

KAREN A. PANETTA

E-mail: karen@computer.org

<http://www.eecs.tufts.edu/~karen>

Education:

Ph.D. *Northeastern University*, Boston, MA, Electrical Engineering

Minors: Robotics (vision and control) and Information Systems

Thesis Topic: Multiple Domain Concurrent Simulation of Interacting Experiments

M.S. *Northeastern University*, Boston, MA, Electrical Engineering

B.S. *Boston University*, Boston, MA, Computer Engineering

Career Highlights:

IEEE Fellow, Several awards for outstanding teaching and mentoring, creative curriculum development and outreach activities. 2011 President Obama awarded Karen the nation's highest award for Engineering, Science and Mathematics Education and Mentoring. 2010 Norm Augustine Award from the National Academies of Engineering and Science, American Association of Engineering Societies, 2011 Women of Vision Award from the Anita Borg Institute, 2013 IEEE Ethical Practices Award, 2013 New England Engineers Week Leadership Award, 2011 Harriet B. Rigas Award for outstanding female Educator. Recognized as the only educator in Massachusetts for Engineering Technology advancement by Mass High Tech Magazine, 2003. Dr. Panetta is the recipient of several NASA and National Science Foundation Research Grants, including the NSF CAREER Award. Conducted engineering outreach activities to over 80,000 children, parents and educators through the International Nerd Girls Program from 2000-2014. Co-founder of a Tufts University School of Engineering Start-up company, BA Logix, Inc. based on Dr. Panetta's intellectual property. Designed the App-E-Feat humanitarian challenge for engineers for the Clinton Global Initiative and IEEE-USA. First woman engineer granted tenure in the Tufts University Department of Electrical and Computer Engineering. Host of the "Ask Dr. Karen" web show which answers questions from students, parents and educators from around the world about Science, Technology, Engineering and Mathematics. STEM Advisor to Her Excellency, Joyce Banda, during her Presidency as the leader of Malawi.

Improved the Tufts' Graduate School of Engineering (US News) from #74 in 2012 to #68 in 2015.

Professional Experience:

**Tufts University, Department of Electrical and Computer Engineering,
Medford, MA**

Associate Dean for Graduate Education
Full Professor

2013-Present
2009-Present

<i>Associate Professor</i>	2001-2009
<i>Assistant Professor and NASA Langley Research Scientist, JOVE program</i>	1996-2001
<i>Visiting Professor</i>	1995-1996
<ul style="list-style-type: none"> • Responsible for managing all Graduate programs including, Ph.D., M.S., M.E., combined degree programs, certificate programs and post-baccalaureate programs. In this role, I develop recruitment and retention strategies, while supporting teaching and professional enrichment programs for all Graduate Students. 	2013-Present
<ul style="list-style-type: none"> • Director of the Simulation Research Laboratory at Tufts University. Current research areas include the development of image processing algorithms for enhancement of homeland security and biomedical applications, simulation, behavioral modeling and reliability analysis for multi-level systems including embedded processors and MEMS components. http://simlab.eecs.tufts.edu 	1995-Present
<ul style="list-style-type: none"> • Responsible for instructing computer and electrical engineering. Specific courses taught include: Digital Logic Circuits, Microprocessor Design, Embedded Systems, Robotics, Digital System Simulation and Testability, Analog Electronics, Operating Systems, Computer Architecture, Advanced Computer Architecture, VLSI, Circuit Theory, Computer Animation for Technical Communications. 	1994-Present
<ul style="list-style-type: none"> • Created the “Breaking the Stigmas and Stereotypes of Women in Engineering and Science: The Nerd Girls Project.” The program encourages young girls to pursue engineering and science careers and shows all young children that Engineers are cool and very talented. Website: http://www.nerdgirls.org. Articles on Dr. Panetta and her award winning team have appeared on the TODAY Show, in ElleGirl.Com, the Boston Globe, Newsweek Magazine, the IEEE Institute and ASEE Prism Magazine. 	2000
<ul style="list-style-type: none"> • Co-developer of the interdisciplinary Multimedia and arts minor. This was the first program in the United States that paired liberal arts students with engineers. 	1995-Present
<ul style="list-style-type: none"> • Advisor for the Tufts University IEEE and Society of Women Engineers Student Branches. 	1994-Present
<ul style="list-style-type: none"> • Created the Lincoln Laboratory Seminar Series for the Electrical and Computer Engineering Department (ECE) Graduate Seminar Program. 	2010
<ul style="list-style-type: none"> • Established the ECE department’s formal relationship with MIT Lincoln Laboratories with MIT Lincoln Labs Director Eric Evans and former Assistant Director Lee Upton. 	2010
<ul style="list-style-type: none"> • While teaching the ECE Graduate Seminar, all students contributed to an IEEE EBook for teaching engineering concepts to high school students to enhance graduate students’ communication and teaching skills. I also engaged all graduate students in the graduate seminar to become technical reviewers for SPIE Journals. Students created functional specifications for mobile applications for Non-Profit Organizations to help the organizations advance their social and humanitarian missions. 	2012
<ul style="list-style-type: none"> • Initiated the School of Engineering Internship Program and secured funding for the first full time School of Engineering Internship Coordinator. 	
<ul style="list-style-type: none"> • Developed the first interdisciplinary projects in “Sports Engineering” at 	1996

- Tufts University.
- Served as a Faculty Advisor for the Robotics Academy at Tufts University and Faculty Advisor for the IEEE Student Chapter, which sponsors the “Junk Yard Wars in Engineering” and the IEEE robotics competition. Developed the “Robot Escape!” and “Virtual Student Pets” design projects for the advanced digital design course within the Electrical and Computer Engineering department. Created the “binary in box” decoder project for the NSF funded “4 Schools for Women in Engineering project”. 1997
 - Appointed by former Tufts University President Lawrence S. Bacow to be a member of the Tufts University Task Force on Undergraduate Education. This committee of 5 faculty and 2 students was responsible for designing the future of the Tufts University Undergraduate education and proposed the Summer Scholars research program. 1999
- MACOM/Tyco Electronics, Lowell, MA**
Design Consultant 2000-Present
- Designed High-Speed 0C48 communications equipment utilizing SiGe and GaAs processes.
 - Participated in critical design reviews for projects involving mixed signal FPGA/microwave systems.
 - Assisted corporate R&D in evaluating outside contractor designs.
 - Served as the resident digital and mixed-signal system design consultant.
 - Designed interfaces to be compliant with IEEE LVDS standards.
- BA Logix, Inc., Medford, MA**
Chief Research Scientist 2007-2011
- Responsible for directing all research efforts in developing image and signal processing software and hardware systems for biomedical and security applications.
- General Scanning, Bedford, MA**
Consultant 1997-1999
- Project consultant for new embedded processor based thermal printer designs.
 - Evaluated real-time operating systems for new designs.
 - Reviewed project specifications including, electrical, diagnostic, and safety specifications.
- Digital Equipment Corporation, Hudson, MA**
Principal Software Engineer 1991-1992
- Developed the modeling, fault simulation and manufacturing test strategy for ALPHA 21064 RISC processor.
 - Performed simulation tools need analysis for Engineering,

Manufacturing and Test.

Fault Simulation Project Leader 1989-1991

- Directed research and development of fault simulation techniques for the ALPHA 21064 architecture. Responsible for directing a team of 5 engineers.
- Co-developer of the DECSIM corporate simulator. Tasks included developing concurrent software algorithms for advanced features and technical customer support for the product.

Senior Software Engineer 1987-1989

- Designed and implemented a Min-Max timing verification tool that efficiently removed common source ambiguity due to reconvergent fanout in digital circuits, while providing accurate glitch/spike reporting.

Diagnostic Engineer 1985-1987

- Developed Diagnostic tests for the VAX 8800.
- Wrote Diagnostic Cache Specifications for a Vector and Scalar processor and designed test hardware for a Vector cache.

Gillette Company, Boston, MA

Information Research Analyst 1984-85

- Design and implementation of department automation.
- Evaluated and planned courses and seminars presented within the company.

Professional Service:

Institute of Electrical and Electronic Engineers (IEEE)

IEEE Region 1 Pace Chair 2015

IEEE Boston Education Society Chair 2015

IEEE Awards Presentation and Publicity Committee Chair 2014-2015

IEEE-USA Nominations and Appointments Committee 2015

Women in Engineering (WIE) Editor-In-Chief 2007-Present

- Editor-In-Chief for the Award winning IEEE Women in Engineering Magazine. Direct a team of writers, staff and production team of 25 people and a subscription membership of over 40,000 individuals.

