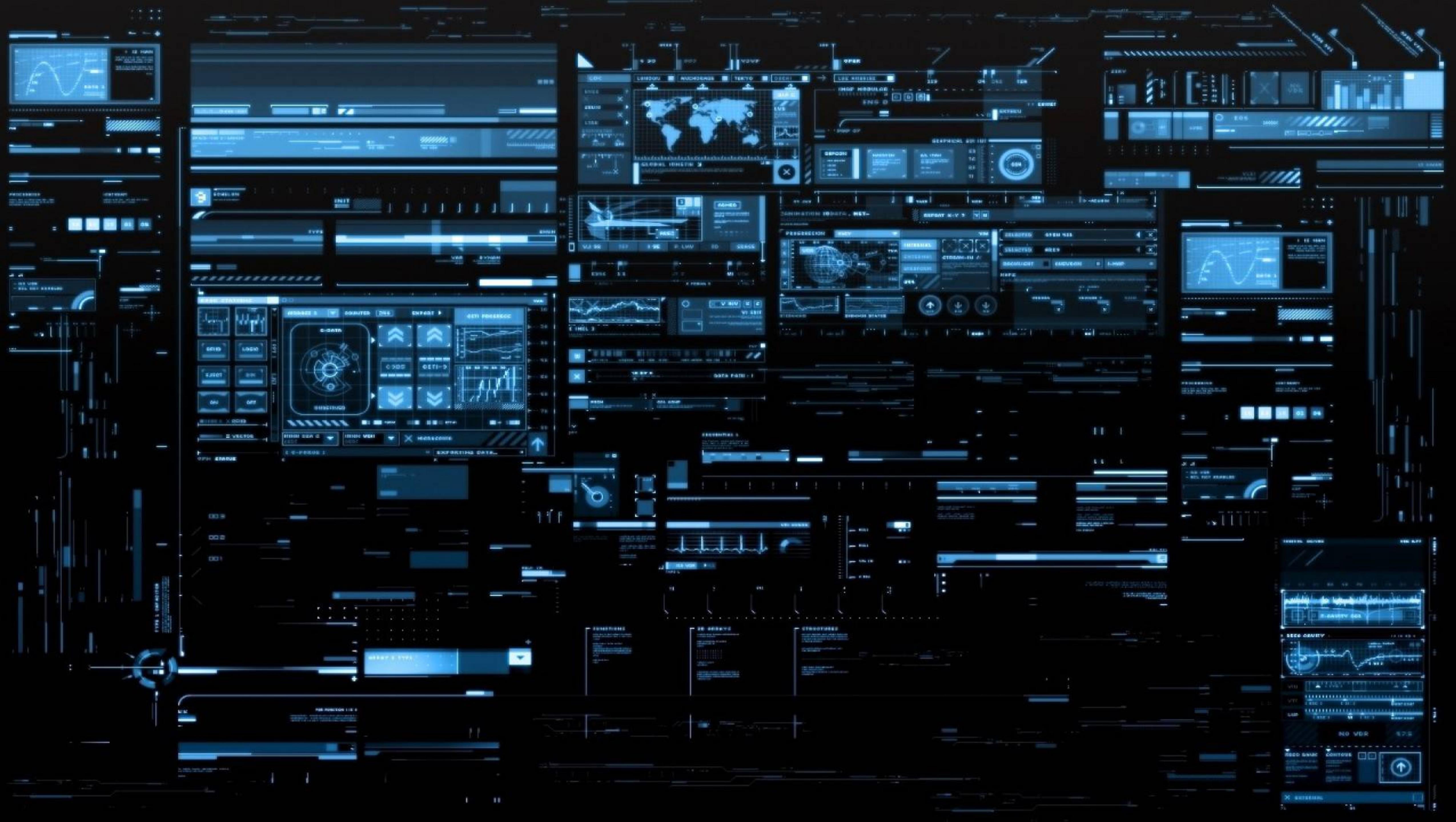


1. Executive Summary

The hosting platform, Heroku, was blocked by UNM's firewall service, HP TippingPoint. Several UNM web applications are hosted here, and these web applications were not accessible from anywhere on UNM campus for several days. The issue was resolved by updating TippingPoint's database. The origin of the problem is somewhat unclear and is certainly likely to occur again, whether with Heroku or other important hosting platforms.

2. Abstract

Web applications are an essential part of today's systems. This includes corporate, government, and educational systems.



Gregory L. Heileman, Ph.D.

2011–present

Professional Background and Primary Accomplishments

University of New Mexico, Albuquerque, NM

Associate Provost for Curriculum

- Responsibilities include campus-wide student academic success initiatives, curriculum, university advising, curricular and co-curricular assessment, academic program review, institutional accreditation and the office of institutional analytics.
- Worked with other key entities on campus to:
 - Direct the development team that created the software necessary to deliver online degree plans for all UNM undergraduate degree programs (see: <http://degrees.unm.edu>)
 - Create an Office of Student Academic Success at UNM.
 - Create the Center for Teaching Excellence at UNM.
 - Initiate a redesign of the freshman year programs on campus, leveraging the John N. Gardner Institute for Excellence in Undergraduate Education's Foundations of Excellence in the First College Year program.
 - Implement an academic coaching program that involves more than 100 coach volunteers and more than 150 students during the 2012-13 academic year.
 - Coordinate freshmen outreach/coaching and cohort tracking initiatives that contributed to 2.5% and 1.2% increases in freshmen retention, and 0.6% and 2.7% increases in graduation rate in 2012 and 2013, respectively.
 - Coordinate an extensive review of university advising, and develop an action plan that includes adoption of a standard campus-wide computer-based early alert/advising tool.
 - Redesign the UNM Academic Program Review process in order to align it more closely with the HLC Accreditation Criteria, streamline the process as a whole, and lead the design of an online application for completing and submitting APRs and tracking the resulting Action Plans.
 - Coordinate the wider use of a campus-wide computer-based program assessment tool.
 - Establish an enhanced academic IT capability in the Provost's Office.
 - Create the first MOOC at UNM (Web Application Architectures, delivered through the Coursera platform).

2004–2011

University of New Mexico, Albuquerque, NM

Associate Chair & Director of Undergraduate Programs
Department of Electrical and Computer Engineering

- Responsible for all aspects of the undergraduate programs in electrical engineering and computer engineering, including recruiting, advisement, curricula assessment and improvement, and ABET accreditation.

- Successfully navigated the department through the ABET evaluation process and site visits (both electrical engineering and computer engineering programs) in 2005 and 2011.
- Implemented a program assessment process that resulted in significant improvements in efficiency and efficacy.
- Led the department through extensive redesigns of both the computer and electrical engineering programs.

2002–present

University of New Mexico, Albuquerque, NM

Professor, Department of Electrical and Computer Engineering.
Secondary Appointment, Computer Science Department.

1996–2002

University of New Mexico, Albuquerque, NM

Associate Professor, Department of Electrical and Computer Engineering.

1990–1996

University of New Mexico, Albuquerque, NM

Assistant Professor, Department of Electrical and Computer Engineering.

1989–1990

University of Central Florida, Orlando, FL

Visiting Assistant Professor, Department of Computer Engineering.

1988–1989

University of Central Florida, Orlando, FL

Graduate Research Assistant, Department of Electrical Engineering.

1986–1989

University of Central Florida, Orlando, FL

Graduate Research and Teaching Assistant, Department of Computer Engineering.

1985–1986

Isotechnologies Inc., Carrboro, NC

Research Engineer.

1984–1985

University of North Carolina, Chapel Hill, NC

Graduate Research Assistant, Department of Biomedical Engineering and Mathematics.

Education

Ph.D. Computer Engineering, University of Central Florida, Orlando, FL. 1989.

M.S. Biomedical Engineering and Mathematics, University of North Carolina–Chapel Hill, Chapel Hill, NC. 1986.

B.A. Biology, Wake Forest University, Winston-Salem, NC. Cum Laude, 1982.

Honors and Awards

2010

University of New Mexico, School of Engineering, Outstanding Teacher Award.

2009

IEEE Albuquerque Section, Outstanding Educator Award.

2009	University of New Mexico, Department of Electrical & Computer Engineering Lawton-Ellis Award in recognition of exemplary teaching and service.
2005–2008	University of New Mexico, Department of Electrical & Computer Engineering, Gardner-Zemke Professorship.
2001	University of New Mexico, Department of Electrical & Computer Engineering Lawton-Ellis Award in recognition of exemplary teaching and service.
2000	University of New Mexico, Department of Electrical & Computer Engineering Distinguished Teacher Award.
1995	University of New Mexico, School of Engineering junior faculty teacher of the year award.
1992	Associated Western Universities–Department of Energy (AWU-DOE) Faculty Fellowship.
1983	Carolina Lightnin', Professional soccer, American Soccer League, Played extensively in a league that required only five Americans on the field.
1982	U.S. Olympic Festival, South Team, Soccer, Indianapolis, IN.
1981	U.S. Olympic Festival, South Team, Soccer, Syracuse, NY.
1979–1982	NCAA Division I Soccer, Wake Forest University. Four year letterman and starter; Team captain 1979–1981, Team MVP, 1981; All Atlantic Coast Conference, 2nd team, 1981; Collegiate Senior All-star Team, 1982.

