science through Simulation and Modeling," *The 5th International Conference on Computer Supported Education*, Aachen, Germany,
308. Biswas, G., Kinnebrew, J.S., and Segedy, J.R. "Analyzing Students' Metacognitive Strategies in Open-Ended Learning Environments," In *Proceedings of the 35th annual meeting of the Cognitive Science Society*, Berlin, Germany, 2013.
309. Biswas, G., Segedy, J.R., and Kinnebrew, J.S., "Smart Open-Ended Learning Environments that Support Learners Cognitive and Metacognitive Processes," *Proceedings of the 1st IEEE International Conference on Human Factors in Computing and Informatics*, Maribor, Slovenia, 2013.
310. Dukeman, A., Caglar, F., Shekhar, S., Kinnebrew, J., Biswas, G., Fisher, D., and Gokhale, A., "Teaching Computational Thinking Skills in C3STEM with Traffic Simulation," *Proceedings of the 1st IEEE International Conference on Human Factors in Computing and Informatics*, Maribor, Slovenia, 2013.
311. Gokhale, A., Biswas, G., Sarkar, N., Sastry, S., and Branicky, M. "CPS Laboratory-as-a-Service: Enabling Technology for Readily Accessible and Scalable CPS Education," *Proceedings of the First Workshop on Cyber-Physical Systems Education (CPS-Ed 2013) at Cyber Physical Systems Week*, Philadelphia, Pennsylvania, USA, 2013.
312. Basu, S., Dickes, A., Kinnebrew, J.S., Sengupta, P., and Biswas, G. "CTSiM: A Computational Thinking Environment for Learning Science through Simulation and Modeling," *Proceedings of the 5th International Conference on Computer Supported Education*, pp. 369-378, Aachen, Germany, 2013.
313. Levin, D. T., Adams, J. A., Saylor, M. M., and Biswas, G. "A transition model for cognitions about agency," *Proceedings of the 8th ACM/IEEE international conference on Human-robot interaction*, pp. 373-380, IEEE Press, March 2013.
314. Biswas, G., Kinnebrew, J.S., and Mack, D.L.C. "How do students' learning behaviors evolve in scaffolded open-ended learning environments?" *Proceedings of the 21st International Conference on Computers in Education*, Bali, Indonesia, 2013. (**Recipient of the Best Paper Award**)
315. Biswas, G., Kinnebrew, J.S., and Segedy, J.R. "Analyzing Students' Metacognitive Strategies in Open-Ended Learning Environments," *Proceedings of the 35th annual meeting of the Cognitive Science Society*, Berlin, Germany, 2013.
316. Biswas, G., Segedy, J.R., and Kinnebrew, J.S. "Smart Open-Ended Learning Environments that Support Learners' Cognitive and Metacognitive Processes," *Proceedings of the 1st IEEE International Conference on Human Factors in Computing and Informatics*, Maribor, Slovenia, 2013.
317. Dickes, A., Sengupta, P., Krishnan, G., and Basu, S. "Thinking Like a Butterfly: Leveraging Students' Embodied Intuitions in Elementary Ecology Classrooms," *Annual Conference of the National Association of Research on Science Teaching (NARST 2013)*, Rio Grande, Puerto Rico, 2013.

318. Dukeman, A., Caglar, F., Shekhar, S., Kinnebrew, J., Biswas, G., Fisher, D., and Gokhale, A. "Teaching Computational Thinking Skills in C3STEM with Traffic Simulation," *Proceedings of the 1st IEEE International Conference on Human Factors in Computing and Informatics*, Maribor, Slovenia, 2013
319. Gokhale, A., Biswas, G., Sarkar, N., Sastry, S., and Branicky, M. "CPS Laboratory-as-a-Service: Enabling Technology for Readily Accessible and Scalable CPS Education," *Proceedings of the First Workshop on Cyber-Physical Systems Education*, (CPS-Ed 2013) at Cyber Physical Systems Week. Philadelphia, Pennsylvania, USA, 2013.
320. Kinnebrew, J.S., Mack, D.L.C., and Biswas, G. "Mining Temporally-Interesting Learning Behavior Patterns," *Proceedings of the 6th International Conference on Educational Data Mining*, Memphis, TN, USA, 2013.
321. Mendiburo, M., Williams, L., Segedy, J.R., and Hasselbring, T. "Towards Automated Support for Small-Group Instruction: Using Data from an ITS to Automatically Group Students," *Proceedings of the Fall 2013 Conference of the Society for Research on Educational Effectiveness*, Washington, D.C., 2013.
322. Mendiburo, M., Williams, L., Segedy, J.R., Wright, M., Biswas, G., and Hasselbring, T. "An Investigation of the Effect of Competition on the Way Students Engage in Game-Based Deliberate Practice," *Proceedings of the 13th IEEE International Conference on Advanced Learning Technologies*, pp. 102-106, Beijing, China, 2013.
323. Segedy, J.R., Biswas, G., Blackstock, E.F., and Jenkins, A. "Guided Skill Practice as an Adaptive Scaffolding Strategy in Open-Ended Learning Environments," *Proceedings of the 16th International Conference on Artificial Intelligence in Education*, Memphis, TN, USA, 2013.
324. Segedy, J.R., Loretz, K.M., and Biswas, G. "Model-Driven Assessment of Learners in an Open-Ended Learning Environment," *Proceedings of the Third International Conference on Learning Analytics and Knowledge*, pp. 200-204, New York, NY: ACM, 2013.
325. Segedy, J.R., Loretz, K.M., and Biswas, G. "Suggest-Assert-Modify: A Taxonomy of Adaptive Scaffolds in Computer-Based Learning Environments," *Proceedings of the Workshop on Scaffolding in Open-Ended Learning Environments*, held at the 16th International Conference on Artificial Intelligence in Education. Memphis, TN, 2013.
326. Dong, Y. and G. Biswas, "Comparison of Sensor Placement Algorithms," *24th International Workshop on Principles of Diagnosis*, A. Feldman, M. Kalech, and G. Provan, eds., Jerusalem, Israel, pp. 53-58, October 2013.
327. Khorasgani, H., Kulkarni, C., Biswas, G., Celaya, J.R., and Goebel, K., "Degradation Modeling and Remaining Useful Life Prediction of Electrolytic Capacitors under Thermal Overstress Condition Using Particle Filters," *Annual Conference of the Prognostics and Health Management Society*, New Orleans, LA, October 2013.
328. Carl, J. D., Lattmann, Z., and Biswas, G. "Modeling and Simulation Semantics for Building Large-Scale Multi-Domain Embedded Systems," *27th European Conference on Modelling and Simulation*, (ECMS 2013), Aalesund, Norway. May 2013.
329. Roychoudhury, I., Daigle, M., Bregon, A., and Pulido, B. "A structural model decomposition framework for systems health management," *IEEE Aerospace Conference*, (pp. 1-12). Big Sky, MT. March 2013.

330. Alonso, N. M., Bregon, A., Alonso-Gonzalez, C. J., and Pulido, B. "A Common Framework for Fault Diagnosis of Parametric and Discrete Faults Using Possible Conflicts," *Advances in Artificial Intelligence*, (pp. 239-249). Springer Berlin Heidelberg, 2013.
331. Basu, S., Kinnebrew, J., and Biswas, G. "Assessing student performance in a computational-thinking based science learning environment," *Proceedings of the 12th International Conference on Intelligent Tutoring Systems*, pp. 476-481, Honolulu, HI, USA: Springer International Publishing, June 2014.
332. Biswas, G., Kinnebrew, J.S., and Segedy, J.R., "Using a Cognitive/Metacognitive Task Model to analyze Students Learning Behaviors," *Proceedings of the 16th International Conference on Human-Computer Interaction*, Creta Maris, Heraklion, Crete, Greece, June 2014.
333. Basu, S., Dukeman, A., Kinnebrew, J., Biswas, G., and Sengupta, P. "Investigating student generated computational models of science," *Proceedings of the 11th International Conference of the Learning Sciences*, pp. 1097-1101, Boulder, CO, USA, July 2014.
334. Dukeman, A., Shekhar, S., Caglar, F., Gokhale, A., Biswas, G., and Kinnebrew, J.S. "Analyzing Students Computational Models as they Learn in STEM Disciplines," *121st American Society for Engineering Education Annual Conference and Exposition*, Indianapolis, IN, 2014.
335. Shekhar, S., Caglar, F., Dukeman, A., Hou, L., Gokhale, A., Kinnebrew, J.S., and Biswas, G. "A Collaborative K-12 STEM Education Framework Using Traffic Flow as a Real-world Challenge Problem," *121st American Society for Engineering Education Annual Conference and Exposition*, Indianapolis, IN, 2014.
336. Khorasgani, H., D. Eriksson, G. Biswas, E. Frisk, and M. Krysander. "Off-line Robust Residual Selection Using Sensitivity Analysis," *25th International Workshop on Principles of Diagnosis, DX-2014*, Graz, Austria, 2014.
337. Carl, J. D., Biswas, G., Neema, S., and Bapty, T. "An Approach to Parallelizing the Simulation of Complicated Modelica Models," *2014 Summer Computer Simulation Conference (SCSC 14)*, Monterey, CA, July 2014.
338. G. Zhou, W. Feng, G. Biswas, W. Zhang, and X. Guan, "A Comparison of State Estimation Algorithms for Hybrid Systems," *29th European Conference on Modelling and Simulation (ECMS)*, pp. 312-319, Albena (Varna), Bulgaria, May 2015.
339. Basu, S., Kinnebrew, J.S., Shekhar, S., Calgar, F., Rafi, T.H., Biswas, G., and Gokhale, A. "Collaborative Problem Solving using a Cloud-based Infrastructure to Support High school STEM Education," *Proceedings of the 122nd ASEE Annual Conference and Exposition*, Seattle, WA, USA, June 2015.
340. Segedy, J. R., Kinnebrew, J. S., Goldberg, B. S., Sottolare, R. A., and Biswas, G., "Using GIFT to Model and Support Students Metacognition in the UrbanSim Open-Ended Learning Environment, In *Generalized Intelligent Framework for Tutoring (GIFT) Users Symposium (GIFTSym3)* (pp. 13), June 2015.
341. Kinnebrew, J.S., Gauch, B., Segedy, J.R., and Biswas, G. "Studying Student use of Self-Regulated Learning Tools in an Open-Ended Learning Environment," *Proceedings of the 17th International Conference on Artificial Intelligence in Education*, Madrid, Spain, Lecture Notes in Computer Science Volume 9112, 2015, pp. 185-194, June 2015.