IEEE Systems, Man, and Cybernetics Society, Founding member of the IEEE 2007-Present

Technical Committee on Information Assurance, Multimedia & Mobile Intelligent Systems

IEEE Boston Section Editor of The Reflector Newspaper 2009-Present
Over 8900 subscribers

IEEE Critical Infrastructure and Security Initiative Committee 2007-Present

IEEE North Atlantic Test Workshop, Steering Committee Member 1999-Present

IEEE TePRA International Conference on Technologies for Practical Robot Applications, Steering Committee 2008-Present

IEEE Tufts University Branch Student Chapter Advisor 1994-Present

IEEE Educational Activities Board (EAB) Awards Chair 2013-2014

IEEE Educational Activities Board (EAB) Sections Educational Outreach Committee 2011-2014

IEEE Region 1 Education Outreach Coordinator 2011-2014

IEEE USA Vice-President of Communications and Public Relations 2013-2014

- Manage and coordinate IEEE-USA's communications, public awareness and recognition programs and associated budgets totaling over two million dollars. Supervised 15 professional staff and 100 engineers.
- Appoint committee chairs and volunteer editors for IEEE-USA communications, public awareness and recognition committees and publications with the concurrence of the IEEE-USA President.
- Serve on the IEEE-USA Board of Directors, the IEEE-USA Operations Committee and the IEEE-USA Finance and Budget Committee.
- Serve as an ex officio member of each of the communications, public awareness and recognition committees.
- Created the App-E-Feat competition, **Appfeat.org**, and mobile application matching system, where Non-Profit Organizations could post their needs for mobile applications and IEEE Engineers would be matched with the organization. This initiative was in conjunction with the Clinton Global Initiative, for which I served as the IEEE representative.
- Consultant to the Clinton Global Initiative commitment for Women Leading Women in Information Computing Technology (ICT) to "build a pipeline of women and girls entering into ICT and to enhance retention and advancement of women currently studying and working in ICT."
- Clinton Global Initiative WeTech Advisor. This initiative is to help more women and girls enter and succeed in technology careers in Africa, India and the U.S.

IEEE Homeland Security Technology Committee, Program Committee 2007-2012

IEEE Award Presentation and Publicity Committee Member 2010, 2012-2013

<i>IEEE Boston Section, Executive Board Member, Senior Past Chair</i>	2013
<i>IEEE Boston Section, Executive Board Member, Past Chair</i>	2012
<i>IEEE Educational Society, Central New England, Chair</i>	2004-2012
<i>IEEE Boston Section, Executive Board, Student Activities Chair</i>	2007-2011
<i>IEEE Awards Review Committee</i>	2009-2011
<i>IEEE Public Visibility Committee</i>	2011
<i>IEEE Boston Section, Executive Board Member, Chair</i>	2011
<ul style="list-style-type: none"> Managed the section's million dollar budget, supervised an executive board of 22 individuals and 32 society section chairs and two professional staff. 	
<i>IEEE Boston Section, Executive Board Member, Vice Chair</i>	2010
<i>IEEE Boston Section, Executive Board Member, Secretary</i>	2009
<i>IEEE Homeland Security Conference Session Chair</i>	2009
<ul style="list-style-type: none"> Session Chair for the Border and Maritime: Tunnel Detection, IEEE Boston, May 12, 2009. Session Chair for the Border and Maritime: Nonintrusive Contraband and WMD Detection, IEEE Boston, May 12, 2009. Session Chair for the Disaster Response: Situational Awareness (Personnel, Resources, Physical Situation), IEEE Boston, May, 12, 2009. 	
<i>IEEE Technology Management Conference, Steering Committee</i>	2009
<i>IEEE Boston Section, IEEE 125th Anniversary Celebration Committee</i>	May 11, 2009
<i>Women in Engineering (WIE) Committee Chair</i>	2007-2009
<ul style="list-style-type: none"> Director for the world's largest professional women's engineering and science organization. Over 450 WIE Chapter Chairs reported to Dr. Panetta in addition to two professional staff administrators. Dr. Panetta was responsible for driving this organization's strategic plan, overseeing a million dollar budget and developing programs to help attract, retain and support women in engineering at all stages of their careers. 	
<i>IEEE Boston Section, Executive Board Member, Treasurer</i>	2008
<i>IEEE Boston Section, Executive Board Member, Member-At-Large</i>	2005-2007
<i>IEEE North Atlantic Test Workshop, Session Chair</i>	1997-2006
<i>IEEE International Test Conference (ITC), Session Chair</i>	2003-2005

<i>IEEE International Test Conference (ITC), Program Committee Member</i>	2000-2005
<i>IEEE Educational Society, Central New England, Vice Chair</i>	2003-2004
<i>IEEE International Test Conference (ITC), Topic Coordinator for the “Path Delay Fault Test” Session</i>	2000-2003
<i>IEEE Embedded Fault Tolerant Workshop, Program Committee</i>	2000
<i>IEEE International Test Conference (ITC), Panel Coordinator</i>	2000
<ul style="list-style-type: none"> • Panel Coordinator for “Testing Challenges for MEMS” (micro-Electromechanical systems) 	
<i>IEEE North Atlantic Test Workshop, General Chair</i>	2000
<ul style="list-style-type: none"> • General Chair during May 25, 26, 2000 in Gloucester, MA 	
<i>IEEE North Atlantic Test Workshop, Vice General Chair</i>	1999
<i>IEEE North Atlantic Test Workshop, Program Chairman</i>	1997-1998
IEEE Networked Computing Conference (NCA), Program Committee Member	
International Society for Optics and Photonics (SPIE)	
<i>Program Committee Member for the Advanced Concepts for Intelligent Vision Systems (ACIVS) Conference</i>	2015
Society for Modeling & Simulation International (SCS)	
<i>Liaison between the Society of Computer Simulation (SCS) and the Advanced Simulation Technologies Conference</i>	1998-2004
<i>Program Committee Member, 35th Annual Simulation Symposium, San Diego, CA</i>	April 2002
<i>Program Committee Member, Communication Networks and Distributed Systems Modeling and Simulation conference (CNDS)</i>	2000
<i>Session Chair, Society for Computer Simulation 33rd Simulation Symposium</i>	2000
<i>Session Chair, Society for Computer Simulation 32nd Simulation Symposium</i>	1999
<i>Program Chair, Simulation Symposium, San Diego, CA</i>	1999
The European Association for Signal Processing (EURASIP)	
<ul style="list-style-type: none"> • <i>Guest Editor for Journal on Advances in Signal Processing</i> 	2014
US Senate Judiciary Committee	
<i>Expert Witness</i>	2013
<ul style="list-style-type: none"> • Testified as Expert Witness for a Senate Judiciary Committee Hearing on “How Comprehensive immigration Reform Should Address the Needs of Women and Families,” March 18, 2013. 	

Society of Women Engineers (SWE)

Society of Women Engineers (SWE) Tufts Student Chapter Advisor 2006-Present

Society of Women Engineers Roundtable on Practical Approaches to Attracting and Retaining Women in Science Technology, Engineering and Mathematics (STEM) Fields, Member Jan. 12, 2010

National Science Foundation (NSF)

NSF Girls Collaborative Champions Board Member 2011-2014

NASA

NASA/ASEE (American Society of Engineering Education) Committee

- *Developed a new joint grant initiative to replace the NASA/ASEE Summer Faculty Program*

External Advisory Committees

Associate Editor of the International Journal of Reliable Electronic Systems Design, International Press 2006-Present

“She’s So Boss”, a women entrepreneurs support organization, member of Board of Advisors 2014

UTSA External Advisory Committee for the Center on Simulations, Visualization and Real Time Computing (SiViRT) March 5, 2010

Boston University College of Engineering External Programs, Evaluator Aug. 21, 2009

Women in Technology Seminar Series, Session Chair

Judge of the Society for Technical Communications International Video Competition 1996-1998

Reviewing Responsibilities:

1. Reviewer for “Canals and Dams: Investigate Feats of Engineering”, by Donna Latham, Nomad Press, ISBN: 978-1-61930-165-8, 2013
2. Reviewer for “Explore Electricity”, by Carmella Van Vleet, Nomad Press, ISBN: 978-1-61930-180-1, 2013
3. NSF Site Visit Team, 2010
4. IEEE Fellows Review sub-committee, Computer Society, 2010
5. NSF Grant Proposal Review: SBIR and Circuit Simulation Proposals, 1998
6. Reviewer for Essentials of Electronic Testing for Digital Testing, by Michael Bushnell and Vishwani Agrawal, Kluwer Academic Press
7. Reviewer for National Science Foundation of Ireland
8. Reviewer for middle school text book, “Electricity” and “Electromagnetism”, by Ioannis Miaoulis and Martha Cyr, Pearson Education Publishers