Professional Affiliations

1996–present	Senior Member , The Institute of Electrical and Electronics Engineers (IEEE)
2009–2010	Founding Board Member , The ASK Academy (an Engineering Charter School in Rio Rancho, NM).
2000–2004	Board Member , New Mexico Information Technology and Software Association (NMITSA).
2001–2005	Board of Advisors , New Mexico Technology Enterprise Coalition.

Professional Activities

2010–present	Accreditation Board For Engineering and Technology (ABET) Program Evaluator , Engineering Accreditation Commission.
2010–present	Editorial Board , <i>International Journal of Multimedia Intelligence and Security</i> .
1995–2005	Associate Editor , Association for Computing Machinery (ACM) <i>Journal of Experimental Algorithms</i> .

1994–1996

Chairman, Educational Activities Committee, IEEE Albuquerque Section.

Panel Member: National Science Foundation, Networking Infrastructure for Education program, 1995; Ikerbasque, the Basque Foundation for Science, Research Program Reviewer, 2009–present.

Program Chair: Ninth ACM Workshop on Digital Rights Management, Chicago, IL, Nov., 2009 (co-chaired with Hongxia Jin); Eighth ACM Workshop on Digital Rights Management, Alexandria, VA, Oct., 2008 (co-chaired with Marc Joye); ISE '95 Expo, Albuquerque, NM, May, 1995.

Workshop Organizer: Applications of Benford's Law, Santa Fe, NM, Dec. 2007; US-Spain Bilateral Scientific Workshop on Information Science and Related Technologies, Santa Fe, NM, Dec. 2010.

Program Committees: Spring 1993 Computational Science Workshop, Los Alamos National Laboratory; International Conference on Neural Networks, Orlando, FL, June 1994; Forth ACM Workshop on Digital Rights Management, Washington, DC, Oct 2004; First International Conference on Digital Rights Management: Technologies, Issues, Challenges and Systems, Sydney, Australia, Nov 2005; Fifth ACM Workshop on Digital Rights Management, Alexandria, VA, Nov 2005; Sixth ACM Workshop on Digital Rights Management, Alexandria, VA, Nov 2006.

Reviewer: Neural Networks, Computers in Electrical Engineering, Journal of Intelligent Manufacturing, IEEE Transactions on Neural Networks, IEEE Transactions on Systems, Man, and Cybernetics, IEEE Transactions on Biomedical Engineering, IEEE Signal Processing Magazine.

Business Development/Management

2003

Chief Scientist, Elisar Software Corporation, Albuquerque, New Mexico.

1999–2003

CEO, Elisar Software Corporation, Albuquerque, New Mexico. Co-founded Elisar Software Corporation in 1999, led the company through two venture capital financing rounds totaling \$3,400,000, and the growth of the company from the original two founders to 16 employees.

1997–present

Co-founder and Partner, AHS Engineering Services, LLC, Albuquerque, New Mexico. AHS provides consulting services in the areas of data analysis and software development.

Community Service

2000–present

Board Member, New Mexico Rush Soccer Club. Served as President since the founding of the club, which has grown to national prominence while the club's annual budget has grown from ~\$60,000 to ~\$500,000, including ~\$60,000 in annual scholarships to support economically disadvantaged players.

1996–present

Soccer Coach, Current License: United States Soccer Federation B License.

Club, Coached a number of teams in the New Mexico Rush organization. These teams have won five state championships, have advanced to the Regional semifinals three times, twice to the Regional finals, and have won one Regional championship.

1999–2004

State of New Mexico, New Mexico Youth Soccer Association (NMYSA) Olympic Development Program (ODP) coaching staff.

Advisement

Ph.D. Students — (Major Professor):

1. Craig Vineyard, in progress (post comprehensive exam)
2. Ed Nava, in progress (post comprehensive exam)
3. Viswanath Nandina, in progress
4. Ahmad Slim, in progress
5. Chris Lamb, Dissertation: "Information Protection in Content-centric Networks." Graduation: Dec. 2012.
6. Pramod Jamkhedkar. Dissertation: "Usage Management." Graduation: Aug. 2011.
7. Alexandre Franco. Dissertation: "Resource Allocation of The Human Brain: A Competitive Equilibrium Approach." Graduated: Dec. 2009.
8. Tu-Thach Quach. Dissertation: "Information Similarity Metrics in Information Security and Forensics." Graduated: Dec. 2009.
9. Sinan Al-Safar. Dissertation: "Semantic Information Valuation." Graduated: May 2009.
10. Henry Jerez. Dissertation: "A New Approach to Complex Object Distributed Storage Distribution and Identification." Co-advised with Ramiro Jordan. Graduated: May 2005.
11. Wenbin Luo. Dissertation: "Characterizing the Behavior of Open Addressing Hash Functions." Graduated: May 2003.
12. Steve Verzi. Dissertation: "Extending the Generalization Capabilities of ARTMAP-based Networks." Graduated: Dec. 2002 (Computer Science).
13. Brad Smith. Dissertation: "An Exponential Open Hash Function Based on Dynamical Systems Theory." Graduated: May 1997.
14. James Howse. Dissertation: "Gradient and Hamiltonian Dynamics: Some Applications to Neural Network Analysis and System Identification." Graduated: Dec. 1995.

M.S. Students — (Thesis or Project option, Major Professor):

1. Jarred Kozlick, in progress.
2. Kevin Warne, in progress.
3. Michael Hickman, in progress.
4. Michael Darling, in progress.
5. Wisam Al-Doroubi, in progress.
6. Vinaya Bharadwaj Ganapavarapu. "Designing and Implementing a Data Warehouse using Dimensional Modeling." Graduation: May 2014.
7. Jeff Wigdahl. "Assessment of Curriculum Graphs with Respect to Student Flow and Graduation Rates." Graduation: Dec. 2013.

8. Uday Bhaskar Kadaboina. "UNM Academic Program Review." Graduation: Aug. 2013.
9. Ravi K. Kadaboina. "An Agent-based Framework for Sharing Personal Health Information." Graduation: May 2011.
10. Aswin Yamuzala Venkata, "Rights Management over Web Mashups." Graduation: July 2010.
11. Viswanath Nandina, "A More Robust Ant Colony Learning Algorithm: With Application to the Traveling Salesman Problem." Graduation: July 2010.
12. Harihar Shankar. "Automating the Moderation Process in GEO using Trust Metrics." Graduation: May 2009.
13. Eduardo Castro-Witting. "Recommender Systems based on Collaborative Filtering." Graduation: Dec. 2008.
14. Craig Vineyard. "Enhancing Expert System Intelligent Agents Using Game Theory." Graduation: Aug. 2008.
15. Curtis Hrncir. "Agent Decision Making in DRM Architectures". Graduation: Aug. 2007.
16. Peter M. Oelschlaeger. "Cooperative Strategies for Pairwise Secure Communication Channels in Sensor Networks." Graduation: Aug. 2007.
17. Dinesh Dhanekula. "Content Spreading in Peer-to-peer Networks." Graduation: Dec. 2006.
18. Ryan Custer. Thesis: "A Rights Expression Language Extension for Classified Information." Graduation: Aug. 2006 (Computer Science).
19. Alexandre Franco. "Application of Pattern Classification to Concrete Analysis." Graduation: Dec. 2005.
20. Markin Demsey. Thesis: "Analysis of Robust Image Hashing Mechanisms." Graduation: Dec. 2005.
21. Pramod Jamkhedkar. Thesis: "A Framework for DRM as a Layered System." Graduated: May 2005 (Computer Science).
22. Gregg Whitford. Thesis: "A General Model for Mobile Radio Link Simulation." Graduated: May 2003.
23. Ying Ding. Thesis: "Improving Detector Performance in Watermarking Systems Using RBF Neural Networks." Graduated: Dec. 2002.
24. Yunlong Yang. Thesis: "The Effects of Watermarking on Satellite Image Classification." Graduated: Dec. 2001.
25. Carlos Pizano. Thesis: "Deconstructing Digital Image Watermarks." Graduated: May 2000.
26. Lawrence Irwin. Thesis: "The Robustness of Watermarking in Digital Images." Graduated: May 1998.
27. Rich Hunt. Thesis: "Multiple Move Dynamic Load Balancing Algorithms." Graduated: May 1995.
28. Diane Verner. Thesis: "Development of Generic Field Classes for Finite Element and Finite Difference Problems." Graduated: May 1993.

Undergraduate Students:

1. Elias Lopez, 2013-present.
2. Athena Avalos, Undergraduate Research, 2012.
3. Michael Hickman, Undergraduate Research, 2011-2013.
4. Nathan Dautenhahn, Honors Study, 2008.
5. Craig Vineyard, Honors Study, 2006.
6. Mandenge Mandenge, McNair Scholar Program, 2004.
7. Curtis Hrcir, Honors Study, 2003.