342. Segedy, J.R., Kinnebrew, J.S., and Biswas, G. "Coherence Over Time: Understanding Day-to-Day Changes in Students' Open-Ended Problem Solving Behaviors," *Proceedings of the 17th International Conference on Artificial Intelligence in Education*, Madrid, Spain. Lecture Notes in Computer Science Volume 9112, 2015, pp 449-458, June 2015.
343. Ye, C., Kinnebrew, J.S., Segedy, J.R., and Biswas, G. "Learning Behavior Characterization with Multi-Feature, Hierarchical Activity Sequences," *Proceedings of the 8th International Conference of Educational Data Mining*, Madrid, Spain, June 2015.
344. Segedy, J. R., Kinnebrew, J. S., and Biswas, G., "Using GIFT to Support Students Understanding of the UrbanSim Counter Insurgency Simulation," *Workshop on Developing a Generalized Intelligent Framework for Tutoring (GIFT): Informing Design through a Community of Practice*, (pp. 54), June 2015.
345. Segedy, J. R., Kinnebrew, J. S., Goldberg, B. S., Sottolare, R. A., and Biswas, G. "Designing Representations and Support for Metacognition," *Generalized Intelligent Framework for Tutoring*. In Foundations of Augmented Cognition, *Proceedings of the 17th International Conference on Human-Computer Interaction*, pp. 663-674, Los Angeles, CA, USA, August 2015.
346. G. Zhou, G. Biswas, W. Feng, and X. Guan, "A Bayesian Framework for Fault diagnosis of Hybrid Linear Systems," *Proceedings of the 26th International Workshop on Principles of Diagnosis (DX-2015)*, pp. 27-34, Paris, France, September 2015.
347. H. Khorasgani, G. Biswas, and D. Jung, "Minimal Structurally Overdetermined Sets Selection for Distributed Fault Detection," *Proceedings of the 26th International Workshop on Principles of Diagnosis (DX-2015)*, pp. 75-82, Paris, France, September 2015.
348. O. Niggemann, G. Biswas, J. Kinnebrew, H. Khorasgani, S. Volgmann, and A. Bunte, "Data-Driven Monitoring of Cyber-Physical Systems Leveraging on Big Data and the Internet-of-Things for Diagnosis and Control," *Proceedings of the 26th International Workshop on Principles of Diagnosis (DX-2015)*, pp. 185-192, Paris, France, September 2015.
349. G. Zhou, G. Biswas, and W. Feng, "A Comprehensive Diagnosis of Hybrid Systems for Discrete and Parametric Faults Using Hybrid I/O Automata," *Proceedings of the 9th IFAC Symposium on Fault Detection Supervision and Safety of Technical Processes (IFAC Safeprocess)*, 48(21): pp. 143-149, Paris, France, September 2015.
350. H. Khorasgani, D. Jung, and G. Biswas, "Structural Approach for Distributed Fault Detection and Isolation," *Proceedings of the 9th IFAC Symposium on Fault Detection Supervision and Safety of Technical Processes (IFAC Safeprocess)*, 48(21), pp. 72-77, September 2015.
351. D. Jung, H. Khorasgani, E. Frisk, M. Krysander, and G. Biswas, "Analysis of fault isolation assumptions when comparing model-based design approaches of diagnosis systems," *Proceedings of the 9th IFAC Symposium on Fault Detection Supervision and Safety of Technical Processes (IFAC Safeprocess)*, 48(21): pp. 1289-1296, September 2015.
352. G. Zhou, G. Biswas, W. Feng, and X. Guan, "Online Monitoring and Fault Diagnosis of Hybrid Systems Using Switched Dynamic Bayesian Networks," *Proceedings of the Annual Conference of the Prognostics and Health Management Society (Annual PHM)*, pp. 186-196, Coronado Island, CA, October 2015.

353. Basu, S., Biswas, G., Kinnebrew, J., and Rafi, T. "Relations between modeling behavior and learning in a Computational Thinking based science learning environment," *Proceedings of the 23rd International Conference on Computers in Education* (In Ogata, H. et al. (Ed.),), pp. 184-189. China: Asia-Pacific Society for Computers in Education, December 2015.
354. Gauch, B. and Biswas, G. "Behavior Changes Across Time and Between Populations in Open-Ended Learning Environments," *13th International Conference on Intelligent Tutoring Systems*, pp. 187-196, Zagreb, Croatia, June 2016.
355. Tscholl, M., Biswas, G., Goldberg, B. S., and Sottolare, R. A. "Automated Detection of Cognitive and Metacognitive Strategies for Learner Modeling in GIFT," *Proceedings of the 4th Annual GIFT Users Symposium (GIFTSym4)* pp. 15-25, 2016.
356. Basu, S., Biswas, G., and Kinnebrew, J.S. "Using multiple representations to simultaneously learn computational thinking and middle school science," *Thirtieth AAAI conference on Artificial Intelligence*, pp. 3705-3711, Phoenix, Arizona, February 2016.
357. Basu, S. and Biswas, G. "Providing adaptive scaffolds and measuring their effectiveness in open ended learning environments," *12th International Conference of the Learning Sciences*, pp. 554-561, Singapore, July 2016.
358. Dong, Y., Kinnebrew, J., and Biswas, G. "Comparison of Selection Criteria for Multi-Feature Hierarchical Activity Mining in Open Ended Learning Environments," *Proceedings of the 9th International Conference on Educational Data Mining*, pp. 591-592, Raleigh, North Carolina, July 2016.
359. Mack, D. L., Biswas, G., Mylaraswamy, D., and Bharadwaj, R. "An Unsupervised Approach to Anomaly Detection from Aircraft Flight Data," *27th International Workshop on Principles of Diagnosis (DX-2016)*, Denver, CO, Oct. 2016.
360. G. Biswas, H. Khorasgani, G. Stanje, A. Dubey, S. Deb, and S. Ghoshal, "An Application of Data Driven Anomaly Identification to Spacecraft Telemetry Data," *Intl. Conf. on Prognostics and Health Management*, Denver, CO, Oct. 2016.
361. Rajendran, R., Mohammed, N., Biswas, G., Goldberg, B. S., & Sottolare, R. A. "Multi-level User Modeling in GIFT to Support Complex Learning Tasks," *Proceedings of the 5th Annual Generalized Intelligent Framework for Tutoring (GIFT) Users Symposium (GIFTSym5)*, pp. 99-106, July 2017.
362. Zhang, N., Biswas, G., & Dong, Y. "Characterizing Students Learning Behaviors Using Unsupervised Learning Methods," *International Conference on Artificial Intelligence in Education*, pp. 430-441, Springer, Cham, June 2017.
363. Emara, M., Tscholl, M., Dong, Y., & Biswas, G. "Analyzing Students Collaborative Regulation Behaviors in a Classroom-Integrated Open Ended Learning Environment," *International Conference on Computer-Supported Collaborative Learning*, Philadelphia, PA: International Society of the Learning Sciences, June 2017.
364. Hasan A., & Biswas, G. "Domain Specific Modeling Language Design to support Synergistic Learning of STEM and Computational Thinking," *International Conference on Computational Thinking in Education (CTE 2017)*, Siu-cheung KONG, ed., The Education University of Hong Kong, Hong Kong, pp. 28-33, June 2017.