9. Reviewer for “Structured Computer Organization”, by Andrew Tannenbaum, fourth edition, Prentice Hall Publishers
10. Reviewer for “Operating Systems”, by William Stallings, fourth edition, Prentice Hall Publishers
11. Reviewer of the book, “Power Electronics”, by K.C. Agrawal, 2008
12. Reviewer for “Software and Hardware Engineering”, by Frederick Cady and James Sibigtoth, Oxford University Press, 2006
13. Reviewer for “Microcontrollers: Motorola MC68HC12”, Oxford University Press, 2006
14. Reviewer for “Digital Logic and Applications”, by Parag Lala, Prentice-Hall Publishers, 2006
15. Reviewer for “The Handbook of Information Security, Data Compression”, John Wiley & Sons, Inc., 2006
16. Reviewer for “The Handbook of Information Security, Video Imaging Techniques”, John Wiley & Sons, Inc., 2006
17. Reviewer for Kluwer Academic Science Mathematics Series Journal
18. Technical Reviewer for:
 - 18.1. Reviewer for the IEEE Test Conference
 - 18.2. Reviewer for the IEEE Transactions on VLSI
 - 18.3. Reviewer for the IEEE Transaction on Computers
 - 18.4. Reviewer for the IEEE Transactions on Image Processing
 - 18.5. Reviewer for the IEEE Transactions on Signals and Systems
 - 18.6. Reviewer for the IEEE Computer
 - 18.7. Reviewer for the IEEE Embedded Fault Tolerant Systems Workshop
 - 18.8. Reviewer for 7th IEEE International Conference on Microelectronic Systems Education
 - 18.9. Reviewer for Society of Computer Simulation 31st Simulation Symposium, 1998

Teaching Activity:

1. ES 4: Introduction to Digital Logic
2. EE 11: Introduction to Analog Electronics
3. EE 14: Microprocessor
4. EE 26: Digital Logic Systems
5. EE 103: Introduction to VLSI Design
6. EE 120: Computer Animation for Technical Communications
7. EE 126: Computer Architecture
8. EE 128: Operating Systems
9. EE 192: Graduate Seminar Series
10. EE 194SIM: Embedded System Design
11. EE 202: Digital Systems Testing and Simulation with VHDL
12. EE 215: Computer Architecture and Organization

Departmental, College, and University Services:

<i>Chair of the Engineering Graduate Studies Committee</i>	2013-Present
<i>Elected Co-Chair of the Tufts University Executive Committee</i>	2011-2014
<i>Appointed as the Office of Equal Opportunity Liaison for the Tufts University School of Engineering</i>	2014
<i>Appointed to the President's Council on Diversity</i>	2014
<i>Elected to the Tufts University Committee on Committees and served as Chair</i>	2011-2013
<i>Served as the Tufts University School of Engineering Academic Standing Committee</i>	2006-2011
<i>Served as member of Committee on Committees</i>	2001-2003
<i>Served as Chair of Committee on Committees</i>	2004-2006
<i>Committee Member of the Experimental College</i>	1999-2001
<i>Chair of the Experiment College</i>	2001-2002
<i>Parents Weekend, School of Engineering Representative and Speaker</i>	1994-2004

Grants:

Award Date	Agency	Amount
2014	National Science Foundation, PI, ADVANCE PLAND: On-Trac A Career Transition Support Program for Women in Engineering, Co-Pis Dr. Valencia Koomson and Dr. Sinai Nathanson, PENDING	\$750,000.00
2014	National Science Foundation, Developing Female Leaders in STEM, Co-Pi with Dr. Tom Vandervelde and Dr. Sinai Nathanson	\$600,000.00
2010	MIT Lincoln Laboratory: Image Enhancement Algorithms for Program 1857	\$10,000.00
2004-2007	National Science Foundation, "A Unified Simulation and Fault Modeling Environment for Mixed Signal Systems Including MEMS Components". PI	\$560,814.00
1999-Present	Endowed Gomez Multimedia and Visualization Grant	\$377,334.00
2008	Textron Inc.	\$20,000.00
2008	The Mathworks Inc.	\$20,000.00
2008	Verizon Foundation	\$10,000.00
2008	INTEL Corporation	\$5,000.00
2007	Allied Minds Inc. Research Grant, "Boolean Function Derivatives for Edge Detection and Compression in Digital Images", PI, \$700,000: \$600,000 plus \$100,000 supplement in 2008	\$700,000.00
2007	Tycoelectronics Inc.	\$5,000.00
2006	Altera	\$4,480.00
2006	National Science Foundation Research Experiences for Undergraduates, PI	\$10,000.00

2005	National Science Foundation Research Experiences for Undergraduates, PI	\$10,000.00
2004	National Science Foundation, "Four Schools for Women in Engineering," Senior Staff	\$24,000.00
2004	National Science Foundation Research Experiences for Undergraduates, PI	\$10,000.00
2003	Nerd Girls: Breaking the Stigmas and Stereotypes of Women in Engineering and Science, Massachusetts Technology Collaborative	\$35,000.00
2002	Nerd Girls: Breaking the Stigmas and Stereotypes of Women in Engineering and Science, Tyco Electronics Inc.	\$25,000.00
2000	Intellectual Partnership for simulating the ALPHA 21064 RISC Architecture, National Science Foundation Industrial Matching with Compaq Computer	\$25,000.00
2000	Teradyne Inc., Support for Simulation Laboratory, Co-PI with Dr. Denis Fermental	\$26,000.00
2000	National Semi-Conductor, Support for Electronics Laboratory	\$100,000
2000	National Science Foundation Research Experiences for Undergraduates, PI	\$10,000.00
2000	National Science Foundation, Travel Grant	\$10,000.00
1999	National Science Foundation Intranet-II, Wilson Dilloway, Ioannis Miaoulis	\$500,000.00
1999	Selmer/ Steinway Networked Database, Co-PI with Dr. Alva Couch	\$24,000.00
1999	National Science Foundation Research Experiences for Undergraduates, PI	\$10,000.00
1999	National Science Foundation Equipment Grant, PI	\$20,000.00
1999	National Semi-Conductor, PI	\$10,000.00
1999	Mellon Research Grant, Tufts University - Research Leave	\$0.00
1998	National Science Foundation Research Experiences for Undergraduates, PI	\$10,000.00
1998	National Science Foundation Computing Research Association student support grant, PI	\$10,000.00
1998	Microtouch Corporation, Equipment grant, touch screen monitor, PI	\$2,885.00
1998	General Scanning Inc., Equipment grant, thermal printer, PI	\$2,300.00
1997	National Science Foundation, CAREER Award. "Robust Behavioral Fault Simulation Algorithms for Multilevel Simulation". MIP-9733584 PI	\$272,766.00
1997	Viacom Multimedia grant, Co-PI, with Dr. Alva Couch and Dr. Ioannis Miaoulis	\$475,000.00
1997	Selmer/ Steinway proposal for multimedia, Co-PI with Dr. Alva Couch	\$11,000.00
1997	Digital/INTEL equipment grant, PI, 4 machines @4k	\$16,000.00
1997	Tufts University, FRAC, Co-PI, with Dr. David Locke, "Music and Media"	\$2,000.00
1996	NASA JOVE (NASA/ Joint University Venture) Grant PI	\$186,000.00

1996	Beveridge Foundation, Co-P, Dr. Ioannis Miaoulis	\$75,000.00
1996	National Science Foundation, National Science Foundation, Planning Grant Award. "Compression and Interaction Algorithms for Modeling and Simulation Environments". MIP-9528194, PI	\$18,000.00
1996	Tufts University, FRAC, "Interactive Media Environments for Occupational Therapy"	\$2,200.00
1995	Massachusetts Cultural Council (MCC), FY96-EP-MED-0795, "Multimedia in the Classroom"	\$3,000.00
1995	Gloucester Cultural Council (GCC), "Multimedia in the Classroom Training"	\$300.00
1994	Tufts University, Summer School Development Fund, "Computer Animation for Technical Communications"	\$2,500.00
1991	Digital Equipment Corporation Research And Development, PI	\$500,000.00
	Total Funded	\$4,750,579.00
	Total Funded & Pending	\$5,500,579.00

Skills:

Programming Skills:

C, C++, MATLAB, PASCAL, FORTRAN, Visual Basic, BLISS, ADA, C-Shell, Bourne Shell, PERL, TCL, yacc, lex, VHDL, Verilog, Assembly for VAX, 21064, 68000, Intel 8085, MIPS, Motorola HC11/HC12.