Funded Research

Total Funding: \$5,015,817

- DoD (Air Force) STTR, Phase II, "Nublu: Assured Information Sharing in Clouds," Sept. 2013–Apr. 2015, \$337,500.
- NSF CyberCorps Scholarship for Service Program, "UNM Information Assurance Scholarship for Service Program," Jan. 2013–Dec. 2017, \$1,675,425.
- DoD (Navy) STTR, Phase II, "ASW Find-To-Forecast" in collaboration with Modus Operandi, Inc., Indialantic, FL, \$450,000 (awarded 2012).
- DoD (Air Force) STTR, Phase I, "Nublu: Assured Information Sharing in Clouds," March 2011–Nov. 2012, \$50,000.
- NSF Transforming Undergraduate Education (TUES) Program, "A Model for Online Cross-Institutional STEM Course Offering and Support Services in New Mexico," in collaboration with Central New Mexico Community College (CNM) and Northern New Mexico College (NNMC), Aug. 2011–Aug. 2013, \$247,100.
- DoD (Navy) STTR, Phase I and Phase I Option, "ASW Find-To-Forecast" in collaboration with Modus Operandi, Inc., Indialantic, FL, Oct. 2011–Nov. 2012, \$60,000.
- DoD (Air Force) SBIR, Phase II, "SMASHUP: A Formal Framework For Secure Mashups" in collaboration with Modus Operandi, Inc., Indialantic, FL, May 2011–June 2013, \$250,000.
- DoD (Air Force) SBIR, Phase I, "SMASHUP: A Formal Framework For Secure Mashups" in collaboration with Modus Operandi, Inc., Indialantic, FL , Mar. 2010–Dec. 2010, \$33,000.
- DoD (Army) STTR, Phase II, "Military Surgical Information System", in collaboration with Moberg Research, Ambler PA, Aug. 2008–July 2010, \$89,880.
- DoD (Air Force) SBIR, Phase I, "Green Wave: Integrating Subjective Trust into Networked Infrastructures", in collaboration with Modus Operandi, Inc., Indialantic, FL , Jul. 2008–Jan. 2009, \$33,000.
- NSF Future Internet Design (FIND) Program, "Collaborative Research: Transient Network Architecture", Co-principal Investigators: C.T. Abdallah, G.L. Heileman and W. Shu, Aug. 2006–July 2008. \$240,000.

- AFOSR STTR (with NumerEx Corp.), "User-safe Virtual Laboratory Environment for High Voltage Radiation Source Experiments", Sept. 2004–Mar. 2005. \$35,000.
- AFRL, "Network Survivability", Co-Principal Investigators: C. Christodoulou, C.T. Abdallah, G.L. Heileman, and M. Hayat, 2004. \$20,000.
- Sandia National Laboratories "Wireless Sensor Networks", Co-Principal Investigators: C.T. Abdallah and G.L. Heileman, 2004. \$32,000.
- Honeywell-KCP, "Machine Intelligence and Simulation Applications", 2004. \$95,248.
- CIRT University Research Labs, University of New Mexico, 2004,
-IPTV Study, Grad. student support, \$5400,
-VoIP Study, Grad. student support, \$5400.
- DARPA Next Generation Internet Grant, under subcontract from the Albuquerque High Performance Computing Center, "Simulation over NGI infrastructure," 2000. \$75,000.
- Boeing Computer Services, "Intelligent Monitoring and Fault Detection", Phase IV, Co-Principal Investigators: T.P. Caudell, G.L. Heileman and C.T. Abdallah, 1999. \$20,000.
- DARPA Next Generation Internet Grant, under subcontract from the Albuquerque High Performance Computing Center, "Wireless Networking", Co-principal Investigators: C.T. Abdallah, and G.L. Heileman, 1999. \$100,000.
- Albuquerque High Performance Computing Center, "UML Workshops and HLA Simulation Development," 1999. \$36,106.
- Maui High Performance Computing Center, "Refinement of the AN/TRC-170 Model into a Standalone Siting and Performance Prediction Tool," G.L. Heileman, PI and E. Schamiloglu, Co-PI, 1999. \$43,000.
- Boeing Computer Services, "Intelligent Monitoring and Fault Detection", Phase III, Co-Principal Investigators: T.P. Caudell, G.L. Heileman and C.T. Abdallah, 1998. \$25,000.
- DARPA, under subcontract from the Maui High Performance Computing Center, "Troposcatter Radiowave Propagation Link," G.L. Heileman, PI and E. Schamiloglu, Co-PI, 1998. \$41,840.
- Boeing Computer Services, "Intelligent Monitoring and Fault Detection", Phase II, Co-Principal Investigators: T.P. Caudell, G.L. Heileman and C.T. Abdallah, 1997. \$45,000.
- Boeing Computer Services, "Intelligent Monitoring and Fault Detection", Phase I, Co-Principal Investigators: T.P. Caudell, G.L. Heileman and C.T. Abdallah, 1996. \$30,000.
- Boeing Computer Services, "Analysis of the Dynamical Properties of ART Networks", Phase IV, Co-Principal Investigators: G.L. Heileman, C.T. Abdallah and T.P. Caudell, 1994. \$55,000.
- Chadwick-Helmuth Company, "Intelligent Health Assessment for Rotorcraft Machines," Co-principal investigator: C.T. Abdallah, G.L. Heileman and D. Hush, 1995. \$44,000.
- Los Alamos National Laboratory, "Summer 1995 Computational Science Workshop," Co-principal investigator: G.L. Heileman and C.T. Abdallah, 1995. \$54,144.
- Boeing Computer Services, "Analysis of the Dynamical Properties of ART Networks", Phase III, Co-Principal Investigators: G.L. Heileman, C.T. Abdallah and T.P. Caudell, 1994. \$60,000.

- Los Alamos National Laboratory, "National Information Infrastructure Workshop," Co-Principal Investigators: T. Caudell, G.L. Heileman, D. Hush, and C.T. Abdallah, 1994. \$114,875.
- Los Alamos National Laboratory, "Summer 1994 National Information Infrastructure Workshop," Co-Principal Investigators: G.L. Heileman, D. Hush, T.P. Caudell, and C.T. Abdallah, 1994. \$120,740.
- Sandia National Laboratories Div. 1434, "Shock Wave Physics Simulation on Massively Parallel MIMD Architectures," 1992–94. \$98,048.
- Boeing Computer Services, "Analysis of the Dynamical Properties of ART Networks", Phase II, Co-Principal Investigators: G.L. Heileman, C.T. Abdallah and T.P. Caudell, 1993. \$96,515.
- Boeing Computer Services, "Analysis of the Dynamical Properties of ART Networks", Phase I, Co-Principal Investigators: G.L. Heileman and C.T. Abdallah, 1992. \$33,194.
- Sandia National Laboratories Div. 1434, "Porting Shock Physics Codes to Massively Parallel Computers," 1992. \$7,019.
- Sandia National Laboratories SURP award, "Neural Network Image Classification Algorithms on Massively Parallel Computers", 1991–93. \$60,000.
- Sandia National Laboratories Div. 9133, "Implementing Neural Network Algorithms on the Connection Machine," 1991. \$16,474.
- Technological Research and Development Authority (TRDA), Melbourne, FL, "Development of a Simulation System for Modeling Ground Processing at KSC in Support of Space Shuttle and Derived Vehicle Support Programs," one of 2 co-principal investigators, 1991. \$53,409. Matching Funds: Rockwell International, Advanced Programs Office, KSC, FL. \$30,000.
- State of Florida High Technology and Industry Council's Applied Research Grants Program. "A Neural Network-Based Adaptive Sensor Array System," one of 5 co-principal investigators, 1990–1991. \$20,000.
Matching Funds: Martin Marietta Electronic Systems, Orlando, FL. \$10,000.
- State of Florida High Technology and Industry Council's Applied Research Grants Program. "Software Tools for Parallel Implementation of Neural Network Models," one of 3 co-principal investigators, 1990–1991. \$20,000.
Matching Funds: Martin Marietta Electronic Systems, Orlando, FL. \$10,000.

Patents

- Method and Apparatus for Securing Video Images, United States Patent and Trademark Office, Patent #6,731,756, May 2004.
- System and Methods for Usage Management in Multi-Level Security Networks, U.S. Patent Application Serial Number: 13/871,250, submitted on /26/2013.
- Rights Calculus, U.S. Patent Application Serial Number: 13/510,088, submitted on 11/16/2009.
- The DRM Game, U.S. Patent Application Serial Number: 12/589,733, submitted on 10/18/2007.

Publications

A. Books

- [1A] G. L. Heileman. *Estructuras de Datos, Algoritmos y Programación Orientada a Objetos*, McGraw-Hill International, Madrid, 1997. (Spanish translation of *Data Structures, Algorithms, and Object-Oriented Programming*.)
- [2A] G. L. Heileman. *Data Structures, Algorithms, and Object-Oriented Programming*, McGraw-Hill, New York, NY, 1996.