365. Zhang, N. & Biswas, G. "Assessing Students Computational Thinking in a Learning by Modeling Environment," *International Conference on Computational Thinking in Education (CTE 2017)* Siu-cheung KONG, ed., The Education University of Hong Kong, Hong Kong, pp. 11-16, June 2017.
366. Hutchins, N. M., Zhang, N., & Biswas, G. "The Role Gender Differences in Computational Thinking Confidence Levels Plays in STEM Applications," *International Conference on Computational Thinking in Education (CTE 2017)*, Siu-cheung KONG, ed., The Education University of Hong Kong, Hong Kong, pp. 34-39, June 2017.
367. Dong, Y. & Biswas, G. "An Extended Learner Modeling Method to Assess Students Learning Behaviors." *Proceedings of the 10th International Conference on Educational Data Mining*, X. Hu, T. Barnes, A. Hershkovitz, L. Paquette (Eds), pp. 302-305, June 2017.
368. Khorasgani, H. & Biswas, G. "A combined model-based and data-driven approach for monitoring smart buildings," *Proc. 28th International Workshop on Principles of Diagnosis*, Brescia, Italy. Kalpa Publications in Computing, vol. 4, 2018, pp. 21-36, Aug. 2017.
369. Pettet, G., Nannapaneni, S., Stadnick, B., Dubey, A., & Biswas, G. "Incident Analysis and Prediction Using Clustering and Bayesian Network," *2017 IEEE International Conference on Smart City Innovations*, pp. 1-8, Sept. 2017.
370. Mukhopadhyay, A., Vorobeychik, Y., Dubey, A., & Biswas, G. "Prioritized allocation of emergency responders based on a continuous-time incident prediction model," *Proceedings of the 16th Conference on Autonomous Agents and Multi-Agent Systems*, pp. 168-177, May 2017. International Foundation for Autonomous Agents and Multiagent Systems.
371. Purohit, H., Nannapaneni, S., Dubey, A., Karuna, P., & Biswas, G. "Structured Summarization of Social Web for Smart Emergency Services by Uncertain Concept Graph," *2018 IEEE International Science of Smart City Operations and Platforms Engineering*, in Partnership with Global City Teams Challenge (SCOPE-GCTC). pp. 30-35, April 2018. IEEE.
372. Taub, M., Mudrick, N. V., Rajendran, R., Dong, Y., Biswas, G., & Azevedo, R. "How Are Students Emotions Associated with the Accuracy of Their Note Taking and Summarizing During Learning with ITSs?" *14th International Conference on Intelligent Tutoring Systems*, Montreal, Canada, pp. 233-242, June 2018. Springer, Cham.
373. Basu, S., McElhaney, K. W., Grover, S., Harris, C. J., & Biswas, G. "A Principled Approach to Designing Assessments That Integrate Science and Computational Thinking," *Proc. 13th International Conference on the Learning Sciences*, London, UK, (International Society of the Learning Sciences, Inc.[ISLS]), pp. 384-391, June 2018.
374. Munshi, A., Rajendran, R., Ocumpaugh, J., Moore, A., & Biswas, G. "Studying the Interactions between Components of Self-Regulated Learning in Open Ended Learning Environments," *Proc. 13th International Conference on the Learning Sciences*, London, UK, (International Society of the Learning Sciences, Inc.[ISLS]), pp. 1691-1692, June 2018.
375. Hutchins, N., Biswas, G., Maroti, M., Ledezci, A., & Broll, B. "A Design-Based Approach to a Classroom-Centered OELE," *19th International Conference on Artificial Intelligence in Education*, London, UK. pp. 155-159, June 2018, Springer, Cham.

376. Zhang, N., & Biswas, G. "Understanding Students Problem-Solving Strategies in a Synergistic Learning-by-Modeling Environment," *19th International Conference on Artificial Intelligence in Education*, London, UK, pp. 405-410, June 2018. Springer, Cham.
377. Naug, A., & Biswas, G. "Data Driven Methods for Energy Reduction in Large Buildings," *4th IEEE International Conference on Smart Computing (SMARTCOMP)*, Taormina, Sicily, Italy, pp. 131-138, June 2018. IEEE.
378. Munshi, A., Rajendran, R., Ocumpaugh, J., Biswas, G., Baker, R. S., & Paquette, L. "Modeling Learners' Cognitive and Affective States to Scaffold SRL in Open-Ended Learning Environments," *Proceedings of the 26th Conference on User Modeling, Adaptation and Personalization*, Singapore, pp. 131-138, July 8-11, 2018. ACM.
379. Rajendran, R., Levin, D. T., Kumar, A., Biswas, G., & Carter, K. E. "Predicting Learning by Analyzing Eye-Gaze Data of Reading Behavior," *Proceedings of the 11th International Conference on Educational Data Mining*, pp. 455-461, Buffalo, NY, July 2018.
380. Darrah, T., Hutchins, N., & Biswas, G. "Design and Development of a Low-Cost Open-Source Robotics Education Platform," *50th International Symposium on Robotics*, pp. 1-4, June 2016. VDE.
381. Naug, A., & Biswas, G., "A Data Driven Method for Prediction of Energy Demand in Commercial Buildings," *14th IEEE International Conference on Automation Science and Engineering (CASE)*, Munich, Germany, pp. 335-340, August 2018. IEEE.
382. Ahmed, I., Khorasgani, H., & Biswas, G. "Comparison of Model Predictive and Reinforcement Learning Methods for Fault Tolerant Control," *Proceedings 10th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes, (IFAC-PapersOnLine)*, vol. 51(24), pp. 233-240, Warsaw, Poland, Aug- August 29-31, 2018.
383. Khorasgani, H., Farahat, A., Ristovski, K., Gupta, C., & Biswas, G. "A Framework for Unifying Model-based and Data-driven Fault Diagnosis," *10th Annual PHM Society Conference*, Philadelphia, PA, vol. 10, no. 1, Sept. 2018.
384. Emara, M., Rajendran, R., Biswas, G., Okasha, M., & Elbanna, A. A. "Do Students' Learning Behaviors Differ when they Collaborate in Open-Ended Learning Environments?" *Proceedings of the 21st ACM on Human-Computer Interaction, (CSCW)*, Jersey City, NJ, pp. 49-149-19, Nov. 2018.
385. Hutchins, N., Biswas, G., Conlin, L., Emara, M., Grover, S., Basu, S., & McElhaney, K. "Studying Synergistic Learning of Physics and Computational Thinking in a Learning by Modeling Environment," *Proceedings of the 26th International Conference on Computers in Education*, Philippines: Asia-Pacific Society for Computers in Education, pp. 153-162, Nov. 2018. **Winner of the Best Student Paper Award.**
386. Rajendran, R., Munshi, A., Emara, M., & Biswas, G. "A Temporal Model of Learner Behaviors in OELEs using Process Mining," *Proceedings of the 26th International Conference on Computers in Education*, Philippines: Asia-Pacific Society for Computers in Education, pp. 276-285, Nov. 2018. **Winner of the Best Technical Design Paper Award.**
387. Ldeczi, ., Marti, M., Zare, H., Yett, B., Hutchins, N., Broll, B., Vlgyesi, P., Smith, M.B., Darrah, T., Metelko, M., Koutsoukos, X., & Biswas, G. "Teaching Cybersecurity with Networked

- Robots,” *Proceedings of the Special Interest Group on Computer Science Education (SIGCSE) Annual Meeting*, Minneapolis, USA, pp. (pp. 885-891, Feb. 2019).
388. Andres, A., Ocumpaugh, J., Baker, R.S., Slater, S., Paquette, L., Jiang, Y., Bosch, N., Munshi, A., Moore, A., & Biswas, G. “Affect Sequences and Learning in Bettys Brain,” *Proceedings of the 9th International Learning Analytics and Knowledge (LAK) Conference*, Tempe, Arizona, pp. 4-8, March 2019.
389. Grover, S., Hutchins, N., Biswas, G., Snyder, C., & Emar, M. “Examining synergistic learning of physics and computational thinking through collaborative problem solving in computational modeling,” *AERA*, Toronto, CA., April 2019.
390. Snyder, C., Hutchins, N., Biswas, G., Emar, M., Grover, S., & Conlin, L. “Analyzing Students Synergistic Learning Processes in Physics and CT by Collaborative Discourse Analysis,” *Proceedings of the International Conference on Computer Supported Collaborative Learning*, Lyon, France, June 2019.
391. Snyder, C., Hutchins, N., Biswas, G., & Grover, S. “Understanding Students Model Building Strategies Through Discourse Analysis,” *International Conference on Artificial Intelligence in Education*, Chicago, IL, pp. 263-268, Springer, Cham., June 2019.
392. Hutchins, N., Biswas, G., Grover, S., Basu, S., & Snyder, C. “A systematic approach for analyzing students computational modeling processes in C2STEM,” *Proceedings of the 20th International Conference on Artificial Intelligence in Education (AIED 2019)*, pp. 116-121, Chicago, USA., June 2019.
393. Zhang, N., Biswas, G., Chiu, J.L., & McElhaney, K.W. “Analyzing Students Design Solutions in an NGSS-Aligned Earth Sciences Curriculum,” *Proceedings of the 20th International Conference on Artificial Intelligence in Education (AIED)*, Chicago, IL, pp. 532-543, June 2019. **Winner of Best Student Paper Award.**
394. Naug, A., Ahmed, I., & Biswas, G. “Online Energy Management in Commercial Buildings using Deep Reinforcement Learning,” *IEEE International Conference on Smart Computing (SMARTCOMP)*, Washington, DC, pp. 249-257, June 2019.