Operating Systems:

UNIX, Linux, MS DOS, Macintosh, Windows 7, 95 NT, Solaris, SGI IRIX, X/Motif environments, VMS.

Software:

MAYA, MATLAB, IBM Data Explorer, Xilinx, Verilog, VHDL, Electric Image, Softimage, Adobe Photoshop, Adobe Premiere, Macromedia Director, Adobe Illustrator, MS Word, MS PowerPoint, MS Excel, MS Backoffice (SQL), Infini-D, Finale, Studio Vision, Lotus 1-2-3, SHARPE reliability modeling, SPICE, McCabe Structured Design and Testing tools, Mentor Graphics CASE analysis tool Suite.

Awards:

2014

- Soroptimist Ruby Award, 2014.

2013

- IEEE Ethical Practices Award, inaugural recipient, 2013.

- IEEE William E. Sayle Award for Achievement in Education, Oklahoma City, October 25, 2013.
- IEEE Outstanding Member for the Boston Section, 2013.
- Engineers Week, New England, Leadership Award, 2013.

2012

- Order of the Sons of Italy Public Service Award Law and Justice, May 6, 2012.
- Under Karen's leadership as Chair, the IEEE Boston Section won the "Outstanding Large Section Award," 2011.
- IEEE Certificate of Recognition for chairing IEEE Boston Section, 2012.
- Named IEEE Ambassador.

2011

- IEEE Certificate for Notable Services and Contributions towards the advancement of IEEE and the Engineering Professionals, 2011.
- IEEE Certificate of Appreciation for services as a Region 1 Section Chair, August 2011.
- IEEE Women in Engineering Affinity Group Certificate of Appreciation, Phoenix, Arizona, May 2011.
- NSF Presidential Award for Engineering, Science and Mathematics Education and Mentoring. 2010, Awarded in 2011.
- IEEE Education Society Harriet Rigas award for Outstanding Educator. 2011.
- Anita Borg Institute Women of Vision Award for Social Impact, 2011.

2010

- IEEE Major Educational Innovation Award 2010.
- IEEE EAB Award for Major Educational Innovation, June 26 2010.
- Norm Augustine Award from the National Academies of Engineering and Science, American Association of Engineering Societies, Washington DC, April 19, 2010.
- APEX awards for publication excellence, six time winner, for the IEEE Women in Engineering Magazine. She is the magazine's Editor-in-Chief.

2009

- State Commissionerate for the Disabled, Certificate of Appreciation, December 1, 2009.

2008

- IEEE Fellow, 2008
- "Be the Change", Massachusetts Conference for Women, chosen by first ladies, Mrs. Duval Patrick and Mrs. Thomas Menino, 2008.
- Galaxy Award for Outstanding Mentoring and Leadership to recruit young girls into Science and Engineering, Science Club for Girls, September 30, 2008.

2007

- 16th IEEE North Atlantic Test Workshop, Certificate for significant contribution. Boxborough, MA. May 2007.
- Regional Hero Award, Alt-Wheels Festival for renewable energy, Boston City Hall Plaza, 2007.
- IEEE Representative for the National Women's Hall of Fame induction, Weedsport, NY, 2007.

2006

- Women at Work Museum, recognized for “Outstanding Contributions to Women in Engineering and Science”, 2006.
- Cape Ann Historical Museum, selected as a featured artist for Cape Ann Blossoms Exhibit, entitled piece: “Our Lady of Good Voyage”, May 20, 2006.
- IEEE North Atlantic Test Workshop: recognition of dedication, May 2006.
- IEEE North Atlantic Test Workshop, Recognition Award for contributions to the workshop. Burlington, VT. May 2006.
- 15th IEEE North Atlantic Test Workshop, Certificate for significant contribution. Essex, VT. May 2006.
- Boston University Outstanding Engineering Alumni Award, April 2006.

2005

- 14th IEEE North Atlantic Test Workshop, Certificate for significant contribution. Essex, VT. May 2005.

2004

- 13th IEEE North Atlantic Test Workshop, Certificate for significant contribution. Essex, VT. May 2004.
- Larz Anderson Museum of Transportation, “Alt Wheels” Conference. Winner Best Educational Exhibit for the Nerd Girls Project, 2004.

2003

- International Test Conference: Technical Contributions, October 2003.
- 2003 International Test Conference Technical Paper Reviewer
- Massachusetts High Tech Magazine, “All Star” award for contributions to technology in MA, 2003.
- The Madeline and Henry Fischer Award for Engineering Teacher of the Year, Tufts University, 2003.

2002

- IEEE North Atlantic Test Workshop, Outstanding Contributions, Long Island, NY. May 2002.

2001

- IEEE North Atlantic Test Workshop, Certificate for significant contribution. Gloucester, MA. May 2001.
- International Test Conference: Outstanding Contributions, October 2001.
- IEEE Computer Society: Certificate of Appreciation, October 28, 2001

2000

- IEEE Micromouse Robotics Competition: advised the students for this competition. The team won second place in 2003, 2002, third place in 2001 and fourth place in 2000.
- International Test Conference: Technical Contributions, October 2000.

1999

- Tufts University Mentorship/Research Award, with Terry Orfanos, 1999.

1998

- Outstanding Contributions to NASA Research, 1998.
- NASA Excellence in Research Award, 1998.
- NASA Curriculum Development Award for EE202: “Digital System Testing and Simulation”, 1998.
- NASA Curriculum Development Award for the Tufts University Multimedia Minor, 1998.
- NASA Best Team Poster Presentation, JOVE conference, 1998.

1997

- NASA Excellence in Research Award, 1997.
- NASA Curriculum Development Award for “Animation for Technical Communications”, 1997.

1996

- NASA Langley Research Scientist Fellow, 1996.
- Massachusetts Interactive Media Council (MIMC), third place for student CD-ROM project on African Drum music, “Gahu of the Ewe” in collaboration with the Music department, 1996.

1994

- Electrical Women Round Table, Julia Kiene Fellowship, 1994.

1993

- Digital Equipment Corporation Fellowship, 1993.

1992

- Digital Equipment Corporation Recognition Award for “Outstanding Research and Performance”, 1992.

1985

- Boston University Alumni Association Outstanding Senior Award, 1985.

Honors of Advisees:

2011

- Anne E Borghesani Symposium Presentation by Lisa Pinals Electrical Engineering (Engineering Outreach Abroad, Australia), Supervised by Dr. Panetta, November 16, 2011. Lisa was also awarded an IEEE Graduate Fellowship for her Ph.D. program.

2010

- Sampathkumar Veeragathan, Dr. Panetta’s graduate research assistant, Tufts University Presidential Community Leadership award for his research project conducted under Dr. Panetta’s advisement, April 2010.

2009

- IEEE TePRA Student Robotics Competition, Dr. Panetta's students placed second and third in the competition, 2009.
- Sampathkumar Veeragathan, Dr. Panetta's graduate research assistant, IEEE Member Geographic Area Award for his research project conducted under Dr. Panetta's advisement. November 21, 2009.
- Sampathkumar Veeragathan, Dr. Panetta's graduate research assistant, IEEE President's Humanitarian Challenge finalist, 2009

2008

- Aaron Greenblatt, Dr. Panetta's undergraduate research assistant, National Science Foundation Fellowship, honorable mention, 2008.

2007

- Lauren S. Jones, Dr. Panetta's Nerd Girl Project leader, National Semi-Conductor Research Association, graduate fellowship award, 2007.

2006

- Ethan Danahy, Dr. Panetta's Ph.D. student was the recipient of the 2006 Graduate Student Research Award, 2006.

2004

- Ethan Danahy, Dr. Panetta's Ph.D. student was the recipient of the 2004 Outstanding Graduate contributor to Engineering Education Award, 2004.
- Barry Goldwater Scholarship, Thomas Baran, now a Ph.D candidate at MIT for his research work in Digital Signal Processing with Dr. Panetta, 2004.
- IEEE national student paper competition, Thomas Baran, second place for his research with Dr. Panetta, 2004.
- IEEE national student paper competition, Marco Enriquez, third place for his research with Dr. Panetta, 2004.

2002

- IEEE Best Student Paper Competition, Daniel Keefe, now a Ph.D. graduate from Brown University for his collaborative work on Dr. Panetta's NASA Grant, 2002.
- IEEE Silver Medal for the Tufts University IEEE Student Chapter web design, 2002.