B. Book Chapters/Edited Volumes:

- [1B] F. Pérez-González T.-T. Quach, C. T. Abdallah, G. L. Heileman and S. J. Miller. Application of Benford's Law to Images. In S. J. Miller, Ed., *The Theory and Application of Benford's Law*, Princeton University Press, 2013.
- [2B] C. M. Vineyard, G. R. Emmanuel, S. J. Verzi and G. L. Heileman. A Game Theoretic Model of Neurocomputation. In A. Chella, R. Pirrone, R. Sorbello and K. R. Jóhannsdóttir, Eds., *Advances in Intelligent Systems and Computing*, Vol. 196, *Biologically Inspired Cognitive Architectures*, Springer-Verlag, pp. 373-374, 2013. http://dx.doi.org/10.1007/978-3-642-34274-5_66
- [3B] P. A. Jamkhedkar, C. C. Lamb, and G. L. Heileman. Usage Management in Cloud Computing, In F. Hartung, T. Kalker and S. Lian, Eds., *Digital Rights Management: Technology, Standards and Applications*, Auerbach Publications, 2012.
- [4B] S. Lian, J.-H. Morin, S. Gritzalis and G. L. Heileman, Editors. Special Issue on Ubiquitous Multimedia Services, *Information Systems Frontiers*, 14(3):477–479, 2012. <http://dx.doi.org/10.1007/s10796-010-9263-z>
- [5B] S. Lian, G. L. Heileman and A. Noore, Editors. Special Issue on Soft Computing for Digital Information Forensics, *Soft Computing*, 15(3), 2011. <http://dx.doi.org/10.1007/s00500-009-0531-0>.
- [6B] J. Khoury, C. T. Abdallah, and G. L. Heileman. Towards Formalizing Network Architectural Descriptions. In M. Frappier, U. Glässer, S. Khurshid, R. Laleau and S. Reeves, Eds., *Lecture Notes in Computer Science 5977, Abstract State Machines, Alloy, B and Z: Second International Conference, ABZ 2010*, Orford, QC, Canada, February 22–25, 2010, Springer-Verlag, Berlin, pp.132–145, 2010.
- [7B] G. L. Heileman, H. Jerez, P. A. Jamkhedkar and J. Khoury. The Indirect DRM Evaluation Architecture (IDEA). in R. Grimm, B. Hass and J. Nützel, Eds., *Virtual Goods: Technology, Economy, and Legal Aspects*, Nova Science Publishers, 2008.
- [8B] P. A. Jamkhedkar and G. L. Heileman. Rights Expression Languages, in S. Lian and Y. Zhang, Eds., *Handbook of Research on Secure Multimedia Distribution*, IGI Global, Hershey, PA, 2008.
- [9B] P. A. Jamkhedkar and G. L. Heileman. The Role of Architecture in DRM Vendor Economics, in D. Satish, Ed., *Digital Rights Management: An Introduction*, The Icfai University Press, Hyderabad, India, 2007.

- [10B] M. Martínez-Ramón, V. Koltchinskii, G.L. Heileman, and S. Posse. Classification of Multiple Interleaved Human Brain Tasks in functional Magnetic Resonance Imaging, in G. Camps-Valls, J. L. Rojo- Álvarez, M. Martínez-Ramón, Eds., *Kernel methods in Bioengineering, Communications and Image Processing*, Idea Group, 2006.
- [11B] M. Georgopoulos, J. Huang, and G. L. Heileman. ART Neural Networks. In J. G. Webster, Ed., *Encyclopedia of Electrical and Electronics Engineering*, John Wiley & Sons, Feb, 1999.
- [12B] G. L. Heileman, C. E. Pizano, and C. T. Abdallah. Image watermarking for copyright protection. In M. T. Goodrich and C. C. McGeoch, Eds., *Lecture Notes in Computer Science 1619, Algorithm Engineering and Experimentation: International Workshop ALENEX'99, Selected Papers*, Springer-Verlag, Berlin, pp. 226–245, 1999.
- [13B] G. L. Heileman, H. R. Myler, and M. Georgopoulos. An object-oriented approach to the simulation of artificial neural networks. In G. W. Zobrist and J. V. Leonard, Eds., *Progress in Simulation, Vol. I*, pp. 126–158. Ablex, Norwood, NJ, 1992.
- [14B] G. L. Heileman, M. Georgopoulos, H. R. Myler, and G. M. Papadourakis. Improved back-propagation learning algorithms for neural networks. In M. B. Fishman and J. L. Robards, Eds., *Advances in Artificial Intelligence Research, Vol. II*, pp. 177–211. JAI Press, Greenwich, CT, 1992.

C. Refereed Journals and Magazine Articles:

- [1C] G. D. Kuh, G. L. Heileman, C. T. Abdallah and T. Babbitt. Lessons from the Mountains Redux, *About Campus*, to appear.
- [2C] C. C. Lamb and G. L. Heileman. Content-centric Information Protection in the Cloud, *International Journal of Cloud Computing and Services Science (IJ-CLOSER)*, 2(1):246–257, 2013.
- [3C] M. Martínez Ramón, A. Gallardo-Antolín, J. Cid-Sueiro, G. L. Heileman, and S. Posse. Automatic Placement of Outer Volume Suppression Slices in MR Spectroscopic Imaging of the Human Brain. *Magnetic Resonance in Medicine*, 63(3):592–600, 2010.
- [4C] A. R. Franco, J. Ling, A. Caprihan, V. D. Calhoun, R. Jung, G. L. Heileman and A. R. Mayer. Multimodal and Multi-tissue Measures of Connectivity Revealed by Joint Independent Component Analysis, *IEEE Journal of Selected Topics in Signal Processing, Special Issue on fMRI Analysis for Human Brain Mapping*, 2(6):986–997, 2008.
- [5C] P. A. Jamkhedkar and G. L. Heileman. Digital rights management architectures. *Computers & Electrical Engineering, Special Issue: Circuits and Systems for Real-Time Security and Copyright Protection of Multimedia*, Elsevier Press, <http://dx.doi.org/10.1016/j.compeleceng.2008.06.012>, Aug. 16, 2008.
- [6C] G. L. Heileman, C. T. Abdallah, W. Shu, C. G. Christodoulou, and D. Knotts. Creating online graduate engineering degrees at the University of New Mexico. *Journal of Universal Computer Science*, 13(7):1002–1011, 2007.
- [7C] M. Martínez-Ramón, V. Koltchinskii, G. L. Heileman, and S. Posse. fMRI pattern classification using neuroanatomically constrained boosting. *Neuroimage*, 31(3):1129–1141, July 2006.

- [8C] S. J. Verzi, G. L. Heileman, and M. Georgopoulos. Boosted ARTMAP: Modifications to fuzzy ARTMAP motivated by boosting theory. *Neural Networks*, 19(2):446–468, 2006.
- [9C] W. Luo and G. L. Heileman. Properties of exponential hashing. *IEICE Transactions on Fundamentals of Electronics, Communications and Computer Sciences*, E87-A(9), Sep 2004.
- [10C] W. Luo and G. L. Heileman. Improved exponential hashing. *IEICE Electronics Express*, 1(7):150–155, 2004.
- [11C] M. Georgopoulos, I. Dagher, G. L. Heileman, and G. Bebis. Properties of learning of a fuzzy ART variant. *Neural Networks*, 12(6):837–850, 1999.
- [12C] I. Dagher, M. Georgopoulos, G. L. Heileman, G. Bebis. An ordering algorithm for pattern presentation in fuzzy ARTMAP that tends to improve generalization performance. *IEEE Transactions Neural Networks*, 10(4):768–778, 1999.
- [13C] J. W. Howse, C. Abdallah, and G. L. Heileman. A learning algorithm for applying synthesized stable dynamics to systems identification. *Neural Networks*, 11(1):81–87, 1998.
- [14C] B. J. Smith, G. L. Heileman, and C. Abdallah. The exponential hash function. *ACM Journal of Experimental Algorithms*, 2(3), <http://www.jea.acm.org/1997/SmithExponential/>, 1997.
- [15C] M. Georgopoulos, H. Fernlund, G. Bebis, and G. L. Heileman. Order of search in fuzzy ART and fuzzy ARTMAP: A geometrical interpretation. *Neural Networks*, 9(9):1541–1559, 1996.
- [16C] C. Abdallah, G. L. Heileman, M. Georgopoulos, and D. R. Hush. An overview of neural networks results for systems and control. *International Journal of Intelligent Control and Systems*, 1(2):177–194, Jun 1996.
- [17C] J. Huang, M. Georgopoulos, and G. L. Heileman. Fuzzy ART properties. *Neural Networks*, 8(2):203–213, 1995.
- [18C] G. L. Heileman, M. Georgopoulos, and C. Abdallah. A dynamical adaptive resonance architecture. *IEEE Transactions on Neural Networks*, 5(6):873–889, 1994.
- [19C] M. Georgopoulos, J. Huang, and G. L. Heileman. Properties of learning in ARTMAP. *Neural Networks*, 7(3):495–506, 1994.
- [20C] C. S. Ho, J. J. Liou, M. Georgopoulos, G. L. Heileman, and C. Christodoulou. Analog circuit design and implementation of an adaptive resonance theory (ART) neural network architecture. *International Journal of Electronics*, 76(2):271–291, 1994.
- [21C] D. A. Verner, G. L. Heileman, K. G. Budge, and A. C. Robinson Development of generic field classes for finite element and finite difference problems. *Scientific Programming*, 2(4):227–234, 1993.
- [22C] M. Georgopoulos, G. L. Heileman, and J. Huang. The $N-N-N$ conjecture in ART1. *Neural Networks*, 5(5):745–753, 1992.

- [23C] G. L. Heileman, M. Georgopoulos, and W. D. Roome. A general framework for concurrent simulation of neural network models. *IEEE Transactions on Software Engineering*, 18(7):551–562, 1992.
- [24C] M. Georgopoulos, G. L. Heileman, and J. Huang. Properties of learning related to pattern diversity in ART1. *Neural Networks*, 4(6):751–757, 1991.
- [25C] M. Georgopoulos, G. L. Heileman, and J. Huang. Convergence properties of learning in ART1. *Neural Computation*, 2(4):502–509, 1990.
- [26C] G. L. Heileman, G. M. Papadourakis, and M. Georgopoulos. A neural net associative memory for real-time applications. *Neural Computation*, 2(1):107–115, 1990.