Recent Awards

- NASA 2011 Aeronautics Research Mission Directorate Technology and Innovation Group Award for Vehicle Level Reasoning System and Data Mining methods to improve aircraft diagnostic and prognostic systems
Awarded to Honeywell and Vanderbilt researchers (Biswas, Koutsoukos, and Mack) for their project on VIPR: Vehicle Integrated Prognostics Reasoner.
- IEEE Fellow, 2014
- Prognostics and Health Management Society Fellow, 2016

Invited Talks

- Tutorial on “The Design, Implementation and Use of Expert Systems,” *Fourth Annual Conference on Intelligent Systems and Machines*, Oakland University, MI, April 1986.

- “Artificial Intelligence in Production Planning and Control,” *1987 Southeast Decision Sciences Institute Conference*, Feb. 18-20, Richmond, VA.
- Panel on “What expert systems can/can’t do ?” at the First Annual Meeting of the AI Society of Mid-Atlantic States,” (Jim Hendler, moderator) Blacksburg, VA, March 1987.
- “Knowledge Based Systems Research in the Computer Science Department at the University of South Carolina,” *1987 Meeting of the South Carolina Academy of Sciences*, April 1987.
- “XX (eXpert eXplorer): An Analogical Reasoning System for Hydrocarbon Play Analysis,” *Mobil Research Labs., Dallas, Exxon Research, Houston, Shell Research, Houston, Standard Oil Company, Austin, Tenneco, Houston, Sun Oil Company, Dallas, Philips Oil, Bartlesville, OK, Boeing High Tech Research Center, Seattle.*, August-September 1987.
Arco Research Labs, Mobil Research Labs, Dallas, TX, November 1987.
- “Reasoning with Uncertainty in Knowledge Based Systems,” *Advanced Computational Methods Center*, University of Georgia, Athens, May 1987.
- “Reasoning with Uncertainty in Knowledge Based Systems,” *Center for Machine Intelligence, College of Engineering, USC*, November 1987.
- “XX (eXpert eXplorer): A Workstation Toolbox for the Explorationist,” *Amoco Exploration, Houston, TX, Conoco Research, Houston, TX*, February 1988.
- “An Intelligent Interface to a Facies Log Analysis System,” *Amoco Research Laboratories, Tulsa, OK*, August 1988.
- “Belief Functions and the Dempster-Shafer Theory: Applications to AI Reasoning,” *Departments of Computer Science and Statistics Seminar Series*, Univ. of South Carolina, Columbia, S.C., April 1989.
- “Classification using Non Numeric Data in the Basin Catalog,” *Amoco Exploration, Houston, TX*, May 1989.
- “Thoughts Experiments and Qualitative Reasoning,” *Department of Computer Science, Michigan State University, E. Lansing, MI*, August 17, 1989.
- “Artificial Intelligence: Second Generation Business Applications,” *Seminar at the IT Forum, London, England*, sponsored by BEALL Ltd., Nov. 3, 1989.
- “Thoughts Experiments and Qualitative Reasoning,” *IBM Thomas J. Watson Research Center, Yorktown Heights, NY*, November 13, 1989.
- “Thoughts Experiments and Qualitative Reasoning,” *Phillips Laboratories, Briarcliff Manor, NY*, November 15, 1989.
- “Thoughts Experiments and Qualitative Reasoning,” *Computer Science and Engineering Seminar, Univ. of Louisville, Louisville, KY*, Dec. 1, 1989.
- “Applying Non Numeric Data to Classification and Risk Analysis,” *Amoco Research Center, Tulsa, OK*, June 1990.
- “Second Generation Expert Systems: Model-Based Reasoning and its Applications,” *Silver Jubilee Session of the Computer Society of India, Calcutta, India*, Nov. 2, 1990.

- “Knowledge-Based Systems: Second Generation Business Applications,” *Two-day intensive course, IBC Technical Services*, Nov. 21-22, 1990, London, UK.
- “Applying Non Numeric Data to Classification and Risk Analysis,” *Amoco Research Labs*, Tulsa, OK, May 1991.
- “Knowledge-Based Systems: Second Generation Business Applications,” *Invited Speaker, Data Processing Managers Association*, Nashville, TN, December 1991.
- “Modeling for Diagnosis of Complex Continuous-valued Systems,” Stanford University, Stanford, CA, March 1992.
- “PLAYMAKER: A Knowledge-based Approach to Characterizing Hydrocarbon Plays,” Institute for Petroleum in Colombia (ICP), Bucaramanga, Colombia, June 1992.
- “Model-based Reasoning and its Applications,” University of Los Andes, Bogota, Colombia, June 1992.
- Panel on “Role of Uncertainty in Expert Systems for Exploration Activities,” Conference on Artificial Intelligence in Petroleum Exploration and Production, Houston, TX, July 1992.
- “Database Mining,” *Conference on AI in Petroleum Exploration and Production (CAIPEP-93)*, Dallas, TX, May 1993.
- “An Efficient Scheme for Diagnosis of Complex, Continuous Systems,” (i) *The University of Tokyo, Tokyo, Japan to a consortium of Japanese industry, June 1993*, (ii) *Hitachi Advanced Research Labs, Tokyo, Japan, June 1993*, (iii) *Toshiba SSEL, Kawasaki City, Japan, June 1993*, (iv) *Mitsubishi Research Institute, Tokyo, Japan, June 1993*.
- “Conceptual Clustering and Knowledge Discovery in Databases,” (i) *Teijin Labs, Kawasaki City, Japan, June 1993*, (ii) *Fujitsu Research Labs, Japan, June 1993*.
- “Second Generation Expert Systems,” *Teijin Labs, Kawasaki City, Japan, June 1993*.
- “Intelligent Manufacturing Systems: State of the Art in U.S. and Japan,” *U.S.-Japan Program, Vanderbilt University of Public Policy Studies, Nashville, TN, November 1993*.
- “Applications of AI to the Oil Industry,” *National Center for Software Technology, Bombay, India, December 1993*.
- “Intelligent Manufacturing Systems: State of the Art,” *National Center for Software Technology, Bombay, India, December 1993*.
- “Intelligent Manufacturing and Environmentally Conscious Manufacturing,” *CAD Center, Indian Institute of Technology, Bombay, December 1993*.
- “Scientific Discovery in Geological Databases,” *Arco Research Labs, Plano, TX, May 1994*.
- “Intelligent and Environmentally Conscious Manufacturing,” *School of Engineering, Tennessee State Univ., February 1995*.
- “Intelligent Scheduling and Planning for Holonic Systems,” *Toshiba Corp., Kawasaki City, Japan, May 1995*.

