

**S H R E E K A N T H A . M A N D A Y A M , P h . D .**  
ELECTRICAL & COMPUTER ENGINEERING • ROWAN UNIVERSITY  
GLASSBORO, NJ 08028 • (856) 256-5333

**RESEARCH:** Imaging, image processing, advanced visualization, sensor data fusion, nondestructive evaluation, biomedical image processing, digital signal processing, artificial neural networks and numerical electromagnetics.

**EDUCATION:** **Ph.D., Electrical Engineering** Iowa State University  
**(Communications and Signal Processing)** Ames, IA

Awarded: May 1996

Dissertation: *Invariance Transformations for Processing NDE Signals*

**M.S., Electrical Engineering** Iowa State University  
Ames, IA

Awarded: December 1993

Thesis: *Finite Element Modeling of Electrodynamic and Magnetostrictive Systems*

**B.E., Electronics Engineering** Bangalore University  
Bangalore, INDIA

Awarded: April 1990

Project: *Microprocessor Based Data Acquisition System for Wind Tunnel*

**EMPLOYMENT:** **Professor** July 2009 – Present

**Department Chair** July 2006 – Present

**Associate Professor** September 2001 – June 2009

**Graduate Studies Coordinator** September 2002 – June 2006

**Assistant Professor** September 1997 – August 2001

Rowan University, Electrical & Computer Engineering Dept. Glassboro, NJ

**Senior Research Associate, The National Academies** August – December 2005  
NASA Stennis Space Center. Mississippi

**Research Consultant** May - July 2005  
GE Global Research, John F. Welch Technology Center. Bangalore, INDIA

**Assistant Professor** August 1996 – August 1997  
Iowa State University, Electrical & Computer Engineering Dept. Ames, IA

**Research Associate** December 1995 – August 1997  
Iowa State University, Electrical & Computer Engineering Dept. Ames, IA

**Graduate Research Assistant** August 1991 – December 1995  
Iowa State University, Electrical & Computer Engineering Dept. Ames, IA

**Assistant Lecturer** September 1990 – March 1991  
R.V. College of Engineering, Electronics Engineering Bangalore, INDIA

**EXPERIENCE:** *Professor* July 2009 – Present

*Department Chair* July 2006 – Present

*Associate Professor* September 2001 – June 2009

*Assistant Professor* September 1997 – August 2001

*Rowan University, Electrical & Computer Engineering Dept. Glassboro, NJ*

Since my appointment as Department Chair, the Electrical & Computer Engineering program at Rowan University has been consistently ranked in the top-10 in the nation by *US News & World Report* (for programs whose highest degree is a Masters').

The ECE department led the College in annual research expenditures (\$421,127 for FY-2007) and saw an annual increase of 16% in its operating expenditures in FY-2007.

The ECE department saw an expansion of its research lab facilities by over 3,200 sq ft with the opening of the South Jersey Technology Park. As an anchor tenant, ECE faculty and graduate students currently lead the College in occupancy and activity at the new facility.

Our targeted student recruitment campaign yielded the largest incoming freshman class in 2007 – we achieved an unprecedented yield of 48% of all accepted students.

Since I was hired as the first faculty member in the Department of Electrical & Computer Engineering at the newly created College of Engineering at Rowan University, I have led the development of a laboratory-based curriculum and have designed unique collaborative learning environments. I have developed laboratory experiences for teaching graduate and undergraduate courses in communications, digital image processing, artificial neural networks and engineering electromagnetics.

At Rowan, I have secured research funding of **\$3,266,440 (as PI: \$1,731,088)** from the National Science Foundation, NASA, US Department of Energy, National Institutes of Health, US Navy NSWC, US Army TACOM, Water Environment Research Foundation, American Institute of Cancer Research, New Jersey DOT, etc.

I have developed a state-of-the-art **Imaging & Nondestructive Evaluation Laboratory** with X-ray, optical, ultrasonic, acoustic-emission, magnetic and thermal interrogation and advanced visualization (VR) capability.

I have established research and development collaborations with several local (e.g. Physical Acoustics Corp., Electric Mobility) and national (e.g. Exxon-Mobil, Shell Oil) industry.

As Assessment Activities Coordinator for the ECE department I have developed novel program assessment tools. I led the organization of a successful ABET (EC 2000) Accreditation visit for the ECE department in October 2000 and was Department Chair during the successful September 2006 visit.