D. Reviewed Conference Papers:

- [1D] V. Nandina, J. Marcio Luna, C. C. Lamb, G. L. Heileman, C. T. Abdallah. Provisioning Security and Performance Optimization for Dynamic Cloud Environments. *7th IEEE International Conference on Cloud Computing*, June 27–July 2, 2014, Alaska (to appear).
- [2D] K. Bimson, A. Slim and G. L. Heileman. Find-to-Forecast Process: An Automated Methodology for Situation Assessment. Eighth IEEE International Conference on Semantic Computing (ICSC 2014), Newport Beach, CA, June 16–18, 2014 (to appear).
- [3D] A. Slim J. Kozlick, G. L. Heileman and C. T. Abdallah. A Network Model to Analyze University Courses. *The 8-th International Conference on Complex, Intelligent and Software Intensive Systems (CISIS 2014)*, Birmingham, UK, July 2–4, 2014 (to appear).
- [4D] G. L. Heileman, T. Babbitt, C. T. Abdallah and M. J. Dougher. Efficient Curricula: The Complexity of Degree Plans and Their Relation to Degree Completion. *Collection of Papers, NCA Higher Learning Commission Annual Conference on Quality in Higher Education*, Chicago, IL, Apr. 10–14, 2014.
<http://cop.hlcommission.org/Learning-Environments/heileman.html>
- [5D] A. Slim J. Kozlick, G. L. Heileman, J. Wigdhal and C. T. Abdallah. Network Analysis of University Courses. *The 23rd International World Wide Web Conference (Companion Volume)*, pp. 713–718, Seoul, Korea, Apr. 7–11, 2014.
- [6D] J. Wigdhal, G. L. Heileman, A. Slim and C. T. Abdallah. Curricular Efficiency: What Role Does It Play In Student Success? *Proceedings of the 2014 American Society for Engineering Education (ASEE) Annual Conference*, Indianapolis, IN, June 15–18, 2014 (to appear).
- [7D] J. Marcio-Luna, T. Schroder and G. L. Heileman. A Model for Online Cross-Institutional STEM Course Offering and Support Services for New Mexico. *Proceedings of the 2014 American Society for Engineering Education (ASEE) Annual Conference*, Indianapolis, IN, June 15–18, 2014 (to appear).
- [8D] J. Crichingo, G. L. Heileman, I. Lopez-Hurtado, A. J. Perez, R. Jordan, T. L. Schroeder and J. Marcio-Luna. Cross-institutional Collaboration on Hybrid Engineering Courses among Institutions in New Mexico. *Proceedings of the 2013 American Society for Engineering Education (ASEE) Annual Conference*, Atlanta, GA, June 23–26, 2013.

- [9D] V. Nandina, J.-M. Luna, E. J. Nava, C. C. Lamb, G. L. Heileman and C. T. Abdallah. Policy-based Security Provisioning and Performance Control in the Cloud, *Proceedings of the 3rd International Conference on Cloud Computing and Services Science (CLOSER 2013)*, Aachen, Germany, May 8–10, 2013.
- [10D] C. C. Lamb, G. L. Heileman. Overlay Architectures Enabling Cloud Computing for Multi-Level Security Environments. *Proceedings of the IEEE Eighth World Congress on Services (SERVICES)*, Hawaii, pp. 116–124, June 24–29, 2012.
- [11D] C. Vineyard, S. J. Verzi and G. L. Heileman. Neurocomputation by a Neural Chip-Firing Game. *Proceedings of the 2012 IEEE World Congress on Computational Intelligence*, Brisbane, Australia, June 10–15, 2012.
- [12D] C. Vineyard, G. L. Heileman, S. J. Verzi and R. Jordan. Game-theoretic Mechanism Design Applied to Machine Learning Classification, *Proceedings of the Third International Workshop on Cognitive Information Processing*, Baiona, Spain, May 28–30, 2012.
- [13D] C. C. Lamb, P. A. Jamkhedkar, M. P. Bohnsack, V. Nandina and G. L. Heileman. A Domain Specific Language for Usage Management, *Proceedings of the Eleventh ACM Workshop on Digital Rights Management*, Chicago, IL, pp. 51–62, Oct. 21, 2011.
- [14D] C. C. Lamb, P. A. Jamkhedkar, G. L. Heileman and C. T. Abdallah. Managed Control of Composite Cloud Systems. *Proceedings of the Sixth IEEE International Conference on System of Systems Engineering (SoSE)*, Albuquerque, NM, pp. 167–172, June 27–30, 2011.
- [15D] P. A. Jamkhedkar, C. C. Lamb and G. L. Heileman. Usage Management in Cloud Computing, *IEEE 4th International Conference on Cloud Computing (CLOUD 2011)*, Washington, DC, pp. 525–532, Jul 5–10, 2011. <http://dx.doi.org/10.1109/CLOUD.2011.112>
- [16D] M. D. Heileman, G. L. Heileman, M. P. Shaver, M. Gilger and P. A. Jamkhekar. SMASHUP: Secure Mashup for Defense Transformation and Net-Centric Systems, *Proceedings of the SPIE Vol. 8062, Defense Transformations and Net-Centric Systems 2011*, Orlando, FL, Jun. 10, 2011. <http://dx.doi.org/10.1117/12.883486>.
- [17D] S. al-Saffar and G. L. Heileman. Computing Information Value from RDF Graph Properties. *Proceedings of the 12th International Conference on Information Integration and Web-based Applications & Services*, Paris, pp. 349–356, Nov. 8–10, 2010.
- [18D] P. A. Jamkhedkar, G. L. Heileman and C. C. Lamb. An Interoperable Usage Management Framework. *Proceedings of the Tenth ACM Workshop on Digital Rights Management*, pp. 73–88, Chicago, IL, Oct. 4, 2010.
- [19D] A. R. Franco, A. R. Mayer, V. D. Calhoun, H. Mayberg and G. L. Heileman. A Competitive Equilibrium Approach to Model Resource Allocation of the Human Brain. *Human Brain Mapping*, Barcelona, Spain, Jun. 6–10, 2010.
- [20D] H. T. Davis, G. L. Heileman, M. Pattichis, S. Murillo, E. S. Barriga and P. Soliz. Real-time Image Quality Feedback for Fundus Camera Photography. *ARVO/ISIE 7-th Annual Meeting*, Ft. Lauderdale, FL, May 1–2, 2009.

- [21D] T.-T. Quach F. Pérez-González and G. L. Heileman. Model-Based Steganalysis Using Invariant Features. *IS&T/SPIE Electronic Imaging Science and Technology: Media Forensics and Security XI* (Conference EI120), San Jose, CA, Jan. 18–22, 2009.
- [22D] P. A. Jamkhedkar and G. L. Heileman. A Formal Conceptual Model for Rights. *Proceedings of the Eighth ACM Workshop on Digital Rights Management*, Alexandria, VA, pp. 29–38, Oct. 27, 2008.
- [23D] S. al-Saffar and G. L. Heileman. Semantic Impact Graphs for Information Valuation. *Proceeding of the Eighth ACM Symposium on Document Engineering*, Sao Paulo, Brazil, pp. 209–212, Sept. 16–19, 2008.
- [24D] S. al-Saffar and G. L. Heileman. Semantics-Based Information Valuation. *Proceedings of the 4-th IEEE International Conference on Intelligent Systems IS'08*, Varna, Bulgaria, Vol. 1, pp. 6-51–6-58, Sept. 6–8, 2008.
- [25D] S. al-Saffar and G. L. Heileman. Experimental Bounds on the Usefulness of Personalized and Topic PageRank. *IEEE/WIC/ACM International Conference on Web Intelligence*, Silicon Valley, USA, pp. 671–675, Nov 2–5, 2007.
- [26D] G. L. Heileman, P. A. Jamkhedkar, J. Khoury and C. Hrncir. The DRM Game. *Proceedings of the Seventh ACM Workshop on Digital Rights Management*, Alexandria, VA, pp. 54–62 Oct. 29, 2007.
- [27D] G. L. Heileman, H. Jerez, P. A. Jamkhedkar and J. Khoury. The Indirect DRM Evaluation Architecture (IDEA). *5th International Workshop for Technical, Economic and Legal Aspects of Business Models for Virtual Goods*, Koblenz, Germany, Oct. 11–13, 2007.
- [28D] F. Pérez-González, G. L. Heileman and C. T. Abdallah. Benford's Law in Image Processing. *Proceedings of the IEEE International Conference on Image Processing (ICIP)*, Vol. I pp. I-405–I-408, San Antonio, TX, Sept. 16–19, 2007.
- [29D] F. Pérez-González, G. L. Heileman and C. T. Abdallah. A Generalization of Benford's Law and its Application to Images, *Proceedings of the European Control Conference 2007*, Kos, Greece, July 2–5, 2007.
- [30D] P. A. Jamkhedkar, G. L. Heileman and I. Martínez-Ortiz. Middleware Services for DRM. *Proceedings of the Second International Conference on Communication Systems Software and Middleware (COMSWARE) 2007*, Bangalore, India, Jan. 7–12, 2007.
- [31D] P. A. Jamkhedkar, G. L. Heileman and I. Martínez-Ortiz. The Problem with Rights Expression Languages. *Proceedings of the Sixth ACM Workshop on Digital Rights Management*, Alexandria, VA, pp. 59–67, Oct. 30, 2006.
- [32D] G. L. Heileman, C. T. Abdallah, W. Shu, C. Christodoulou, and D. Knotts. Creating On-line Graduate Engineering Degrees at the University of New Mexico. to appear in Simposio Internacional Informática Educativa '06, León, Spain, Oct., 2006.
- [33D] T. Li, M. Martínez-Ramón, G. L. Heileman, and S. Posse. Automatic Outer Volume Suppression (OVS) Slice Placement for Proton-Echo-Planar-Spectroscopic-Imaging (PEPSI). International Society for Magnetic Resonance in Medicine 14th Scientific Meeting & Exhibition, Seattle, WA, May, 2006.