- “Modeling Hybrid Systems for Diagnosis,” *Mitsubishi Research Inst.*, Tokyo, Japan, May 1995.
- “Workshop on LCA Methodology and ECMM Analysis,” *Intl. Conf. on Industrial Waste Minimization*, Taipei, Taiwan, Nov. 1995.
- “Intelligent Learning Environments: The Next Generation,” *National Central University*, Taiwan, Nov. 1995.
- “Planning under Uncertainty by Spreading Activation Through an Adaptive Planning Network,” *Tokyo-Denki Univ.*, Saitama, Dec. 1996.
- “Monitoring, Prediction and Fault Isolation in Dynamic Physical Systems,” *PNC*, Mito, Japan, Dec. 1996.
- “Macrocontexts plus Microworlds: The Jasper Project and AdventurePlayer,” *Univ. of Electro-Communications*, Chofu, Tokyo, Japan, Dec. 1996.
- “Planning and Distributed Scheduling for Intelligent Manufacturing,” *Toshiba Manufacturing Engineering Research Center.*, Yokohama, Japan, Dec. 1996.
- “Assessment of Domain Learnability (ADL) in the Context of AC and DC Circuit Problem Solving,” *NPRDC*, San Diego, CA, July 1997.
- “IMA and Spreading Activation for Flexible Robotics Systems,” *Tokyo-Denki Univ.*, Saitama, Aug. 1997.
- “Fault Isolation from Transients in Dynamic Physical Systems,” *Univ. of Osaka ISIR*, Osaka, Japan, Aug. 1997.
- “Formal Specifications of Hybrid Dynamic System Models,” *Univ. of Osaka ISIR*, Osaka, Japan, Aug. 1997.
- “Distributed Scheduling for Holonic Manufacturing Systems,” *Toshiba Corp., SSEL Division*, Kawasaki City, Japan, Aug. 1997.
- “EcoDS: A Decision Support System for Streamlined LCA,” *Japan LCA Forum*, Tokyo, Japan, Aug. 1997.
- “What every DXer should know about Systems Theory,” *Eighth Intl. Workshop on Principles of Diagnosis (DX-97)*, with M.J. Chantler, Mont. St. Michel, France, Sept. 1997.
- “Monitoring, Prediction, and Fault Isolation in Complex Physical Systems,” *Univ. of Paris-Nord (XIII)*, Villetaneuse, France, Sept. 1997.
- “Formal Specifications of Hybrid Dynamic System Models,” *Knowledge Systems Laboratory, Dept. of Computer Science, Stanford Univ.*, Palo Alto, CA, Dec. 1997.
- “Formal Specifications of Hybrid Dynamic System Models,” *Xerox PARC*, Palo Alto, CA, Dec. 1997.
- “Fault Isolation from Transients in Dynamic Physical Systems,” *HP Labs*, Palo Alto, CA, Dec. 1997.
- “A Comprehensive Framework for Model-based Monitoring and Diagnosis,” *NASA Ames Research Center*, Mountain View, CA, Sept. 1998.

- “Modeling and Analysis of Hybrid Dynamic System ,” *KSL Seminar Series*, Stanford University, CA, Oct. 1998.
- “A Comprehensive Framework for Model-based Monitoring and Diagnosis,” *Nobots Seminar Series*, Stanford University, CA, Oct. 1998.
- “A Comprehensive Framework for Model-based Monitoring and Diagnosis,” *AI Seminar Series*, SRI International, Menlo Park, CA, Nov. 1998.
- “Knowledge Representation and Reasoning for Multidisciplinary Design,” *DARPA RaDeo Meeting*, Seattle, WA, February 1999.
- “A Model-based approach to Fault Detection and Isolation for Complex Physical Systems,” *IRISA*, Rennes, France, March 2000.
- “Applying the Hidden Markov Methodology to Unsupervised Learning of Temporal Data,” Keynote Lecture, *CIMA 2001: Computational Intelligence: Methods and Applications*, Bangor, Wales, UK, June 19-22, 2001.
- “An Integrated Approach to Fault Detection and Isolation in Complex Hybrid Systems,” *NASA Ames Research Center*, Mountain View, CA, July 2002.
- “ Fault Diagnosis and Fault-Adaptive Control in Embedded Systems,” *NASA Johnson Space Center*, Houston, TX, October 2002.
- “Teachable Agents and Student Learning,” *Learning Federation Workshop on Gaming and Simulation*, Orlando, FL, December 2002.
- “Learning by Teaching: A New Agent Paradigm for Educational Software,” *Workshop on Educational Agents: More than virtual tutors*, Vienna, Austria, June 2002.
- “Towards Long-term Autonomy in Embedded Systems: Hybrid Modeling, FDI, Fault-Adaptive Control, and IVHM,” *NASA Ames Research Center*, Mountain View, CA, July 2003.
- “Evaluating Teachable Agents: Educational Software that implements the Learning by Teaching Paradigm,” *Dagstuhl Seminar on Embodied Conversational Agents*, Dagstuhl, Germany, March 2004.
- “Qualitative Modeling and Cognitive Science,” *Symposium Presentation at the 26th Annual Cognitive Science Conference*, Chicago, IL, August 2004.
- Three lectures: (i) “Model-based Diagnosis of Continuous Systems,” (ii) “Model-based Diagnosis of Hybrid Systems,” and (iii) “Hierarchical, Limited Look Ahead Control,” *Spanish Summer School on Fault Detection and Diagnosis of Complex Systems*, Penaranda de Duero, Burgos, Spain, June 2006.
- “A New Approach to Designing Intelligent Learning Environments Exploring the value of Learning by Teaching,” *University of Arkansas at Little Rock*, October 13, 2006.
- “Teachable Agents and the Role of Metacognitive Support in Learning by Teaching Environments,” *University of Memphis Cognitive Science Seminar Series*, March 2007.

- “Issues in Efficient Simulation of Component-Oriented Hybrid System Models,” *2007 Summer Simulation Conference; Special Track on Computational Modeling and Simulation of Embedded Systems*, San Diego, CA, July 2007.
- “Building Students’ Metacognitive Skills through Interactions with Computer-based Teachable Agents,” *2008 IES Research Conference*, Washington, D.C., June 11, 2008.
- “A Learning by Teaching Approach to Help Students Develop Self-Regulatory Learning Skills in Middle School Science Classrooms,” *Enhancing Learning Using Adaptive Computerized Tutoring in K-12 Settings symposium*, 30th Annual Meeting of the Cognitive Science Society, Washington, D.C., July 2008.
- “Model-based Diagnosis of Hybrid Systems,” *Tutorial Presented at International Conference on Prognostics and Health Management*, Denver, Colorado, October 2008.
- “Towards Intelligent Embedded Systems: Hybrid Modeling, Diagnosis, and Fault-Adaptive Control,” *Ecole Polytechnic*, Lille, France, June 18, 2009.
- “Robust Distributed Diagnosis of Complex Systems using Dynamic Bayes Nets,” *University of Valladolid*, Spain, June 28 2009.
- “Self-Cognitive Capability for Anomaly Detection, Fault Analysis, and Prognosis,” *Center for Advanced Life Cycle Engineering, University of Maryland*, College Park, MD , November 5, 2009.
- “Promoting Self-Regulated Learning Skills through Social Interactions in Agent-Based Environments,” *Theme-Based Invited Talk (DIGITEL) at 17th Intl. Conf. on Computers in Education*, Hong Kong, China, Nov. 30-Dec. 4, 2009.
- “Choice-Adaptive Intelligent Learning Environments (CAILE),” *Renowned Researcher Talk at Interactive Event: Applications of Virtual Agents, Student Modeling, and Knowledge Engineering in Education*, 17th Intl. Conf. on Computers in Education, Hong Kong, China, Nov. 30-Dec. 4, 2009.
- “Robust Distributed Diagnosis of Complex Systems using Dynamic Bayes Nets,” *Linköping University*, Linköping, Sweden, December 16, 2009.
- “Robust and Efficient Model-based Methods for FDI in Physical Systems,” *Scania Research Labs*, Stockholm, Sweden, December 20, 2009.
- “Cross-Exchanges between Mobile and Game-Based Learning,” *Third International Conference on Digital Games and Toy-Enhanced Learning*, Kaohsiung, Taiwan, April 2010.
- “Modeling and Measuring Self-Regulated Learning Skills in Teachable Agent Environments,” *AAAI Fall Symposium FS-02 on Cognitive and Metacognitive Educational Systems (MCES)*, Arlington, VA, Nov. 2010.
- “Robust Model-based Diagnosis of Dynamic Systems,” *23rd Australasian Joint Conference on Artificial Intelligence*, Adelaide, Australia , December 2010.
- “Research Panel on Height of Graduate Students,” *18th Intl. Conf. on Computers in Education*, Putrajaya, Malaysia, November 2010.