2001

- Ethan Danahy, Graduate Research Fair, 3rd Place in October 2003 and 1st place in October 2001.
- Terry Orfanos, received the Outstanding Graduate Research Assistant Award from the Graduate School of Arts and Sciences. 2001.

Invited Talks:

2014

- Nerd Girls, Math Moves You, Keynote Speaker, Middlesex Community College, November 2, 2014.

- “Real World Engineering using MATLAB”, Mathworks, October 7, 2014.
- “Change the World: Inspiring future Engineers,” Dana Hall, Wellesley MA, September 9, 2014.
- USA Science and Engineering Festival, Speaker, “Beyond the Pink Aisle- Cool, Creative Ways, Inspiring Girls in STEM”, Washington DC, April 27, 2014.
- IEEE Integrated STEM Education Conference (ISEC 2014), Keynote, “Inspiring Innovation,” March 8, 2014.
- Empowering Nerd Girls, Brearley School, New York City, February 21, 2014.

2013

- USA Science Festival, Nifty Fifty Speaker, St. Gertrude High School, Virginia, December 10, 2013.
- Nerd Girls, Math Moves You, invited speaker, Middlesex Community College, November 17, 2013.
- IEEE Women in Engineering Annual Meeting, Panelist, Portland Oregon, August 2013.
- Order of the Sons of Italy 58th Annual Scholarship Awards, invited speaker, May 19, 2013.
- IEEE WIE/Google, Enhancing the Sustainability of Women in Technology, Speaker, January 23, 2013.

2012

- USA Science Festival, Nifty Fifty Speaker, Madeira School, Virginia, April 12, 2012.
- Microsoft Digigirlz Camp, Keynote Speaker, Cambridge MA, March 30, 2012.
- Next Generation of Experion Headlines Technology Advancements at Honeywell Users Group, Moderator. Houston, Texas. June 12, 2012.
- URL: https://www.honeywellprocess.com/en-US/news-and-events/Pages/pr_06152012_honeywell-puts-a-twist-on-sustain-ability-at-americas-users-group-symposium.aspx
- Math Moves You, Keynote Speaker, Middlesex Community College, October 21, 2012.
- Tri-Cities Engineers Week Banquet, Engineer of the Year Award Presentation, Keynote Speaker, Pasco Washington February 24, 2012.
- IEEE/EWEEK, Fort Huachuca, Arizona, Keynote Speaker.

2011

- IEEE Milestone Presentation to MIT Lincoln Labs, Opening Speaker, December 8 2011.
- Society of Women Engineers, Tufts University, Keynote Speaker, October 18, 2011.

2010

- IEEE Region 1 Northeast Industry Day, Speaker, September 24, 2010.
- National Science Foundation Center For Energy-Efficient Ultra-Dense Computing University of Michigan, Ann Arbor, Speaker, September 14, 2010.
- Boston University Career Night speaker, November 10, 2010.
- IEEE Women in Engineering Phased Array Conference Reception, co-speaker with Dr. Millie Dresselhaus, October 12, 2010.
- IEEE Region 1 Industry Day, Evening Keynote Speaker, Portsmouth, NH, September 25, 2010.
- “Human Visual System Image Processing Algorithms and Applications to Image Recognition Systems,” MIT Lincoln Laboratories, August 2010.

2009

- Microsoft Digigirlz Camp, Keynote Workshop Speaker, North Carolina, June 2009.
- IEEE 2009 Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC), “Fostering better use of the talent pool of Women in Engineering and Science,” Orlando, Florida, October 28, 2009.
- IEEE Women in Engineering Professional Development Seminar, Keynote Speaker, White Plains, NY, September 25, 2009.
- Society of Women Engineers, “Engineering with a Global Perspective,” April 4, 2009.
- Society of Women Engineers, Professional Night, Boston, MA, February 19, 2009.
- Rockport Middle School, “Kids to College,” April 15, 2009.
- Society of women’s Engineers Region F Conference, Speaker, 2009
- Wentworth Institute of Technology, Fourth Annual Women’s Leadership Conference, Keynote Speaker, March 21, 2009.

2008

- Delta Academy, Minority Women Engineering Day, April 10, 2008.
- Women at Work Museum, Envision 2020 Exhibit, keynote speaker, March 19, 2008.
- University of Central Florida, Women in EECS Luncheon, Keynote Speaker, October 30, 2008.
- Boston University 2008 Engineering Distinguished Alumni Awards, “Engineering and the Community,” Boston, MA. November 2008.
- IEEE Sections Congress 2008, Women in Engineering, Quebec City, Canada, 2008.
- Order of the Engineer, Ring Ceremony, Keynote Speaker, Boston University, February 22, 2008.
- National Academy of Engineering Diversity Forum, Boston, MA, February 14, 2008.
- IEEE Congress, Chennai, India, January 2008.
- Government of Dubai, Silicon Oasis Authority, January 2008.
- Women at Work Museum, Envision- Women Engineers, Keynote Speaker, March 19, 2008.
- IEEE RFID Conference, Las Vegas, Nevada, April 2008.
- Envision-Women Engineers, Attleboro High School, Keynote Speaker, March 19, 2008.

2007

- FIRST Robotics, Keynote Speaker, Nashua New Hampshire, December 4, 2007.
- International Joint conference on Neural networks, Women in Computational Intelligence Keynote Speaker, Orlando, Florida, August 17, 2007.
- IEEE Power Engineering Conference, Orlando, Florida, 2007.
- IEEE Women in Engineering Forum, Melbourne, Australia, March 2007.
- IEEE Women in Engineering Conference, University of New Hampshire, keynote speaker, April 10, 2007.
- IEEE Radar Conference, Boston, MA, April 17 2007.
- Clean Cities of Massachusetts, “Renewable Energy Systems on Thacher Island,” Boston, MA, January 30, 2007.

2006

- The Massachusetts Conference for Women: Session: The Next Generation of Global Architects”, Boston, MA, December 14, 2006.
- Society of Women Engineers, “Walks of Life Career Panel”, Medford, MA, December 12, 2006.

- Build Boston Conference, Women in Design, Session: Degrees of Connections, title: “Connecting Ideas with Actions and Inspiring Change.”, World Trade Center, Boston, MA, November 14, 2006.
- MACOM/ Tyco Electronics Professional Women’s Network distinguished speaker seminar, title: “Running Through the Finish Line: Experiences from the Nerd Girl Engineering Project”, Lowell, MA, November 10, 2006.
- Women at Work Museum, Defining the Decade Exhibit, title: Women in Transport: Visualizing Complex Data Sets from NASA Shuttle missions”, Attleboro, MA, November 4, 2006.
- Women at Work Museum, Dream it! Design it! Exhibit, title: “Art, Engineering and Alternative Energy.”, Attleboro, MA, August 2, 2006.
- SolarNow Inc., Greenergy Park renewable energy fair, “Solar Energy Engineering”, Beverly, MA, July 2006.
- Women at Work Museum, title: “The Nerd Girls: Breaking the Stigmas and Stereotypes of Women in Engineering and Science”, June 13, 2006.
- Rockport Public School, Girls and Technology, title: “Everyday Engineering”, Medford, MA, April 12, 2006.
- Peabody Public Schools, Welch Middle School, “Engineering for Everyone”, January 2006.
- Peabody Public Schools, West Middle School, “Visualization versus Animation”, January 2006.
- Welch Elementary School, Peabody, MA, February, 2006.

2005

- Clean Cities of Massachusetts, Department of Energy Resources: “Renewable Energy Designs for Thacher Island”, Boston, MA, February 2005.
- Thacher Island Association, title: “Renewable Energy Engineering Solutions for Remote Environments”, Rockport, MA, April 2005.
- Sandwich Public Schools, title: “Renewable Energy and Engineering”, Sandwich, MA, February 2005.
- Woodward School for Girls, title: “Girls in Engineering”, Quincy MA, January 2005.
- Clean Cities: Department of Energy Resources: Keynote speaker, 2005.
- Burke School, Peabody, MA, December 21, 2005.
- West Memorial School, Peabody, MA, December, 2005.
- Massachusetts Guidance Symposium for Engineering and Engineering Technology Conference, Boston Museum of Science, Cambridge, MA, November 10, 2005.

2004

- NSF PSET Project, title: “Inventing the Binary Box for teaching Digital Communications”, March 2004.
- Rockport Educational Foundation, Keynote Speaker, title: “Visualization of NASA Data”, April 24, 2004.
- Tufts University First Year Scholars program.
- Malden Middle School Outreach Program: “What Engineers Do”, April 2, 2004.
- Malden Middle School Outreach Program: “What Engineers Do”, April 16, 2004.