- [34D] D. Dhanekula, G. L. Heileman, and B. Horne. Content Spreading in Peer-to-Peer Networks. *Proceedings of IADIS International Conference on e-Commerce 2005*, Porto, Portugal, pp. 85–92, Dec. 15–17, 2005.
- [35D] P. A. Jamkhedkar and G. L. Heileman. The Role of Architecture in DRM Vendor Economics. *Proceedings of IADIS International Conference on e-Commerce 2005*, Porto, Portugal, pp. 358–362, Dec. 15–17, 2005.
- [36D] G. L. Heileman and P. A. Jamkhedkar. DRM Interoperability Analysis from the Perspective of a Layered Framework. *Proceedings of the Fifth ACM Workshop on Digital Rights Management*, Alexandria, VA, pp. 17–26, Nov. 7, 2005.
- [37D] M. Martínez-Ramón, V. Koltchinskii, G. L. Heileman, S. Posse. Pattern classification in functional MRI using optimally aggregated ADA-boosting. *11th Annual Meeting of the Human Brain Mapping Organization*, Toronto, Canada, June 12–16, 2005.
- [38D] M. Martínez-Ramón, V. Koltchinskii, G.L. Heileman, and S. Posse. Improved pattern classification in functional MRI using neuro-anatomically selective boosting. *13th Meeting of the International Society for Magnetic Resonance in Medicine*, Miami, FL, May 7-13, 2005.
- [39D] G. L. Heileman and W. Luo. How Caching Affects Hashing. *The Seventh Workshop on Algorithm Engineering and Experiments (ALENEX05)*, Vancouver, BC, pp. 141–154, Jan. 22, 2005.
- [40D] P. A. Jamkhedkar and G. L. Heileman. DRM as a Layered System. *Proceedings of the Fourth ACM Workshop on Digital Rights Management*, Washington, DC, pp. 11–21, Oct. 25, 2004.
- [41D] W. Luo and G. L. Heileman. Analysis of Hashing Performance Accounting for Modern Memory Hierarchies. *Proceedings of the 8th World Multi-Conference on Systemics, Cybernetics and Informatics*, Orlando, FL, Volume IX, pp. 23–28, July 18-21, 2004.
- [42D] W. Luo and G. L. Heileman. Information-theoretic Study of Hashing Algorithms. *Proceedings of the 8th World Multi-Conference on Systemics, Cybernetics and Informatics*, Orlando, FL, Volume II, pp. 185–190, July 18–21, 2004.
- [43D] W. Luo and G. L. Heileman. Chaotic Properties of Exponential Hashing. *Proceedings of International Conference on Cybernetics and Information Technologies, Systems and Applications*, Orlando, FL, Volume II, pp. 196-201, July 21–25, 2004 (selected as best paper in the session).
- [44D] G. L. Heileman and Y. Yang. The Effects of Invisible Watermarking on Satellite Image Classification. *Proceedings of the Third ACM Workshop on Digital Rights Management*, Washington, DC, pp. 120–132, Oct., 2003.
- [45D] H. Goldstein, G. L. Heileman, M. D. Heileman, T. Nicolakis, C. E. Pizano, B. Prumo, and M. Webb. Protecting Digital Archives at the Greek Orthodox Archdiocese of America. *Proceedings of the Third ACM Workshop on Digital Rights Management*, Washington, DC, pp. 13–26, Oct., 2003.
- [46D] V. Licks, F. Ourique, R. Jordan, and G. L. Heileman. Performance Loss of Dirty-Paper Codes for Additive White Gaussian Noise and Jitter Channels. *Proceedings of the 2003*

- IEEE Workshop on Statistical Signal Processing*, St. Louis, MO, pp. 217–220, Sept. 28–Oct 1, 2003.
- [47D] S. J. Verzi, G. L. Heileman, and M. Georgopoulos. Universal Approximation with Fuzzy ART and Fuzzy ARTMAP. *Proceedings of the IEEE-INNS-ENNS International Joint Conference on Neural Networks*, pp. 1987–1992, Portland, OR, July, 2003. (Invited paper)
- [48D] G. C. Anagnostopoulos, M. Bharadwaj, M. Georgopoulos, S. J. Verzi and G. L. Heileman. Exemplar-based Pattern Recognition via Semi-Supervised Learning. *Proceedings of the IEEE-INNS-ENNS International Joint Conference on Neural Networks*, pp. 2782–2787, Portland, OR, July, 2003. (Invited paper)
- [49D] W. Luo and G. L. Heileman. Comparison of Different Open Addressing Hashing Algorithms. *Proceedings of the 18th International Conference on Computers and Their Applications*, pp. 1–4, Honolulu, HI, March, 2003.
- [50D] W. Luo and G. L. Heileman. Characterizing Open Addressing Hash Functions. *Proceedings of the 18th International Conference on Computers and Their Applications*, pp. 21–24, Honolulu, HI, March, 2003.
- [51D] G. C. Anagnostopoulos, M. Georgopoulos, S. J. Verzi and G. L. Heileman. Reducing Generalization Error and Category Proliferation in Ellipsoid ARTMAP via Tunable Misclassification Error Tolerance: Boosted Ellipsoid ARTMAP. *Proceedings of the IEEE-INNS International Joint Conference on Neural Networks*, pp. 2650–2655, Honolulu, HI, May, 2002.
- [52D] S. J. Verzi, G. L. Heileman and M. J. Healy. A Survey of Techniques Designed to Improve Generalization in ARTMAP-based Networks. *Proceedings of the INNS-IEEE International Joint Conference on Neural Networks*, Honolulu, HI, May, 2002. (Invited paper)
- [53D] S. J. Verzi, G. L. Heileman, M. Georgopoulos and M. J. Healy. Off-line Structural Risk Minimization Applied to Fuzzy ARTMAP. *Proceedings of the INNS-IEEE International Joint Conference on Neural Networks*, Honolulu, HI, May, 2002.
- [54D] G. C. Anagnostopoulos, M. Georgopoulos, S. J. Verzi and G. L. Heileman. Boosted ellipsoid ARTMAP, *Proceedings of SPIE Vol. 4739 – Applications and Science of Computational Intelligence V*, K. L. Priddy, P. E. Keller and P. J. Angeline, Editors, pp. 74–85, Mar. 2002.
- [55D] W. Luo, G. L. Heileman and C. Pizano. Fast and robust watermarking of JPEG files. *Proceedings of the 5-th IEEE Southwest Symposium on Image Analysis and Interpretation*, pp. 158–162, Santa Fe, NM, Apr., 2002.
- [56D] W. Luo, G. L. Heileman and C. Pizano. JPEG domain watermarking. *Proceedings of SPIE Vol. 4684 – Medical Imaging 2002: Image Processing*, Milan Sonka, J. Michael Fitzpatrick, Editors, pp. 980–985, San Diego, CA, May, 2002.
- [57D] S. J. Verzi, G. L. Heileman, M. Georgopoulos and M. J. Healy. Rademacher Penalization Applied to Fuzzy ARTMAP and Boosted ARTMAP. *Proceeding of the INNS-IEEE International Joint Conference on Neural Networks*, pp. 1191–1196, Washington, DC, July, 2001.

- [58D] S. J. Verzi, G. L. Heileman, M. Georgopoulos, and M. J. Healy. Structural Risk Minimization and Fuzzy ARTMAP. *Proceedings of the Learning 2000 Conference*, Madrid, Spain, Oct., 2000.
- [59D] G. L. Heileman and C. E. Pizano. Technical challenges associated with protecting on-line images. *Proceedings of the Thirty-Fourth Asilomar Conference on Signals Systems, and Computers*, Monterey, CA, Oct., 2000.
- [60D] S. J. Verzi, G. L. Heileman, M. Georgopoulos, and M. J. Healy. Hierarchical ARTMAP. *Proceeding of the IEEE-INNS International Joint Conference on Neural Networks*, Vol. VI, pp. 41–46, Como, Italy, July 2000.
- [61D] S. J. Verzi, G. L. Heileman, M. Georgopoulos, and M. J. Healy. Boosting in ARTMAP networks. *Proceedings of the 4th World Multiconference on Systemics, Cybernetics and Informatics*, Vol. III, pp. 473–478, Orlando, FL, July 2000.
- [62D] C. E. Pizano, G. L. Heileman, C. T. Abdallah, and M. S. Pattichias, Are perfect watermarking schemes possible? *Proceedings of the 10th Mediterranean Electrotechnical Conference (MELECON 2000)*, Vol. 2 pp. 669–672, Cyprus, May, 2000.
- [63D] G. L. Heileman, C. E. Pizano, and C. T. Abdallah. Performance measures for image watermarking schemes. *Proceedings of the Fifth Baiona Workshop on Emerging Technologies in Telecommunications*, pp. 149–152, Baiona, Spain, Sept., 1999.
- [64D] G. L. Heileman, C. T. Abdallah, B. M. E. Moret, and B. J. Smith. Dynamical System Representation of Open Address Hash Functions. *Proceedings of the Tenth Annual ACM-SIAM Symposium on Discrete Algorithms*, pp. 919–920, Baltimore, Jan., 1999.
- [65D] V. Koltchinski, S. Efromovich, C. T. Abdallah, and G. L. Heileman. Tracking control of uncertain systems. *Proceedings of the 37th IEEE Conference on Decision and Control*, pp. 1867–1868, Tampa, FL, Dec., 1998.
- [66D] C. T. Abdallah, G. L. Heileman, and D. R. Hush. Statistical learning methods in the study of polynomial stability. *Proceedings of Learning'98*, Madrid, Spain, Sept., 1998.
- [67D] C. T. Abdallah, G. L. Heileman, L. H. Pollard, R. Jordán, and D. Docampo. The Ibero-American science and technology education consortium (ISTEC): Lessons of seven years of project-oriented partnership. *Proceedings of the International Conference on Engineering Education*, Rio de Janeiro, Brasil, Aug., 1998.
- [68D] C. E. Pizano and G. L. Heileman. A GIF image watermarking technique based on invariant measures. *Proceedings of the International Conference on Imaging Science, Systems, and Technology*, pp. 60–67, Las Vegas, NV, July, 1998.
- [69D] L. W. Irwin, G. L. Heileman, C. E. Pizano, C. T. Abdallah, and R. Jordán. The robustness of digital image watermarks. *Proceedings of the International Conference on Imaging Science, Systems, and Technology*, pp. 82–85, Las Vegas, NV, July, 1998.
- [70D] S. J. Verzi, G. L. Heileman, M. Georgopoulos, and M. J. Healy. Boosted ARTMAP. *Proceedings of the 1998 IEEE-INNS International Joint Conference on Neural Networks*, Vol. I pp. 396–401, Anchorage, AK, May 1998.