As the ECE Graduate Studies coordinator, I recruited and enabled the largest increase to date in the size of our graduate program. The ECE department leads the College in extra-mural funding for graduate student support.

***Assistant Professor***

***August 1996 – August 1997***

***Research Associate***

***December 1995 – August 1997***

***Iowa State University***

***Ames, IA***

Taught freshman engineering course with computational laboratory in C and graduate course in digital image processing.

Managed research projects, wrote proposals, generated technical reports, supervised research of graduate students (areas include digital signal processing, wavelet neural networks, automatic pattern recognition and interactive computer graphics).

Conducted research in the following areas, applied to nondestructive evaluation: wavelet neural networks, texture-based image processing

***Graduate Research Assistant***

***August 1992 – December 1995***

***Iowa State University***

***Ames, IA***

Co-taught the following courses: communications systems (junior level), pattern recognition principles (graduate level), electrical circuits (sophomore level)

Developed novel signal processing algorithms and invariant pattern techniques for characterizing gas pipeline inspection data. Project funded by the Gas Research Institute, Chicago, IL.

Designed neural network based models for characterizing hysteresis curves of railroad wheel samples.

Optimized a 3-D finite element code for computing the current density profile inside a railroad wheel, for the Cray C-90 supercomputer.

Assisted in the development of an automated test system for scanning the wheel for defects. Project supported by the Association of American Railroads.

Developed a computationally efficient numerical model for simulating electrodynamic vibration absorbers and magnetostrictive actuators. Project funded by the Carver grant, Iowa State University.

Designed a phase shifter network for an inflatable spherical antenna for lunar astronomy. Project sponsored by NASA.

Investigated spectral estimation techniques for discrete time stochastic processes.

Developed Monte Carlo methods to model electromagnetic NDE phenomena.

***Assistant Lecturer***

***September 1990 – March 1991***

***R. V. College of Engineering***

***Bangalore, INDIA***

Taught freshman and sophomore courses in electronic devices and circuits, microelectronics, electromagnetics.

## **TEACHING EXPERIENCE**

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### **Digital Image Processing**

**F'09, F'07, S'06, F'03, F'01, S'99**

Taught one section of the graduate/senior-elective project-based course in digital image processing.

### **Artificial Neural Networks**

**F'08, F'06, F'04, S'02, S'00, F'98**

Taught one section of graduate/senior-elective project-based course in artificial neural networks.

### **Electrical Communications Systems S'09, S'08, S'07, S'06, S'04, S'03, S'02, S'01, S'00, S'99**

Taught one section of junior-core lab-lecture course in analog and digital communications systems and circuits.

### **Digital Communications**

**F'02**

Taught one section of graduate/senior-elective lab-lecture course in advanced digital communications.

### **Computer Architecture II: Specialized**

**F'01**

Taught two sections of senior-core lab-lecture course in specialized computer architectures.

### **Engineering Electromagnetics I**

**F'04, F'02, F'00, F'99, F'98**

Taught two sections of junior-core lab-lecture course in electrostatics, magnetostatics and quasistatics.

### **Engineering Frontiers: Seminar**

**S'04, S'00**

Coordinated senior-core seminar course.

**Principles of Nondestructive Evaluation** **F'99**  
Taught one section of the graduate/senior-elective project-based course in nondestructive evaluation.

**Networks II** **S'98**  
Taught one section of sophomore-core lab-lecture course in AC circuits.

**Sophomore Engineering Clinic II** **S'98**  
Taught one project module of sophomore level design course – students developed a portable NDE device for aircraft skin inspection.

**Networks I** **F'97**  
Taught one section of sophomore-core lab-lecture course in DC circuits.

**Statics** **F'97**  
Taught one section of sophomore-core statics course.

## **PROPOSAL AND GRANT ACTIVITY**

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### **Funded (Total at Rowan: \$3,266,440; As PI: \$1,731,088)**