- “Robust, Distributed Diagnosis of Complex Systems using Dynamic Bayes Nets,” *Honeywell Technical Center*, Minneapolis, MN, February 11, 2010.
- “Self-Cognitive Capability for Anomaly Detection, Fault Analysis, and Prognosis,” Center for Advanced Life Cycle Engineering, University of Maryland, College Park, MD, November 5, 2010.
- “Advances in PHM, Anomaly Detection, Fault Analysis and Prognosis,” *IEEE Prognostics and Health Management Conference*, Shenzhen, China, May 2011.
- “Data Mining for Diagnosis,” *Annual Conference of the Prognostics and Health Management Society - PHM 2011*, Montreal, Canada, September 2011. Invited Tutorial.
- “Educational Data Mining,” *Institute of Education Sciences (IES) Technical Working Group Meeting on Educational Data Mining*, SRI International, September 2011.
- “Data Mining for Anomaly Detection and Diagnosis: A Case Study,” *22nd Intl. Workshop on Principles of Diagnosis (DX-2011)*, Murnau, Germany, October 2011.
- “Game-Based and Toy-Enhanced Learning: Research Challenges,” *Height of Graduate Students Mini-symposium, 19th International Conference on Computers in Education*, Chiang Mai, Thailand, December 2011.
- “Using Conversational Agents in Learning by Teaching Environments to Promote Metacognition in Middle School Science Classrooms,” *National Tainan University, Tainan, Taiwan, National Central University, Zhongli, Taiwan*, May 2012.
- “Data Mining Methods to Support Real World Diagnostics and Prognostics,” *2012 Prognostics and System Health Management Conference (PHM 2012)*, Beijing, China, May 2012.
- “A Model-Based Approach to Prognostics of Electronic Capacitors: Accelerated Experiments for Electrical and Thermal Overstress Conditions,” *GE Tech Center*, Bangalore, India, July 17, 2012.
- “Educating Our Students through Games,” *CGAMES Conference*, Louisville, KY, August-Sept. 2012.
- “Open-ended Environments That Help Middle School Students Develop Metacognitive Strategies for Learning Science,” *University of Pittsburgh Learning Research and Development Center (LRDC) 50th Anniversary Distinguished Speaker Series*, Pittsburgh, PA, April 4, 2013.
- “Metacognition and Self-Regulation,” *ARL GIFT User Meeting*, Memphis, TN, July 13, 2013.
- “Betty’s Brain: Helping Middle School Students Develop Metacognitive Strategies for Learning Science,” *American Psychological Association, Division 3 (Experimental Psychology) Symposium on Technological Innovations in Education*, Honolulu, Hawaii, August 2013.
- “Case Studies in Qualitative Modeling and Reasoning,” *QR 2013 - 27th Qualitative Reasoning Workshop*, Schloss Etelsen, Bremen, Germany, Aug. 27-30, 2013.
- “Model-based Diagnosis - Where Are We? And Where Do We Go from Here?” Panel Discussion at *International Workshop on Principles of Diagnosis*, Graz, Austria, September 2015.

- “Analyzing Students’ Learning Behaviors in Open Ended Learning Environments (OELEs),” Cognitive Science Invited Speaker Series, Department of Philosophy, The Faculties of Humanities and Theology, Lund University, Sweden. October 21, 2015.
- “CTSiM: A Computational Thinking Environment for Learning Science using Simulation and Modeling,” Sixth International Conference to review research on Science, Technology and Math Education (epiSTEME 6), Mumbai, India, December 15-18, 2015.
- “AI in Open-Ended Learning Environments: Bettys Brain,” Workshop on Open Ideas at Pearson: Sharing Independent insights on the big, unanswered questions in education, UCL Knowledge Lab, London UK, March 2016.
- “Using Analytics and Mining to Analyze and Support Students in Open Ended Learning Environments,” Virginia Tech Graduate Seminar in Engineering Education, November 18, 2016.
- “Building Adaptive Scaffolding in CTSiM: A computational Thinking Environment for Learning Science using Simulation and Modeling,” Keynote Talk, Fifth International Conference on Educational Innovation through Technology. (EITT 2016). Tainan, Taiwan, September 22-24, 2016.
- “Using Analytics and Mining to Analyze and Support Students in Open Ended Learning Environments,” SRI International, Menlo Park, CA, Sept 14, 2017.
- “Diagnosis-Driven Prognosis for Decision Making,” NASA Ames Research Center, Moffett Field, CA, Sept 15, 2017.
- “CTSiM: A Computational Thinking Environment for Learning Science using Simulation and Modeling,” Carnegie Mellon University, PIER: PIER: Program in Interdisciplinary Education Research, Pittsburgh, PA, Nov 27, 2017.
- “Using Analytics and Mining to Analyze and Support Students in Open Ended Learning Environments,” Carnegie Mellon University, Department Colloquium, Pittsburgh, PA, Nov 28, 2017.
- “CTSiM: A Computational Thinking Environment for Learning Science using Simulation and Modeling,” International Conference on Computational Thinking in Education, Hong Kong, July 13-15, 2017.
- “How Artificial Intelligence and Machine Learning can improve Educational Excellence,” Damanhour University, Damanhour, Egypt, August 11, 2018.
- “C2STEM: Collaborative, Computational STEM Learning Environment,” IIT Bombay Diamond Jubilee Celebrations, Mumbai, India, November 19, 2018.
- “Using Analytics and Mining to Analyze and Support Students in Open-Ended Learning Environments,” Interdisciplinary Program in Educational Technology, IIT Bombay, Mumbai, India, November 20, 2018.

Research Proposals

Funded Research

List of Funded Proposals

Currently funded proposals in bold font.

1. "Three Dimensional Image Reconstruction," Sponsored Programs and Research Grant, Univ. of South Carolina, PI, 1984, \$1000.
2. "An Active Learning Assistant Interface," co-PI with M.M. Matthews, NCR Corporation, Columbia, 1985, \$161,000.
3. "XX (eXpert eXplorer) An Expert Database System of 'Electronic Case Histories of Oilfields' which assists in the Identification of Potential Hydrocarbon Plays and Prospects," 1986 (current sponsors: Amoco, British Petroleum, Japan National Oil Corporation, Mobil, Union Oil of California), co-PI with C. Kendall, J. Bezdek, and R. Cannon, January 1987 - September 1992, \$380,000.
4. "Qualitative Physics for Complex Regular Systems," Vanderbilt University Research Council Summer Award, PI, 1988, \$5500.
5. "Qualitative Modeling for Advanced Medical Reasoning and Instruction," Vanderbilt University Research Council Summer Award, PI, 1989, \$3000.
6. "Design and Development of Fault Isolation and Maintenance Training Systems for the AMIX Project," Federal Express Corporation, PI, Sept. 1990-May 1991, \$58,500.
7. "Geological Basin Characterization, Classification and Analysis using Artificial Intelligence Techniques," Amoco Research Labs., PI, June 1989 - May 1993, \$117,000.
8. "Assessing Competence in Electronic Troubleshooting," Office of Naval Research, Co-PI with S. Goldman, July 1991 - June 1993, \$250,000.
9. "Assessing Competence in Electronic Troubleshooting – AASERT Fellowship," Office of Naval Research, Co-PI with S. Goldman, August 1992 - July 1995, \$80,000.
10. "SMART Assessments: Scientific Mathematical Arenas for Refining Thinking," Investigator, J. Pellegrino and N. Vye (Co-PI's), July 1992 - June 1997, \$1,944,380.
11. "A Knowledge-Based System for Risk Analysis of Hydrocarbon Prospects," Ecopetrol, Colombia, PI, September 1992-August 1993, \$33,000.
12. "Model-based Diagnosis of Continuous-valued Systems," McDonnell Douglas Corporation, February 1993-September 1993, \$19,900.
13. "Developing Conceptual Clustering Methods for Knowledge Discovery Tasks," Arco Exploration and Production, May 1993-Dec. 1994, \$56,000.
14. "U.S-Japan Industry and Technology Management Program," AFOSR, Investigator, K. Kawamura (PI), 1994-97, \$2,208,299.
15. "High Precision Robotic Manufacturing System," co-PI with K. Kawamura, Tech Gem Diamond Tools, Inc., Feb. 1995-Jan. 1996, \$75,900.