- [71D] I. Dagher, M. Georgopoulos, G. L. Heileman, G. Bebis, Fuzzy ARTVar: An Improved Fuzzy ARTMAP Algorithm for High Compression Ratio Neural Network Architectures. *Proceedings of the 1998 IEEE-INNS International Joint Conference on Neural Networks*, Vol. III pp. 1688–1693, Anchorage, AK, May 1998.
- [72D] I. Dagher, M. Georgopoulos, G. L. Heileman, G. Bebis, Ordered Fuzzy ARTMAP: A Fuzzy ARTMAP Algorithm with a Fixed Order of Pattern Presentation. *Proceedings of the 1998 IEEE-INNS International Joint Conference on Neural Networks*, Vol. III pp. 1717–1722, Anchorage, AK, May 1998.
- [73D] C. Abdallah, G. L. Heileman, and M. J. Healy. On the Stability of LAPART. *Proceedings of the 1997 IEEE International Conference on Systems, Man, and Cybernetics*, pp. 1356–1360, Orlando, FL, Oct., 1997.
- [74D] G. L. Heileman, M. Georgopoulos, M. J. Healy, and S. J. Verzi. The Generalization Capabilities of ARTMAP. *Proceedings of the ICNN IEEE 1997 International Conference on Neural Networks*, Vol. II pp. 1068–1071, Houston, TX, June, 1997.
- [75D] M. Georgopoulos, I. Dagher, G. L. Heileman, and G. Bebis. Properties of Learning in a Fuzzy ART Variant. *Proceedings of the ICNN IEEE 1997 International Conference on Neural Networks*, Vol. III pp. 2012–2016, Houston, TX, June, 1997.
- [76D] D. R. Hush, C. T. Abdallah, G. L. Heileman, and D. Docampo. Neural Networks in Fault Detection: A Case Study. *Proceedings of the American Control Conference*, pp. 918–921, Albuquerque, NM, June, 1997. (Invited paper)
- [77D] C. Abdallah, D. Arantes , G. L. Heileman, D. Hush, R. Jordán, R. Lotufo, N. Magotra, H. Pollard, E. Schamiloglu, R. Whitman, Interactive DSP Course Development/Teaching Environment. *Proceedings of the 1997 IEEE International Conference on Acoustics, Speech, and Signal Processing*, Vol. III pp. 2249–2252, Munich, Apr., 1997.
- [78D] J. W. Howse, C. T. Abdallah, and G. L. Heileman. Some Control Theoretic Issues in Neural Networks. *Proceedings of the International Conference on Neural Networks*, Plenary, Panel, and Special Sessions, pp. 205–209 Washington, DC, June, 1996. (Invited paper)
- [79D] J. W. Howse, C. T. Abdallah, and G. L. Heileman. Gradient and Hamiltonian Dynamics Applied to Learning in Neural Networks. *Advances in Neural Information Processing Systems 8*, Proceedings of the 1995 Conference, pp. 274–280, Dec., 1996.
- [80D] P. W. Goldberg, G. L. Heileman, and C. Abdallah. Complexity of Systems and Control Theory Problems. *IMACS 95 Workshop on Computer Algebra*, Albuquerque, NM, May 1995. (Abstract)
- [81D] M. Georgopoulos, J. Huang, and G. L. Heileman. A survey of learning results in ART architectures. *Proceedings of SPIE Vol. 2492 – Applications and Science of Artificial Neural Networks*, S. K. Rogers and D. W. Ruck, Editors, pp. 416–424, Orlando, FL, Apr., 1995. (Invited paper)
- [82D] G. L. Heileman, M. Georgopoulos, and J. Huang. A survey of learning results for ART1 networks. *International Conference on Neural Networks*, Vol II, pp. 1222–1225, Orlando, FL, June, 1994. (Invited paper)

- [83D] J. Huang, M. Georgopoulos, and G. L. Heileman. Properties of Learning in Fuzzy ART. *International Conference on Neural Networks, Vol II*, pp. 756–761, Orlando, FL, June, 1994.
- [84D] M. Georgopoulos, J. Huang, and G. L. Heileman. Properties of learning in ARTMAP. *World Congress on Neural Networks, Vol. II*, pp. 360–365, San Diego, CA, June, 1994. (Invited paper)
- [85D] J. A. Greenfield and G. L. Heileman. An overview of load balancing techniques for parallel implementation of finite element method problems. In *Proceedings of the Sixteenth Annual ISE Symposium*, pp. 22–31, Albuquerque, NM, May, 1994.
- [86D] J. W. Howse, C. Abdallah, G. L. Heileman, and M. Georgopoulos. An application of gradient-like dynamics to neural networks. *Southcon Conference Record*, pp. 92–96, Orlando, FL, March, 1994.
- [87D] G. L. Heileman, C. Abdallah, D. R. Hush, and S. Baglio. Chaotic probe strategies in open address hashing. *1993 International Symposium on Nonlinear Theory and its Applications*, pp. 1183–1188, Hawaii, Dec., 1993. (Invited paper)
- [88D] J. W. Howse, C. Abdallah, G. L. Heileman, and M. Georgopoulos. Total stability of dynamical neural networks. *1993 World Congress on Neural Networks, Vol. IV* pp. 280–284, Portland, OR, July, 1993.
- [89D] D. A. Verner, G. L. Heileman, K. G. Budge, and A. C. Robinson. Development of a generic field class library for large finite element and finite difference problems. *1993 Object Oriented Numerics Conference*, pp. 354–363, Sunriver, OR, Apr., 1993.
- [90D] C. S. Ho, J. J. Liou, M. Georgopoulos, G. L. Heileman, and C. Christodoulou, Design and simulation of adaptive resonance theory (ART) neural networks. *Proceedings of SPIE Vol. 1965 – Applications of Artificial Neural Networks IV*, S. K. Rogers, Editor, pp. 244–255, Orlando, FL, Apr., 1993.
- [91D] G. L. Heileman, M. Georgopoulos, and W. D. Roome. Concurrent object-oriented simulation of neural network models. *IEEE-INNS International Joint Conference on Neural Networks, Vol. II*, pp. 553–559, Baltimore, MD, June, 1992.
- [92D] M. Georgopoulos, G. L. Heileman, and J. Huang. The N - N - N conjecture in ART1. *IEEE-INNS International Joint Conference on Neural Networks, Vol. IV*, pp. 103–108, Baltimore, MD, June, 1992.
- [93D] J. A. Follick, G. L. Heileman, and D. R. Hush. A parallel implementation of the neocognitron neural network. In *Proceedings of the Fourteenth Annual ISE Symposium*, pp. 157–162, Albuquerque, NM, May, 1992.
- [94D] C. Wuerz, Jr., J. J. Liou, M. Georgopoulos, C. Christodoulou, and G. L. Heileman. Circuit design and simulation of adaptive resonance theory (ART) neural networks. In *Proceedings of the 23rd Annual Pittsburgh Conference on Modeling and Simulation*, Pittsburgh, PA, Apr., 1992.
- [95D] G. N. Bebis, M. Georgopoulos, G. M. Papadourakis, and G. L. Heileman. Increasing classification accuracy using multiple neural network schemes. In *Proceedings of SPIE Vol. 1709 – Applications of Neural Networks III*, S. K. Rogers, Editor, pp. 221–231, Orlando, FL, Apr., 1992.