1. “Acquisition of an Immersive Virtual Reality System for the South Jersey Technology Park at Rowan University,” **Principal Investigator**, *National Science Foundation*, Award Amount: **\$392,000**, 2008-2011.
2. “Intelligent Valves for Integrated Systems Health Management,” **Principal Investigator**, *NASA – Stennis Space Center*, Award Amount: **\$100,000**, 2008-2010.
3. “Multi-Sensor Data Fusion for Integrated Systems Health Management (ISHM) in a Rocket Engine Test Stand,” **Principal Investigator**, *NASA – Stennis Space Center*, Award Amount: \$30,000, 2009-2010.
4. “Evolutionary Integrated Awareness Platform for Integrated Systems Health Management (ISHM),” **Principal Investigator**, *NASA – Stennis Space Center*, Award Amount: **\$60,000**, 2008-2010.
5. “Development of Video Sensor Systems for Monitoring Ship-Board Equipment,” **Principal Investigator**, US Navy – Naval Surface Warfare Center, Award Amount: \$50,000, 2009-2010.
6. “Development of a Virtual Reality Simulation of the Flooding Characteristics for the Cramer Hill Neighborhood in the City of Camden,” **Principal Investigator**, Cooper’s Ferry Development Association, Award Amount: \$68,971, 2009.
7. “Development of a Video Sensors Laboratory Protocol for Monitoring Ship-Board Systems,” **Principal Investigator**, *US Navy – Naval Surface Warfare Center*, Award Amount: **\$50,000**, 2008-2009.
8. “Virtual Reality Visualization for an Integrated Systems Health Management of the E-3 Test Facility,” **Principal Investigator**, *NASA – Stennis Space Center*, Award Amount: **\$90,000**, 2007-2010.
9. “Integrated Systems Health Management Visualization Interfaces,” **Principal Investigator**, *NASA – Stennis Space Center*, Award Amount: **\$4,500**, 2006-2007.
10. “Acquisition of a Desktop, High-Resolution, Three-Dimensional X-Ray Computed Tomography (CT) System,” **Principal Investigator**, *National Science Foundation*, Award Amount: **\$238,698**, 2004-2006.

11. "A Data Fusion System for the Non-Destructive Evaluation of Non-Piggable Pipes," **Principal Investigator**, *US Department of Energy*, Award Amount: **\$215,866**, 2002-2005.
12. "Acquisition of a Portable Large Scale Visualization System for Nondestructive Evaluation," **Principal Investigator**, *National Science Foundation*, Award Amount: **\$171,292**, 2002-2005.
13. "Development of an Acoustic Emission Test Platform with Biaxial Stress Loading System," Principal Investigator, *ExxonMobil Inc.*, Houston, TX, Award Amount: **\$41,607**, 2002-2004.
14. "An Ensemble Based Incremental Learning Algorithm for Early Diagnosis, Confidence and Severity Estimation of Alzheimer's Disease," Co-Principal Investigator, *National Institutes of Health*, Award Amount: \$343,075, 2003-2006.
15. "Three Dimensional Characterization and Modeling of Angular Materials," Co-Principal Investigator, *National Science Foundation*, Award Amount: \$146,000, 2003-2005.
16. "Digital Imaging Across the Curriculum," Co-Principal Investigator, *National Science Foundation*, Award Amount: \$74,998, 2003-2005.
17. "Development of an Advanced Visualization Protocol for Simulating Ship-Board Fuel Cell Systems," **Principal Investigator**, *Naval Surface Warfare Center, Carderock Division*, Award Amount: **\$11,880**, 2004.
18. "Development of a Magnetic Flux Density Mapping System for Internal Magnetic Shields," **Principal Investigator**, *Thomson Consumer Electronics*, Lancaster, PA, Award Amount: **\$59,169**; 2001 – 2002.
19. "Advanced Technology Vehicle Demonstrators," Co-Principal Investigator, New Jersey Department of Transportation/ New Jersey State Police, Award Amount: \$350,000; 2001 – 2002.
20. "Ultrasonic Based Defect Characterization in Wastewater Concrete Pipelines Using Invariance Transformation Techniques," **Principal Investigator**, *Water Environment Research Foundation*, Award Amount: **\$70,206**; 1999 – 2000.
21. "Development of a Configurable Thermal Imaging System for Nondestructive Evaluation of Materials," Co-Principal Investigator, *National Science Foundation*, Award Amount: \$91,935; 2000 – 2002.
22. "Dietary Patterns and Breast Density," Co-Investigator, *American Institute of Cancer Research*, Award Amount: \$55,000; 2000 – 2002.
23. "Communications, Signal Processing and VLSI: Education Under a Common Framework," Co-Principal Investigator, *National Science Foundation*, Award Amount: \$74,939; 2001 – 2003.
24. "Hands on the Human Body," Co-Principal Investigator, *National Science Foundation*, Award Amount: \$162,326; 2001 – 2003.
25. "Macroelectronics: A Gateway to Electronics Education," Co-Principal Investigator, *National Science Foundation*, Award Amount: \$74,987; 1999 – 2000.
26. "Development of a Position Tracking System for a Handheld Scanner," **Principal Investigator**, *Physical Acoustics Corporation and US Army TACOM*, Award Amount: **\$18,000**; 1999.
27. "Low Cost Automated Crash Notification System," Co-Principal Investigator, *New Jersey Department of Transportation*, Award Amount: \$111,092; 1999 – 2000.
28. "Detection and Characterization of Stress-Corrosion Cracks in Gas Pipelines," **Principal Investigator**, *The Lindback Foundation*, Award Amount: **\$15,000**; 1998.