16. "Data Mining Project," Rockwell Science Center, Palo Alto, CA, PI, 1995-96, \$10,000.
17. "Developing Knowledge Discovery Methods for the Management Discovery Tool," AT&T Global Information Systems, 1996-97, \$27,807 (1 year).
18. "Developing Knowledge Discovery Methods for the Management Discovery Tool," NCR HITC, Atlanta, 1997-98, \$26,000 (1 year).
19. "Assessing Qualitative Reasoning Skills in Understanding and Troubleshooting Alternating Current Circuits," Office of Naval Research (ONR), PI, with B. Bhuvra, D. Schwartz, and J. Bransford, 1996-98, \$276,379 (2 years), \$313,680, 1999-2001.
20. "A Systematic Integrated Methodology for Prediction, Monitoring, and Diagnosis of Complex, Dynamic Systems," Mitsubishi Research Institute, Tokyo, Japan, PI, 1996-98, \$101,828 (2 years).
21. "Hybrid Modeling, Monitoring, Prediction, and Diagnosis of Complex Physical Systems," Hewlett Packard Labs, Palo Alto, CA, PI, 1997-98, \$40K + \$15K (equipment), 1998-99, \$50K + \$5K (equipment), 1999-00, \$50K + \$10K (equipment).
22. "Hybrid Modeling for Smart Systems Design," University Research Council, Vanderbilt Univ., Summer 1997, \$5290.
23. "Development of an Intelligent Learning Environment for Training of Clinical Audiology Students," Dept. of Education, 1997-2000, with co-PI with A.M. Tharpe, D. Schwartz, and J. Bransford, \$398,178.
24. "Learning and Intelligent Systems: Center for Intelligent Learning Technologies," National Science Foundation, 1997-2002, with J. Bransford (PI) and others, \$1,172,285.
25. "Teachable Agents: Computer Environments for Supporting High Achievement in Science and Mathematics," co-PI with John Bransford and Dan Schwartz, National Science Foundation (KDI grant), \$800,000.
26. "Fault-Adaptive Control Technology," DARPA, 1999-2003, with G. Karsai (PI), \$1,287,960.
27. "Hybrid Modeling and Diagnosis," Xerox Palo Alto, Research Center, \$41,000, 1999-2001.
28. "Robust Methods for Autonomous Fault-Adaptive Control of Complex Systems," (G. Biswas, PI, K. Frampton and G. Karsai, co-PI's), NASA Research on Intelligent Systems, \$672,591, April 2001–March 2004.
29. "Dynamic Modeling, Analysis, and Synthesis of Embedded Hybrid Systems," (G. Biswas, PI, G. Karsai, and S. Abdelwahed, co-PIs), NSF Embedded and Hybrid Systems, \$272,000, Oct. 2002–Sept. 2005.
30. "Distributed Monitoring and Control of Complex Dynamic Systems," (G. Biswas, PI, S. Abdelwahed, co-PI) NASA Advanced Human Support Technology Program, \$471,933, Jan. 2003–Dec. 2005.
31. "Foundations of Hybrid and Embedded Software Systems," S. Sastry (UC Berkeley) and J. Sztipanovits (Vanderbilt), PI's, G. Karsai, G. Biswas, and K. Frampton, co-PI's (Vanderbilt), NSF Large ITR Grant, \$4.7 million (Vanderbilt), 2003-2007.

32. “Collaborative Research: Exploring the Value of Learning by Teaching,” N. Vye (Vanderbilt) and D. Schwartz (Stanford), PI’s, G. Biswas and J. Bransford (Vanderbilt), co-PI’s, NSF Program on Learning and Education, \$899,812, 2003-2005.
33. “SGER: Modeling, Analysis, and Diagnosis for Safety of Distributed Hybrid Systems,” PI, X. Koutsoukos and S. Abdelwahed, co-PIs, NSF SGER Award, \$200,000, 2004-2005.
34. “FACT Toolsuite Integration,” co-PI, G. Karsai (PI), Boeing Aerospace Company, \$100,333, 2005.
35. “Speech Recognition in Chaotic Aural Environments,” PI, E. Manders (co-PI), DARPA STTR, Phase 1 (UME Voice, Principal), \$33,000, 2005.
36. “Collaborative Research: Exploring the value of Learning by Teaching (supplement),” PI, NSF Role Grant, \$44,599, 2006.
37. “Multi-Agent Architecture for Adaptive Science Operations in Satellite Formations,” co-PI, D. Schmidt, PI, subcontractor to Lockheed Martin ATC, Palo Alto, NASA AIST, \$ 80,180, May 2005–December 2006.
38. “Human Centric Design Environments for Command and Control Systems: The C2 Wind Tunnel,” co-PI, J. Sztipanovits, PI, G. Karsai, T. Bapty, co-PI’s, AFOSR PRET, \$2,270,000, March 2006–November 2008.
39. “Advanced Diagnostics and Prognostics Techniques Applied to NASA Spacecraft and Testbeds,” PI, NASA Ames Research Center (USRA), \$109,014, July 2006–May 2007.
40. “A learning by teaching approach to help students develop self-regulatory learning skills in middle school science classrooms,” PI, K. Catley, D.L. Schwartz, co-PIs, Dept. of Education, Institute for Education Sciences, \$1,499,980, July 2006–June 2010.
41. “Aircraft Electrical Power System Diagnostics and Health Management,” PI, subcontract from Qualtech Systems Inc, CT (Office of Naval Research STTR Topic N064-007-0103), \$33,000, September 2006–May 2007.
42. “Collaborative Research: REESE- Assisting and Assessing Middle School Science Learning in Formal and Informal Settings,” PI, NSF REESE grant, \$467,355, January 2007–December 2010.
43. “Fault Diagnostics, Prognostics, and Self-Healing Control of Navy Electric Machinery,” PI, Subcontract from Qualtech Systems Inc, CT (Contract No. N00014-06-M-0263 from Office of Naval Research STTR Topic N06-033), \$33,000, September 2006–May 2007.
44. “Online Statistical Methods for Robust State Estimation, Anomaly Detection, and Degradation Analysis in Complex Systems,” PI, X. Koutsoukos and G. Karsai, co-PIs, NASA Aeromnautics grant, \$749,868, January 2007–September 2010.
45. “The Smart Sensor Web Architecture,” co-PI, D. Schmidt, PI, subcontract from Lockheed Martin ATC, Palo Alto, CA (NASA ROSES Program), \$467,729, January 2007–February 2010.
46. “Distributed Monitoring and Diagnosis of Embedded Systems Using Hierarchical Abstractions,” co-PI, X. Koutsoukos, PI, NSF, \$270,000, July 2006–June 2009.

47. "Distributed Multi-agent Fault Diagnosis and Reconfiguration Control," PI, subcontract from Qualtech Systems, CT, NASA SBIR, \$30,277, February 2007–December 2007.
48. "Model-Based Condition Monitoring and Diagnosis of Nuclear Power Plants," *Vanderbilt Innovations Office Grant Program*, \$4,000., November 2007 - February 2008.
49. "Postdoctoral Training: Rigorous Research Methods in the Learning Sciences," Department of Education, Institute for Educational Sciences, co-PI, P. Cobb, PI, co-PIs B. Rittle-Johnson, T. Smith, \$732,956, June 2008 - May 2012.
50. "Integrated Ground Support System for Launch Operations," NASA STTR Phase 2 (subcontractor to Qualtech Systems, Inc., \$179,992, Sept. 2008 - May. 2011.
51. "Assisting and Assessing Middle School Science Learning in Formal and Informal Settings," *National Science Foundation (REESE grant)*, PI, \$467,355, January 2007 - December 2010. (collaborative proposal with Daniel Schwartz, Stanford University.
52. "Avionics Diagnostics and Prognostics Using Bond Graphs," PI, *NASA Aeronautics Program*, \$175,000, February 2008 - January 2011.
53. "Vehicle Integrated Prognostics Reasoner (VIPR)," PI, co-PI: Xenofon Koutsoukos, *NASA Aeronautics Program*, (subcontractor to Honeywell Labs), \$366,804, December 2009 - November 2012.
54. "Dependability and Risks Assessment Frameworks Tool Sets(DRAFTS): Stage 2: Integrating Function and Behavior," PI, *Airbus Industries, UK*, \$70,719, June 2010 - June 2011.
55. "HCC: Medium: Collaborative Research: Formal Analysis of Choice-Adaptive Intelligent Learning Environments (FACILE) that support Future Learning," PI, *NSF HCC Program*, \$681,541, August 2009 - July 2012. (collaborative with Daniel Schwarz, Stanford University).
56. "Distributed Diagnosis, Prognosis and Recovery for Complex Systems," PI, *ONR STTR Program*, \$17,000, February 2010 - January 2011.
57. "Dynamic Physical/Data-Driven Models for System-Level Prognostics and Health Management," PI, *NASA STTR Program*, \$49,960, August 2010 - June 2011.
58. "Developing and Evaluating a Technology-Based Fractions Intervention Program for Low-Achieving and At-Risk Students," co-PI (Ted Hasselbring, PI), *Department of Education Educational technology Program*, \$1,499,862, October 2010-September 2013.
59. "CTSiM: Fostering Computational Thinking in Middle Schools through Scientific Modeling and Simulation," PI, *NSF Cyberlearning Program*, \$550,279.00, September 2011 - August 2013.
60. "SimSelf: A simulation environment designed to model and scaffold learners' self-regulatory skills to optimize complex science learning," PI, Cognition and Student Learning, Institute for Educational Science, \$1,218,424, June 2012-May 2015.
61. "C3STEM: Enabling Community-Situated, Challenge-based, Collaborative STEM Education Using Broadband Cyber Infrastructure," PI, NSF EAGER, \$297,350, October 2012-September 2014.