- [96D] M. Georgopoulos and G. L. Heileman. The analysis of the augmented ART1 network. In *Proceedings of the IEEE-INNS International Joint Conference on Neural Networks*, Vol. III, pp. 2658–2663, Singapore, Nov., 1991.
- [97D] M. Georgopoulos, G. L. Heileman, and Juxin Huang. Properties of learning in ART1. In *Proceedings of the IEEE-INNS International Joint Conference on Neural Networks*, Vol. III, pp. 2671–2676, Singapore, Nov., 1991.
- [98D] G. L. Heileman and M. Georgopoulos. The augmented ART1 network. In *Proceedings of the IEEE-INNS International Joint Conference on Neural Networks*, Vol. II, pp. 467–472, Seattle, WA, July, 1991.
- [99D] G. L. Heileman and D. R. Hush. Parallel implementation of a neural network image classification algorithms. In *Proceedings of the Thirteenth Annual ISE Symposium*, pp. 176–180, Albuquerque, NM, May, 1991.
- [100D] G. L. Heileman, M. Georgopoulos, and W. D. Roome. Distributed implementation of ART1 networks. In *Abstracts of the International Conference on Neural Networks for Vision and Image Processing*, page 34, Wang Institute of Boston University, Tyngsboro, MA, May, 1991. (Abstract)
- [101D] M. D. Heileman, D. G. Linton, J. C. Winkler, S. Khajenoori, and G. L. Heileman. Simulating shuttle and derivative vehicle processing at KSC. In *Proceeding of the 28th Space Congress*, pp. 5–9–5–16, Cocoa Beach, FL 1991.
- [102D] G. L. Heileman, H. K. Brown, and M. Georgopoulos. Simulation of artificial neural network models using an object-oriented software paradigm. In *Proceedings of the IEEE-INNS International Joint Conference on Neural Networks*, Vol. II, pp. 133–136, Washington, DC, Jan., 1990.
- [103D] R. K. Gillis, G. L. Heileman, M. Georgopoulos, and H. R. Myler Software tools for development of artificial neural network models. In *Proceedings of the 1990 ASEE Annual Conference*, pp. 1840–1842, Toronto, Canada, June, 1990.
- [104D] G. L. Heileman, H. R. Myler, and M. Georgopoulos. Incorporating concurrent processes into the object-oriented simulation of neural networks. In M. B. Fishman, editor, *Proceedings of the Third Florida Artificial Intelligence Research Symposium*, pp. 1–5, Cocoa Beach, FL, Apr., 1990.
- [105D] M. Georgopoulos and G. L. Heileman. Neural network learning using a constrained weight space search. In M. B. Fishman, editor, *Proceedings of the Third Florida Artificial Intelligence Research Symposium*, pp. 284–288, Cocoa Beach, FL, Apr., 1990.
- [106D] T. Kasparis, G. Eichmann, M. Georgopoulos, and G.L. Heileman. Image pattern algorithms using neural networks. In *Proceedings of SPIE Vol. 1297 – Hybrid Image and Signal Processing II*, D. P. Casasent and A. G. Tescher, Editors, pp. 298–306, Orlando, FL, Sept., 1990.
- [107D] G. L. Heileman, M. Georgopoulos, and H. K. Brown. The minimal disturbance back-propagation algorithm. In *Proceedings of the IEEE-INNS International Joint Conference on Neural Networks*, Vol. II, page 625, Washington, DC, June, 1989. (Abstract)

- [108D] G. M. Papadourakis, G. L. Heileman, and M. Georgopoulos. A parallel implementation of the Hopfield network on GAPP processors. In *Proceedings of the IEEE-INNS International Joint Conference on Neural Networks, Vol. II*, page 582, Washington, DC, June, 1989. (Abstract)
- [109D] G. L. Heileman, M. Georgopoulos, H. R. Myler, and G. M. Papadourakis. Comparison of learning algorithms for multi-layer neural networks. In M. B. Fishman, editor, *Proceedings of the Second Florida Artificial Intelligence Research Symposium*, pp. 76–79, Orlando, FL, Apr., 1989.
- [110D] J. D. Charlton, G. L. Heileman, J. J. Brickley, and P. A. Genova. A servomotor controller for simulating human motion in the testing of rehabilitation equipment dynamics. In *Proceedings of the American Control Conference*, pp. 2064–2065, Seattle, WA, June, 1986.
- [111D] J. J. Brickley, P. A. Genova, G. L. Heileman, and J. D. Charlton. Development of digital control for machines designed to evaluate/rehabilitate muscular deficits. In *Proceedings of the American Control Conference*, pp. 1465–1468, Seattle, WA, June, 1986.

E. Talks and Other Presentations:

- [1E] G. L. Heileman. “Usage Management,” Melbourne/Space Coast Chapter of the Information Systems Security Association, Florida Institute of Technology, July 11, 2012.
- [2E] G. L. Heileman. Panel Member, “Internet Security and Privacy,” National Security Symposium, Global Cyber-Impact: Society and World Politics, University of New Mexico, March 31, 2011.
- [3E] G. L. Heileman. “Content Management in the Next Generation Internet.” Keynote Talk, *International DOI Foundation Annual Meeting*, Washington, D.C., June 21, 2007.
- [4E] G. L. Heileman, H. Jerez, P. A. Jamkhedkar and J. Khouri. The Indirect DRM Evaluation Architecture (IDEA). *5th International Workshop for Technical, Economic and Legal Aspects of Business Models for Virtual Goods*, Koblenz, Germany, Oct. 11–13, 2007.
- [5E] G. L. Heileman. “An Introduction to Digital Rights Management.” Nine hour doctoral student research seminar, Facultad de Informatica, Universidad Politécnica de Madrid, Spain, Nov 28–Dec 13, 2005.
- [6E] G. L. Heileman. “How Caching Affects Hashing.” Colloquium, Informatics Department, Universidad Complutense de Madrid, Spain, Dec 1, 2005.
- [7E] G. L. Heileman. “Digital Rights Management.” Three hour seminar series at Telefonica Research and Development, Madrid, Spain, Nov 17–18, 2005.
- [8E] G. L. Heileman. “A Consideration of Digital Rights Management and Enforcement as Applied to the Insider Threat Problem.” Advanced Countermeasures for Insider Threat Workshop, Invitational workshop sponsored by the National Institute of Standards and Technology in conjunction with the Advanced Research and Development Activity. Arlington, VA. Feb 3–4, 2003.

- [9E] G. L. Heileman. "Technical Challenges Associated with Protecting On-line Content." Colloquium, Dpto. de Teoría de la Señal, y Comunicaciones Ing. Telemática, Universidad de Valladolid, Mar 26, 2001.
- [10E] G. L. Heileman. "Technical Challenges Associated with Protecting On-line Content." Colloquium, Grupo de Teoría de la Señal, Universidad Carlos III de Madrid, Mar 23, 2001.
- [11E] G. L. Heileman. "Technical Challenges Associated with Protecting On-line Content." Computer Science Colloquium, University of Central Florida, Feb 15, 2001.
- [12E] G. L. Heileman. "Technical Challenges Associated with Protecting On-line Content." Albuquerque High-Performance Computing Center Colloquium, University of New Mexico, Nov 15, 2000.
- [13E] G. L. Heileman and C. E. Pizano. "Copy-protection Polices for Digital Images." *DIMACS Workshop on Management of Digital Intellectual Property*, Rutgers, NJ, April 18, 2000.
- [14E] G. L. Heileman, C. E. Pizano, and C. T. Abdallah. "Image Watermarking for Copyright Protection." *First Workshop on Algorithm Engineering and Experimentation*, Baltimore, Jan, 1999.
- [15E] G. L. Heileman. "Chaos, Dynamical Systems, and Hashing." Colloquium, Grupo de Teoria de la Señal, Universidad Carlos III de Madrid, Oct 29, 1998.
- [16E] G. L. Heileman. "Characterizing the Behavior of Open Address Hash Functions." Computer Science and Mathematics Colloquium, University of Nevada-Reno, Feb 5, 1998.
- [17E] C. Abdallah, G. L. Heileman, and O. Toker. "On the Complexity of Output Feedback Problems. *International Symposium on the Mathematical Theory of Networks and Systems*, St. Louis, MO, Jun 1996.
- [18E] B. J. Smith, G. L. Heileman, and C. Abdallah. "A Exponential Open Hashing Function Based on Dynamical Systems Theory." *Fourth Bayona Workshop on Intelligent Methods in Signal Processing and Communications*, Bayona-Vigo, Spain, Jun 1996.
- [19E] G. L. Heileman. "Parallel Computing: Models and Architectures," Universidad Tecnologica Equinoccial, Quito, Ecuador, Nov 14, 1995.
- [20E] G. L. Heileman. "Object-Oriented Design and C++," Departamento de Electrónica de la Pontificia Universidad Javeriana, Bogota, Colombia, Nov 28, 1994.
- [21E] G. L. Heileman. "Parallel Programming Models," Computational Science Workshop, Los Alamos National Laboratory, Jan 24, 1994.
- [22E] G. L. Heileman. "Parallel Paradigms," High Performance Computing for Small Business Workshop, Los Alamos National Laboratory, Oct 6, 1993.
- [23E] G. L. Heileman. "Programming High-Performance Computers," Summer 1993 Computational Science Workshop, Los Alamos National Laboratory, Jun 14, 1993.
- [24E] G. L. Heileman. "Programming High-Performance Computers," Spring 1993 Computational Science Workshop, Los Alamos National Laboratory, Feb 22, 1993.

- [25E] G. L. Heileman. "Parallel Architectures," 1992 Computational Science Workshop, Los Alamos National Laboratory, Jun 15, 1993.
- [26E] G. L. Heileman. "Parallel Simulation of Neural Network Models," Los Alamos National Laboratory C3 Division Seminar, Mar 21, 1991.