29. “An Artificial Neural Network for Characterizing Residual Stress from Photothermal NDE Shearography Images,” **Principal Investigator**, *Karta Technologies, Inc.*, San Antonio, TX, Award Amount: **\$7,500**; 1998.
30. “A Venture Capital Fund to Encourage Rapid Product Development with Multidisciplinary E-Teams in the Junior Engineering Clinic II,” Co-Principal Investigator, *National Collegiate Inventors and Innovators Alliance/Lemelson Foundation*, Award Amount: \$30,000; 2000 – 2002.
31. “A Venture Capital Fund to Encourage Rapid Product Development with Multidisciplinary E-Teams in the Junior Engineering Clinic II,” Co-Principal Investigator, *National Collegiate Inventors and Innovators Alliance/Lemelson Foundation*, Award Amount: \$11,000; 1998 – 2000.
32. “A Venture Capital Fund to Promote Rapid Product Development in the Engineering Clinic at Rowan University,” Co-Principal Investigator, *National Collegiate Inventors and Innovators Alliance/Lemelson Foundation*, Award Amount: \$10,000; 1998 – 2000.
33. “Development of a Software Validation Protocol for the IBM AS400 System,” **Principal Investigator**, *Electric Mobility*, Award Amount: **\$5,000**; 2000.
34. “Development of Numerical Models for a Maglev System,” **Principal Investigator**, *Cooper Grant*, Award Amount: **\$2,500**; 2000.
35. “A Data Fusion Imaging System for In-Line NDE of Ferromagnetic Objects,” **Principal Investigator**, *Rowan University SBR Grant*, Award Amount **\$2,700**; 1997 – 1998.
36. “A Real-Time Computer Vision/Object Recognition System,” **Principal Investigator**, *Rowan University Sponsored Creative Research Activity Grant*, Award Amount: **\$4,700**; 1998.

## PUBLICATIONS

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### Manuscripts in Preparation

1. J. Oagaro and S. Mandayam, “Multi-sensor data fusion using geometric transformations for the nondestructive evaluation of gas transmission pipelines,” in preparation for submission to *Nondestructive Testing & Evaluation International*.

### Manuscripts in Review

2. M. Bloom, M. Russell, A. Kustau, S. Mandayam and B. Sukumaran, “Measurement of porosity in granular particle distributions using adaptive thresholding,” in review, *IEEE Transactions on Instrumentation and Measurement*.
3. N. Das, D. Barrot, P. Giordano, A. K. Ashmawy, S. Mandayam and B. Sukumaran, “Imaging and discrete element modelling of granular material,” in revisions requested by the reviewers, *Géotechnique*.

### Manuscripts Accepted for Publication

4. P. Giordano Jr., J. Corriveau, M. Bloom, G. D. Lecakes, Jr., S. Mandayam and B. Sukumaran, “Imaging systems and algorithms for the numerical characterization of 3D shapes of granular particles,” accepted for publication, *IEEE Transactions on Instrumentation and Measurement*.
5. M. Russell, G.D. Lecakes, Jr., S. Mandayam and S. Jensen, “Diagnostic models for sensor measurements in rocket engine tests,” accepted for publication, *IEEE Sensors Conference*, October 2009.

6. P. Jansson, R. P. Ramachandran, J. L. Schmalzel and S. Mandayam, "Creating an agile ECE learning environment through engineering clinics," accepted for publication, *IEEE Transactions on Education* (to appear August 2010).