62. “Extending CTSiM: An Adaptive Computational Thinking Environment for Learning Science through Modeling and Simulation in Middle School Classrooms,” PI, NSF CISE Cyberlearning Program, \$1,348,412, Oct. 2014 to Sept. 2017.
63. “Developing a Metacognitive Tutor within the GIFT Framework,” PI, Army Research Labs, Adelphi Human Research, \$473,971, May 2014 to April 2017
64. “Enhancing Games with Assessment and Metacognitive Emphases (EGAME),” co-PI, NSF EHR program, \$3,149,239, Sept. 2011 to May 2016.
65. “Beyond Fault Diagnosis and Failure Prognosis Fault Tolerant Control of Aerospace Systems,” PI, Air Force SBIR Program/Global Tech Inc, Atlanta, GA, \$168,726, Oct. 2015-Sept. 2017
66. “Diagnosis-Driven Prognosis for Decision Making,” NASA/Qualtech Systems, Rocky Hill, CT, \$189,085, June 2015 to May 2017
67. “Infrastructure and Analytics for Data Intensive Research in Open-Ended Learning Environments (OELEs),” PI, National Science Foundation CISE EAGER, \$299,983, Sept. 2015 to Aug. 2017
68. “Cloud Computing and Software Defined Networking Enhancements to Support Collaborative and Interactive STEM Education,” co-PI, National Science Foundation US Ignite Program, \$357,711, Sept. 2015 to Aug. 2017
69. “Information Saliency,” PI, Office of Naval Research STTR Program Phase 2/DiscernTek, \$390,000, Sept. 2015 to Aug. 2017
70. “Prognostic Scheduling,” (Phase 2) PI, Air Force Research Labs/Global Tech, Inc., Atlanta, GA, \$74,525, Sept. 2015 to Aug. 2016.
71. “Collaborative Research: Using Data Mining and Observation to derive an enhanced theory of SRL in Science learning environments,” PI, NSF ECR Program, \$629,630, Sept. 1, 2016 to Aug. 31, 2019.
72. “Research and Assessment on Synergistic Learning of Physics and Programming through Computational Modeling and Problem Solving,” PI, NSF STEM+C Program, \$2,499,682, Sept. 15, 2016 to Aug. 14, 2019.
73. “Integrated Safety Incident Forecasting and Analysis,” co-PI, NSF CPS Program, \$199,993, Sept. 1, 2016 to August 31, 2019.
74. “Linking eye movements with visual attention to enhance cyberlearning,” co-PI, NSF Cyberlearning EXP program, \$549,936, Aug. 15, 2016 to July 31, 2018.

Research Supervision

Ph.D. Theses

1. D.L. Hibler, “The Thought Experiment Method: A New Approach to Qualitative Reasoning,” January 1992.
2. X. Yu, “Multi-level Reasoning applied to Diagnosis of Complex Continuous-valued Systems,” December 1992.

3. G. Lee, "Increasing Reliability and Efficiency for Knowledge-Based Systems," May 1994.
4. A.M. Tharpe, "A Problem-Based Curriculum in a Computerized Learning Environment for Training in the Field of Audiology," (Audiology and Speech Sciences), May 1994.
5. M. Curtin, "A Decision-making Framework for Environmentally Conscious Manufacturing," (Management of Technology, joint supervision with K. Kawamura), June 1995.
6. T. Crews, "AdventurePlayer: Macrocontexts plus Microworlds," July 1995.
7. J.B. Weinberg, "Syndromic Abstraction: A Method of Exploiting Domain Structure to Focus Abductive Reasoning in Association Based Representations," August 1996.
8. P.J. Mosterman, "Hybrid Dynamic Systems: A hybrid Bond Graph Modeling Paradigm and its Application in Diagnosis," May 1997.
9. R. Kapadia, "Model-based Support for Parametric System-Level Design Optimization," Nov. 1999.
10. C. Li, "A Bayesian Approach to Temporal Data Clustering using the Hidden Markov Model Methodology," August 2000.
11. S. Narasimhan, "Model Based Diagnosis of Hybrid Systems," July 2002.
12. E.J. Manders, "A combined statistical detection and qualitative fault isolation scheme for abrupt faults in dynamic systems," June 2003.
13. R. Dhingra, "A Streamlined LCA Approach for Conducting a Cost and Residual Risk Based Evaluation of Automobile Recycling Alternatives in the U.S., Japan, and Europe," May 2004.
14. T. Katzlberger, "Learning by Teaching Agents," December 2004.
15. K. Leelawong, "Using the Learning-by-Teaching Paradigm to Design Intelligent Learning Environments," August 2005.
16. I. Roychoudhury, "Distributed Diagnosis of Continuous Systems: Global Diagnosis through Local Analysis," August 2009.
17. J. Kinnebrew, "Global Sensor Web Coordination and Control Using Multi-Agent systems," August 2010.
18. C. Kulkarni, "A Physics-Based Degradation Modeling Framework for Diagnostic and Prognostic Studies in Electrolytic Capacitors," December 2012.
19. D. Mack, "Anomaly Detection from Complex Temporal Sequences in Large Data," May 2013.
20. J. Segedy, "Adaptive Scaffolds in Open-Ended Computer-Based Learning Environments," June 2014.
21. J. Carl, "High Performance Numerical Simulations to Support System Level Design," December 2015.
22. S. Basu, "Fostering Synergistic Learning of Computational Thinking and Middle School Science in Computer-based Intelligent Learning Environments," April 2016.

23. H. Khorasgani, "Model- and Data-Driven approaches to Fault Detection and Isolation in Complex Systems," December 2017.
24. Y. Dong, "Modeling Students' Learning Behaviors in Open-Ended Learning Environments," August 2018.
25. M. Emara, "Measuring and Supporting Self-Regulated Learning in problem solving with an Intelligent Multi-agent Learning Environment," August 2018.

Current Ph.D. Candidates

Ningyu Zhang (RA)	Anabil Munshi (RA)
Nicole Hutchins (RA)	Caitlin Snyder (RA)
Avisek Naug (RA)	Ibrahim Ahmed (TA)
Tim Darrah (RA)	Ben Yett (TA)
Neelanjana Sarkar (TA)	

Professional Societies

Association for Advancement of Artificial Intelligence	IEEE Computer Society
Sigma Xi Research Society	Association for Computing Machinery
Artificial Intelligence in Education (AI-ED)	International Society for the Learning Sciences
Society for Computer Simulation	American Society for Engineering Education
Asia Pacific Society for Computers in Education	

Professional Activities (External)

• Editorships:

- Guest Editor, Special Issue on *Learning Systems for Science and Technology Education*, B. Bredeweg and B. McLaren, IEEE Transactions on Learning Technologies, 2013.
- Guest Editor, Special Issue on *Model-based Diagnosis: Facing Challenges in Real-world Applications*, P. Struss, G. Provan, J. de Kleer, co-editors, IEEE Transactions on Systems, Man, and Cybernetics, Part A, June 2010.
- Guest Editor, Special Issue on *Diagnosis of Complex Systems: Bridging the Gap between the FDI and DX communities*, M.O. Cordier, J. Lunze, L. Trave-Massuyes, and M. Staroswiecki, co-editors, IEEE Transactions on Systems, Man, and Cybernetics, Part B, Oct. 2005.
- Associate Editor, IEEE Transactions on Systems, Man, and Cybernetics - Systems.
- Associate Editor, IEEE Transactions on Learning Technologies.
- Associate Editor, Intl. Journal of Prognostics and Health Management
- Associate Editor, International Journal of Educational Data Mining
- Editorial Board, Educational Technology and Society Journal.
- Editorial Board, Journal of Metacognition and Learning
- Editorial Board, International Journal of Smart Learning Environments
- Associate Editor, IEEE Transactions on Knowledge and Data Engineering. (past)
- Associate Editor, Applied Intelligence: The International Journal, Kluwer Academic. (past)

- Guest Editor, Special Issue of the International Journal of Approximate Reasoning on *Belief Revision and Belief Maintenance*, 1992.

- **Workshop Organization:**

- Workshop Co-Chair, Subgroup Environmentally Conscious Manufacturing: The IMS Perspective, Workshop on Clean and Intelligent Manufacturing for the Process Industry, Nashville, TN, October 1993.
- Group Leader, Internal Workshop on Biorobotics, Intelligence Group, Tsukuba, Japan, May 1995.
- Program Co-chair, Principles of Diagnosis Workshop, val Morin, Canada, Oct. 1996.
- Workshop Organizer (Chair), 3rd Engineering Problems for Qualitative Reasoning Workshop, IJCAI-97, Nagoya, Japan, August 1997.
- Workshop Session Organizer (Chair), Ecometrics '98, session on Sustainability Metrics for the Electronics Industry, Lausanne, Switzerland, Jan. 20-21, 1998.
- Co-chair, AAAI Spring Symposium on Hybrid Systems and AI, Stanford, CA, March 1998.
- Program Co-chair, IEEE Intl. Conf. on Systems, Man, and Cybernetics, Nashville, TN, Oct. 2001.
- Program Chair, Fifteenth Intl. Workshop on Qualitative Reasoning, San Antonio, TX, May 2001.
- Program Chair, 18th International Workshop on Principles of Diagnosis, Nashville, TN, 2007.