2003

- Larz Anderson Auto Museum: The Museum of Transportation, Brookline, MA, September 2003.

- Girls Inc., Smart Conference, Keynote Speaker, title: “Engineers, Ready to Take on any Feat!”, April 2003.
- Society of Women Engineers, Sports Engineering workshop for girls, May 2003.
- American Society of Engineering Education and NASA: title: “NASA Joint Ventures for Engineering Education”, Virginia, April 2003.

2002

- Somerville Middle School Outreach Program: “Animation for Engineering and Science”, July 19, 2002.
- Society of Women Engineers, title: “The Real World: Industry Perspectives on Engineering Careers”, April 5, 2002.
- Association for Women in Computing, “Animation for Technical Communications”, April 25, 2002.
- Tufts University First Year Scholars Program, “Multimedia and Engineering”, July 17, 2002.
- Discovery Museum: “Girls Get Set!” program, “Engineers Changing the World!”, July 26, 2002.
- Discovery Museum, Educator’s Open House, Acton, MA, July 26, 2002.
- Runkle School, Brookline, MA, November 1, 2002.

1999

- National Science Foundation, “CAREER Awardees Workshop”, invited presenter, 1999.

1998

- Boston University, College of Engineering. Title: “Multilevel Concurrent Simulation”, 1998.
- Syllabus Conference, Title: “Adding Multimedia to the Curriculum: Issues and Approaches”, July 1998.
- NASA JOVE Conference, Cocoa Beach Florida, Guest Speaker, 1998.
- Eta Kappa Nu Induction Ceremony, Keynote Speaker, 1998.

1997

- Society of Women engineers, keynote speaker, 1997
- University of Lowell, Electrical Engineering department. Title: “Stimulating Simulating”.
- Girls in Engineering NSF Summer Program, Keynote Speaker, 1997.
- Tufts University Sixth Annual Teaching Conference, Speaker and organizer Multimedia Workshop, 1997.

1995

- Tau Beta Pi Induction Ceremony, Keynote Speaker 1995.

Publications:

Patents

1. Karen A. Panetta, Shahan Nercessian, and Sos Agaian, "Methods and Apparatus for Image Processing and Analysis," 2014, patent pending.
2. Karen A. Panetta, Sos Agaian, and Chen Gao, "Systems and Methods for Image and Video Signal Measurement," 2013, patent pending.
3. G. Nagel, J. Jose, N. Matiasz, and K. Panetta, "Electrolarynx devices and uses thereof," 2013, patent pending.

4. Karen A. Panetta, Sos Agaian, and Aaron Greenblatt, "Methods and Apparatus for Image Restoration," US8285070, 10-09-2012, 2008.
5. Karen A. Panetta and Sos Agaian, "Methods and Apparatus for Visual Sub-Band Decomposition of Signals," US8285076, 03-27-2008, 2008.
6. Karen A. Panetta and Sos Agaian, "Methods and Apparatus for Using Boolean Derivatives to Process Data," 2007, patent pending.
7. Ernst G. Ulrich, Karen Panetta, and Micheal M. Gustin, "Method for Testing, Debugging, and Comparing Computer Programs Using Concurrent Simulation of Program Paths," US5291497 A, 03-01-1994, 1994.
8. Ernst G. Ulrich and Karen Panetta, "A Method for Multi-Domain and Multi-Dimensional Concurrent Simulation Using a Digital Computer," US5307479 A, 04-26-1994, 1994.

Authored Books, Book Chapters, and Edited Books

1. Zhou Yicong, Sos S. Agaian, Karen Panetta, and C. L. Chen, "Nonlinear Unsharp Masking for Enhancing Suspicious Regions in Mammograms," in *Computer-Aided Cancer Detection and Diagnosis: Recent Advances*, ed: SPIE, 2013.
2. Sos Agaian, Karen Panetta, and Shahan Nercessian, "Image Fusion Using a Parameterized Logarithmic Image Processing Framework," in *Image Fusion*, O. Ukimura, Ed., ed: InTech, 2011, pp. 139-165.
3. Yicong Zhou, Karen A. Panetta, and Sos S. Agaian, *Multimedia Encryption Using Recursive Sequences*: VDM Verlag Dr. Müller, 2008.
4. Contributor to the book Parag K. Lala, *Principles of modern digital design*. Hoboken, N.J.: Wiley-Interscience, 2007.
5. Contributor to the book Borivoje Furht, *Handbook of multimedia computing*. Boca Raton, Fla: CRC Press LLC, 1999.
6. Ernst G. Ulrich, Vishwani D. Agrawal, Jack H Arabian, and Karen Panetta (Contributor), *Concurrent and comparative discrete event simulation*. Boston; Dordrecht; London: Kluwer academic publ., 1994.
7. Contributor to the book, *Handbook of Communications*, CRC Press.
8. Karen Panetta, and others, *Four Schools for Women in Engineering*, National Science Foundation, "How to Grow a STEM Team", Co-author of this 417 page book.

Journals

1. Karen Panetta, Chen Gao, and Sos Agaian, "Human Visual Systems Inspired Underwater Image Quality Measures", accepted with minor revisions to *IEEE Journal of Oceanic Engineering*, 2015.
2. Karen Panetta, Arash Samani, and Sos Agaian, "Choosing the Optimal Spatial Domain Measure of Enhancement for Mammogram Images", *International Journal of Biomedical Imaging*, vol. 2014, p. 8, 2014.
3. Karen Panetta, Chen Gao, Sos Agaian, and Shahan Nercessian, "A New Reference Based Edge Map Measure", accepted with minor revisions to *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 2015.
4. Karen Panetta, Sos Agaian, Jean-Charles Pinoli, and Yicong Zhou, "Image Processing Algorithms and Measures for the Analysis of Biomedical Imaging Systems Applications", *International Journal of Biomedical Imaging*, vol. 2015, p. 1, 2015.
5. K. Panetta, A. Samani, and S. Agaian, "Choosing the optimal spatial domain measure of enhancement for mammogram images," *Int J Biomed Imaging*, vol. 2014, p. 937849, 2014.
6. Karen Panetta, Gao Chen, Agaian Sos, and Shahan Nercessian, "Nonreference Medical Image Edge Map Measure," *International Journal of Biomedical Imaging*, 2014.
7. Zhou Yicong, K. Panetta, S. Agaian, and C. L. P. Chen, "(n, k, p)-Gray code for image systems," *Systems, Man, and Cybernetics, Part B: Cybernetics, IEEE Transactions on*, vol. 43, pp. 515-