#### Archival Peer-reviewed Publications on IEEE Xplore

7. G. D. Lecakes, Jr., J. A. Morris, J. L. Schmalzel and S. Mandayam, "Virtual reality environments for integrated systems health management of rocket engine tests," *IEEE Transactions on Instrumentation and Measurement*, Volume 58, Issue 9, Sept. 2009 Page(s):3050 – 3057  
Digital Object Identifier 10.1109/TIM.2009.2016823
8. M. Bloom, M. Russell, A. Kustau, S. Mandayam and B. Sukumaran, "An X-ray computed tomography technique for the measurement of packing density in granular particles," *Instrumentation and Measurement Technology Conference Proceedings, 2009. I2MTC '09. IEEE*, 5-7 May 2009 Page(s):74 – 79  
Digital Object Identifier 10.1109/IMTC.2009.5168419
9. M. Russell, G. D. Lecakes and S. Mandayam, "Acquisition, interfacing and analysis of sensor measurements in a VR environment for integrated systems health management in rocket engine tests," *Sensors Applications Symposium Proceedings, 2009. SAS 2009. IEEE*, 17-19 Feb. 2009 Page(s):132 - 136  
Digital Object Identifier 10.1109/SAS.2009.4801793
10. G. D. Lecakes, M. Russell and S. Mandayam, "Visualization of multiple sensor measurements in a VR environment for integrated systems health management in rocket engine tests," accepted for publication, *Sensors Applications Symposium Proceedings, 2009. SAS 2009. IEEE*, 17-19 Feb. 2009 Page(s):132 - 136  
Digital Object Identifier 10.1109/SAS.2009.4801793
11. G. D. Lecakes, J. A. Morris, J. L. Schmalzel and S. Mandayam, "Virtual reality platforms for integrated systems health management in a portable rocket engine test stand," *Instrumentation and Measurement Technology Conference Proceedings, 2008. IMTC 2008. IEEE*, 12-15 May 2008 Page(s):388 - 392  
Digital Object Identifier 10.1109/IMTC.2008.4547066
12. J. A. Oagaro, and S. Mandayam, "Multi-sensor data fusion using geometric transformations for gas transmission pipeline inspection," *Instrumentation and Measurement Technology Conference Proceedings, 2008. IMTC 2008. IEEE*, 12-15 May 2008 Page(s):1734 - 1737  
Digital Object Identifier 10.1109/IMTC.2008.4547324
13. J. L. Schmalzel, F. Figueroa, J. Morris, S. Mandayam and R. Polikar, "An architecture for intelligent systems based on smart sensors," *Instrumentation and Measurement, IEEE Transactions on*, Volume 54, Issue 4, Aug. 2005 Page(s):1612 - 1616  
Digital Object Identifier 10.1109/TIM.2005.851477
14. P. M. Jansson, S. Mandayam and J. L. Schmalzel, "Green power engineering: pedagogy for the next generation of electrical engineers," *Power Engineering Society General Meeting, 2004. IEEE*, 6-10 June 2004 Page(s):65 - 70 Vol.1  
Digital Object Identifier 10.1109/PES.2004.1372755
15. D. Parikh, M. T. Kim, J. Oagaro, S. Mandayam and R. Polikar, "Ensemble of classifiers approach for NDT data fusion," *Ultrasonics Symposium, 2004 IEEE*, Volume 2, 23-27 Aug. 2004 Page(s):1062 - 1065 Vol.2  
Digital Object Identifier 10.1109/ULTSYM.2004.1417959
16. D. Parikh, M. T. Kim, J. Oagaro, S. Mandayam and R. Polikar, "Combining classifiers for multisensor data fusion," *Systems, Man and Cybernetics, 2004 IEEE International Conference on*,