- 529, 2013.
8. K. Panetta, Gao Chen, and S. Agaian, "No reference color image contrast and quality measures," *Consumer Electronics, IEEE Transactions on*, vol. 59, pp. 643-651, 2013.
 9. S. C. Nercessian, K. A. Panetta, and S. S. Agaian, "Non-Linear Direct Multi-Scale Image Enhancement Based on the Luminance and Contrast Masking Characteristics of the Human Visual System," *IEEE Transactions on Image Processing*, vol. 22, pp. 3549-3561, Sep 2013.
 10. Yicong Zhou, Karen Panetta, Sos Agaian, and CL Chen, "Image encryption using P-Fibonacci transform and decomposition," *Optics Communications*, vol. 285, pp. 594-608, March 2012.
 11. Jean-Charles Pinoli, Karen Panetta, and Seiji Hata, "Special Section Guest Editorial: Quality Control by Artificial Vision," *Journal of Electronic Imaging*, vol. 21, pp. 021101-1-021101-1, 2012.
 12. Karen Panetta, Junjun Xia, and Sos Agaian, "Color image enhancement based on the discrete cosine transform coefficient histogram," *Journal of Electronic Imaging*, vol. 21, pp. 021117-1-021117-10, 2012.
 13. Shahan C. Nercessian, Karen A. Panetta, and Sos S. Agaian, "Multiscale image fusion using an adaptive similarity-based sensor weighting scheme and human visual system-inspired contrast measure," *Journal of Electronic Imaging*, vol. 21, pp. 021112-1-021112-13, 2012.
 14. Shahan C. Nercessian, Karen Panetta, and Sos Agaian, "Fusing images for contextual enhancement," *Electronic Imaging & Signal Processing*, August 2012.
 15. Karen A. Panetta, Sos S. Agaian, Shahan C. Nercessian, and Ali A. Almunstashri, "Shape-dependent canny edge detector," *Opt. Eng.* 50(8), 087008, vol. 50, pp. 087008-1-12, 2011.
 16. K. Panetta, Zhou Yicong, S. Agaian, and Jia Hongwei, "Nonlinear Unsharp Masking for Mammogram Enhancement," *Information Technology in Biomedicine, IEEE Transactions on*, vol. 15, pp. 918-928, 2011.
 17. K. Panetta, S. Agaian, Zhou Yicong, and E. J. Wharton, "Parameterized Logarithmic Framework for Image Enhancement," *Systems, Man, and Cybernetics, Part B: Cybernetics, IEEE Transactions on*, vol. 41, pp. 460-473, 2011.
 18. Shahan C. Nercessian, Karen A. Panetta, and Sos S. Agaian, "Multiresolution Decomposition Schemes Using the Parameterized Logarithmic Image Processing Model with Application to Image Fusion," *EURASIP Journal on Advances in Signal Processing*, vol. 2011, pp. 1-17, 11 October 2010.
 19. S. S. Agaian, K. A. Panetta, S. C. Nercessian, and E. E. Danahy, "Boolean derivatives with application to edge detection for imaging systems," *Systems, Man, and Cybernetics, Part B: Cybernetics, IEEE Transactions on*, vol. 40, pp. 371-82, Apr 2010.
 20. Karen A. Panetta, Eric J. Wharton, and Sos S. Agaian, "Logarithmic edge detection with applications," *Journal of Computers*, vol. 3, pp. 11-19, 11-19, Sep 2008.
 21. K. A. Panetta, E. J. Wharton, and S. S. Agaian, "Human visual system-based image enhancement and logarithmic contrast measure," *Systems, Man, and Cybernetics, Part B: Cybernetics, IEEE Transactions on*, vol. 38, pp. 174-88, Feb. 2008.
 22. S. S. Agaian, E. E. Danahy, and K. A. Panetta, "Logical System Representation of Images and Removal of Impulse Noise," *Systems, Man and Cybernetics, Part A: Systems and Humans, IEEE Transactions on*, vol. 38, pp. 1349-1362, Nov. 2008.
 23. S. S. Agaian, B. Silver, and K. A. Panetta, "Transform coefficient histogram-based image enhancement algorithms using contrast entropy," *IEEE Trans Image Process*, vol. 16, pp. 741-58, March 2007.
 24. Karen Panetta, Charles Dornbush, and Catherine Loomis, "A Collaborative Learning Methodology for Enhanced Comprehension using TEAMThink®," *Journal of Engineering Education*, vol. 91, pp. 223-229, 2014-05-10 2002.
 25. K Panetta, "Industrial/university liaison," *Electronic Design*, vol. 49, pp. 54-54, Sept. 17 2001.
 26. S. S. Agaian, K. Panetta, and A. M. Grigoryan, "Transform-based image enhancement algorithms with performance measure," *IEEE Transactions on Image Processing*, vol. 10, pp. 367-382, Mar

- 2001.
27. K. Panetta, J. Heller, and P. L. Montessoro, "System verification using multilevel concurrent simulation," *Micro, IEEE*, vol. 19, pp. 60-67, 1999.
 28. Karen Panetta, Elias S Manolakos, Edward Czeck, and Jamie Heller, "Multiple Experiment Environments for Testing," *Journal of Electronic Testing*, vol. 11, pp. 247-262, 1997/12/01 1997.
 29. K. Panetta, "Multimedia on Campus: New Multimedia Lab at Tufts University," *Professional Journal of the Special Interest Group on CD Applications and Technology (SIGCAT)*, vol. 10, 1996.
 30. K. Assiter, K. Panetta, A. Couch, and C. Currey, "Locating Anomalies in Large Data Sets," *Society for Computer Simulation Military, Government and Aerospace Simulation*, vol. 30, pp. 218-223, April 5, 1998.
 31. Ernst Ulrich, Karen Panetta, Jack Arabian, Michael Gustin, Vishwani D. Agrawal, and Pier Luca Montessoro, "Comparative and concurrent simulation of discrete-event experiments," *Journal of Electronic Testing: Theory and Applications (JETTA)*, vol. 3, pp. 107-118, 2011-11-11 1992.
 32. S. Demba, E. Ulrich, K. Panetta, and D. Giramma, "Experiences with concurrent fault simulation of diagnostic programs," *Computer-Aided Design of Integrated Circuits and Systems, IEEE Transactions on*, vol. 9, pp. 621-628, 1990.

Conferences

1. Chen Gao, Karen Panetta, and Sos Agaian, "Coefficients training methods for linear combinations of image attribute measures", submitted to the *IEEE International Conference on Image Systems and Techniques*, Macau, China, 2015.
2. Long Bao, Karen Panetta, and Sos Agaian, "New Image Denoising Algorithm Based on Both Correlation and Differential weighted Filters", submitted to the *IEEE International Conference on Image Systems and Techniques*, Macau, China, 2015.
3. A. Samani, K. Panetta, and S. Agaian, "Quality assessment of color images affected by transmission error, quantization noise, and non-eccentricity pattern noise", in *IEEE International Conference on Technologies for Homeland Security*, 2015.
4. Chen Gao, Karen Panetta, and Sos Agaian, "Robust template based corner detection algorithms for robotic vision", in *IEEE International Conference on Technologies for Practical Robot Applications*, 2015.
5. Long Bao, Karen Panetta, and Sos Agaian, "A No Reference Image Quality Measure using a Distance Doubling Variance", in *IEEE International Conference on Technologies for Practical Robot Applications*, 2015.
6. A. Samani, K. Panetta, and S. Agaian, "TDMEC, a new measure for evaluating the image quality of color images acquired in vision systems", in *IEEE International Conference on Technologies for Practical Robot Applications*, 2015.
7. Chen Gao, Karen Panetta, and Sos Agaian, "Color image retrieval and analysis using image color measures," in *Mobile Multimedia/Image Processing, Security, and Applications 2015*, Baltimore, MD, 2015, pp. 949702-949702-12. **(Best Paper Award)**
8. Chen Gao, Karen Panetta, and Sos Agaian, "Color image attribute and quality measurements," in *Mobile Multimedia/Image Processing, Security, and Applications 2014*, Baltimore, Maryland, USA, 2014, pp. 91200T-91200T-14.
9. A. Samani, K. Panetta, and S. Agaian, "Transform domain measure of enhancement -TDME - For security imaging applications," in *Technologies for Homeland Security (HST), 2013 IEEE International Conference on*, Waltham, MA, 2013, pp. 265-270.
10. Debashree Mandal, Karen Panetta, and Sos Agaian, "Face recognition based on logarithmic local binary patterns," in *Image Processing: Algorithms and Systems XI*, Burlingame, California, USA, 2013, pp. 865514-865514-12.
11. Chen Gao, Karen Panetta, and Sos Agaian, "Three dimensional alpha weighted quadratic filter based image color contrast enhancement," in *Mobile Multimedia/Image Processing, Security, and*

- Applications 2013*, Baltimore, Maryland, USA, 2013, pp. 875514-875524.
12. N. Davis, F. Pittaluga, and K. Panetta, "Facial recognition using human visual system algorithms for robotic and UAV platforms," in *Technologies for Practical Robot Applications (TePRA), 2013 IEEE International Conference on*, 2013, pp. 1-5.
 13. Chen Gao, K. Panetta, and S. Agaian, "No reference color image quality measures," in *Cybernetics (CYBCONF), 2013 IEEE International Conference on*, 2013, pp. 243-248.
 14. Shahan Nercessian, Karen A. Panetta, and Sos S. Agaian, "A multi-scale non-local means algorithm for image de-noising," in *Mobile Multimedia/Image Processing, Security, and Applications 2012*, Baltimore, Maryland, USA, 2012, pp. 84060J-84060J-10.
 15. Shahan Nercessian, Sos S. Agaian, and Karen A. Panetta, "Multi-scale image enhancement using a second derivative-like measure of contrast," in *Image Processing: Algorithms and Systems X; and Parallel Processing for Imaging Applications II*, Burlingame, California, USA, 2012, pp. 82950Q-1-82950Q-9.
 16. D. Mandal, K. Panetta, and S. Agaian, "Human visual system inspired object detection and recognition," in *Technologies for Practical Robot Applications (TePRA), 2012 IEEE International Conference on*, Woburn, MA, USA, 2012, pp. 145-150.
 17. Chen Gao, K. Panetta, and S. Agaian, "A new color contrast enhancement algorithm for robotic applications," in *Technologies for Practical Robot Applications (TePRA), 2012 IEEE International Conference on*, Woburn, MA, USA, 2012, pp. 42-47.
 18. Yicong Zhou, Karen Panetta, and Sos Agaian, "Parameterized Logarithmic Image Processing Model for Image Enhancement," presented at the IS&T / SPIE Electronic Imaging 2011: Image Processing: Algorithms and Systems IX, San Jose, CA, 2011.
 19. Junjun Xia, Karen Panetta, and Sos Agaian, "Comparative study of color image enhancement techniques," in *Mobile Multimedia/Image Processing, Security, and Applications 2011*, Orlando, Florida, USA, 2011, pp. 806316-806316-13.
 20. Junjun Xia, Karen Panetta, and Sos Agaian, "Color image enhancement algorithm based on logarithmic transform coefficient histogram," in *Image Processing: Algorithms and Systems IX*, San Francisco Airport, California, USA, 2011, pp. 78700Y-1-78700Y-10.
 21. S. Nercessian, K. Panetta, and S. Agaian, "Human visual system-based image fusion for surveillance applications," in *Systems, Man, and Cybernetics (SMC), 2011 IEEE International Conference on*, 2011, pp. 2687-2691.
 22. Shahan Nercessian, Sos S. Agaian, and Karen A. Panetta, "An image similarity measure using enhanced human visual system characteristics," in *Mobile Multimedia/Image Processing, Security, and Applications 2011*, Orlando, Florida, USA, 2011, pp. 806310-806310-9.
 23. Shahan Nercessian, Sos S. Agaian, and Karen A. Panetta, "Pixel- and region-based image fusion using the parameterized logarithmic stationary wavelet transform," in *Multimedia on Mobile Devices 2011; and Multimedia Content Access: Algorithms and Systems V*, San Francisco Airport, California, USA, 2011, pp. 78810U-1-10.
 24. Xia Junjun, K. Panetta, and S. Agaian, "Color image enhancement algorithms based on the DCT domain," in *Systems, Man, and Cybernetics (SMC), 2011 IEEE International Conference on*, 2011, pp. 1496-1501.
 25. Chen Gao, K. Panetta, and S. Agaian, "New edge detection algorithms using alpha weighted quadratic filter," in *Systems, Man, and Cybernetics (SMC), 2011 IEEE International Conference on*, 2011, pp. 3167-3172.
 26. Yicong Zhou, Karen Panetta, and Sos Agaian, "Human Visual System Based Contrast Enhancement for X-ray CT Images Using Alpha Weighted Quadratic Filter," in *IS&T / SPIE Electronic Imaging 2010: Image Processing: Algorithms and Systems VIII*, San Jose, CA, 2010.
 27. Yicong Zhou, Karen Panetta, and Sos Agaian, "Nonlinear Filtering for Image Enhancement using Order Statistics Decomposition," in *SPIE Defense, Security, and Sensing 2010: Mobile Multimedia/Image Processing, Security, and Applications 2010*, Orlando, FL, USA, 2010.
 28. Yicong Zhou, Karen Panetta, and Sos Agaian, "CT baggage image enhancement using a

- combination of alpha-weighted mean separation and histogram equalization," in *Mobile Multimedia/Image Processing, Security, and Applications 2010*, Orlando, Florida, USA, 2010, p. 77080G.
29. Yicong Zhou, K. Panetta, and S. Aгаian, "Nonlinear filtering for enhancing prostate MR images via alpha-trimmed Mean Separation," in *Systems Man and Cybernetics (SMC), 2010 IEEE International Conference on*, 2010, pp. 3698-3701.
 30. Yicong Zhou, K. Panetta, and S. Aгаian, "Human visual system based mammogram enhancement and analysis," in *Image Processing Theory Tools and Applications (IPTA), 2010 2nd International Conference on*, Paris, France, 2010, pp. 229-234.
 31. Yicong Zhou, K. Panetta, and S. Aгаian, "3D CT baggage image enhancement based on order statistic decomposition," in *Technologies for Homeland Security (HST), 2010 IEEE International Conference on*, 2010, pp. 287-291.
 32. Junjun Xia, Karen Panetta, and Sos Aгаian, "Wavelet transform coefficient histogram-based image enhancement algorithms," in *Mobile Multimedia/Image Processing, Security, and Applications 2010*, Orlando, Florida, USA, 2010, p. 770812.
 33. Yue Wu, Yicong Zhou, Joseph P. Noonan, Karen Panetta, and Sos Aгаian, "Image encryption using the Sudoku matrix," in *Mobile Multimedia/Image Processing, Security, and Applications 2010*, Orlando, FL, USA, 2010, p. 77080P.
 34. S. Veeraraghavan, K. Panetta, and S. Aгаian, "Web based integrated framework for security applications," in *Systems Man and Cybernetics (SMC), 2010 IEEE International Conference on*, 2010, pp. 1889-1895.
 35. Sampathkumar Veeraraghavan, Karen Panetta, and Sos Aгаian, "An edge detector based integrated database framework for security applications," in *Mobile Multimedia/Image Processing, Security, and Applications 2010*, Orlando, Florida, USA, 2010, p. 77080X.
 36. S. Nercessian, K. Panetta, and S. Aгаian, "Image fusion using the Parameterized Logarithmic Dual Tree Complex Wavelet Transform," in *Technologies for Homeland Security (HST), 2010 IEEE International Conference on*, 2010, pp. 296-302.
 37. S. Nercessian, K. Panetta, and S. Aгаian, "Multi-scale image fusion using the Parameterized Logarithmic Image Processing model," in *Systems Man and Cybernetics (SMC), 2010 IEEE International Conference on*, 2010, pp. 3930-3937.
 38. Li Lu, Yicong Zhou, Karen Panetta, and Sos Aгаian, "Comparative study of histogram equalization algorithms for image enhancement," in *Mobile Multimedia/Image Processing, Security, and Applications 2010*, Orlando, FL, USA, 2010, pp. 770811-1-11.
 39. Xia Junjun, K. Panetta, and S. Aгаian, "Image enhancement based on transform coefficient histogram shifting and shaping," in *Technologies for Homeland Security (HST), 2010 IEEE International Conference on*, 2010, pp. 488-494.
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5. "Ethical Honor: Panetta wins Distinguished Ethical Practices Award [Amperes: Current Affairs from Around the World]," in *Women in Engineering Magazine, IEEE* vol. 7, ed, 2013, pp. 31-31.
6. "IEEE WIE Congratulates IEEE Women in Engineering Magazine Editor-In-Cheif Dr. Karen Panetta: On Receiving the U.S. Presidential Award for Engineering and Science Education and Mentoring," in *Women in Engineering Magazine, IEEE* vol. 6, ed, 2012, pp. 7-7.
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Activities:

Consulting:

- NSF/NAE Equity Extension Services Project: ENGAGE: Engaging Students in Engineering 2009-2010.
- Camros Capitol.
- National Academy of Engineering.
- WEPAN - Women in Engineering Proactive Network.
- Westwood Public Schools.

Memberships:

- Institute of Electrical and Electronics Engineers (IEEE) (Fellow Member)
 - IEEE Systems, Man, and Cybernetics Society Membership
 - IEEE Computer Society Membership
 - IEEE Signal Processing Society Membership
 - IEEE Educational Society Membership
 - IEEE Women in Engineering Membership
 - IEEE Robotics and Automation Society Membership
- Society of Women Engineers (SWE) (Senior Member)
- Association for Computing Machinery (ACM)
 - SIGGRAPH Membership
- American Association for the Advancement of Science (AAAS)
- American Society for Engineering Education (ASEE)
- Order of Sons of Italy (OSIA)
- Society for Modeling & Simulation International (SCS) (Senior Member)
- Society of Hispanic Professional Engineers (SHPE)
- Association for Women in Science (AWIS)
- Eta Kappa Nu Engineering Honor Society, member
- Tau Beta Pi Honor Society, member
- Order of the Engineer
- Massachusetts Clean Cities, member
- Test Technology Technical Committee (TTTC), member

Community Service:

- Volunteer for Nursing Homes conducting flower arrangement activities with residents
- Present many outreach talks every year to k-12 students to promote engineering and science careers
- Women at Work Museum, Planning Committee for the Museum's new building
- Boston High School Science Fair Judge
- Education committee for the Gloucester, MA, historic Schooner, "Adventure"
- Member of the Friends of the Cape Ann Symphony
- Hostess for the Topsfield Fair, Flower Building, Topsfield, MA

Interests:

Trained in voice, piano, flute, violin and engineering for the benefit of humanity.
Special Effects, Animation, Music, Sailing, Robotics, Gardening, and Ichthyology.