Volume 2, 10-13 Oct. 2004 Page(s):1232 - 1237 vol.2

Digital Object Identifier 10.1109/ICSMC.2004.1399793

17. J. Schmalzel, F. Figueroa, J. Morris, S. Mandayam and R. Polikar, "An architecture for intelligent systems based on smart sensors," *Instrumentation and Measurement Technology Conference, 2004. IMTC 04. Proceedings of the 21st IEEE*, Volume 1, 18-20 May 2004 Page(s):71 - 75 Vol.1  
Digital Object Identifier 10.1109/IMTC.2004.1350998
18. S. Papson, J. Oagaro, R. Polikar, J. C.Chen, J. L. Schmalzel and S. Mandayam, "A virtual reality environment for multi-sensor data integration," *Sensors for Industry Conference, 2004. Proceedings the ISA/IEEE* , 2004 Page(s):116 - 122  
Digital Object Identifier 10.1109/SFICON.2004.1287142
19. J. Schmalzel, F. Figueroa, J. Morris, W. Solano, S. Mandayam and R. Polikar, "A framework for intelligent rocket test facilities with smart sensor elements," *Sensors for Industry Conference, 2004. Proceedings the ISA/IEEE*, 2004 Page(s):91 - 95  
Digital Object Identifier 10.1109/SFICON.2004.1287137
20. J. T. Neyhart, R. E. Eckert, R. Polikar, S. Mandayam, and M. Tseng, "A modified Neyman-Pearson technique for radiodense tissue estimation in digitized mammograms," *Engineering in Medicine and Biology, 2002. 24th Annual Conference and the Annual Fall Meeting of the Biomedical Engineering Society]EMBS/BMES Conference, 2002. Proceedings of the Second Joint*, Volume 2, 23-26 Oct. 2002 Page(s):995 - 996 vol.2  
Digital Object Identifier 10.1109/IEMBS.2002.1106243
21. J. T. Neyhart, M. D. Ciocco, R. Polikar, S. Mandayam, and M. Tseng, "Dynamic segmentation of breast tissue in digitized mammograms," *Engineering in Medicine and Biology Society, 2001. Proceedings of the 23rd Annual International Conference of the IEEE*, Volume 3, 25-28 Oct. 2001 Page(s):2669 - 2672 vol.3
22. S. Mandayam, "Invariance algorithms for nondestructive evaluation," *Acoustics, Speech, and Signal Processing, 2001. Proceedings. (ICASSP '01). 2001 IEEE International Conference on*, Volume 6, 7-11 May 2001 Page(s):3397 - 3400 vol.6  
Digital Object Identifier 10.1109/ICASSP.2001.940570
23. J. L. Schmalzel, S. Mandayam, R. P. Ramachandran, R. R. Krchnavek, L. Head, R. Ordonez, R. Polikar, P. Jansson, J. H. Tracey, "Composing a new ECE program: The first five years," *Frontiers in Education Conference, 2001. 31st Annual*, Volume 2, 10-13 Oct. 2001 Page(s):F3B - 1-5 vol.2  
Digital Object Identifier 10.1109/FIE.2001.963729
24. S. Mandayam, J. L. Schmalzel, R. P. Ramachandran, R. R. Krchnavek, L. Head, R. Ordonez, R. Polikar and P. Jansson, "Assessment strategies: feedback is too late!" *Frontiers in Education Conference, 2001. 31st Annual*, Volume 1, 10-13 Oct. 2001 Page(s):T4A - 1-4 vol.1  
Digital Object Identifier 10.1109/FIE.2001.963928
25. J. C. Chen and S. Mandayam, "Implementation of a mobile, low-cost, wireless network for problem solving in the classroom," *Frontiers in Education Conference, 2000. FIE 2000. 30th Annual*, Volume 2, 18-21 Oct. 2000 Page(s):S1D/12 vol.2  
Digital Object Identifier 10.1109/FIE.2000.896620
26. J. DeFuria, B. Probasco, S. Mandayam and J. L. Schmalzel, "Versatile multipurpose modular instrument for conductivity measurements," *Instrumentation and Measurement Technology Conference, 2000. IMTC 2000. Proceedings of the 17th IEEE*, Volume 3, 1-4 May 2000 Page(s):1614 - 1615 vol.3  
Digital Object Identifier 10.1109/IMTC.2000.848743

27. S. Mandayam and R. P. Ramachandran, "An invariance transformation technique for interpreting images obtained from unknown operational conditions," *Circuits and Systems, 1999. ISCAS '99. Proceedings of the 1999 IEEE International Symposium on*, Volume 4, 30 May-2 June 1999 Page(s):167 - 170 vol.4  
Digital Object Identifier 10.1109/ISCAS.1999.779968
28. J. L. Schmalzel, S. Mandayam, R. P. Ramachandran, S. H. Chin and J. H. Tracey, "Composing a new electrical and computer engineering program," *Frontiers in Education Conference, 1998. FIE '98. 28th Annual*, Volume 1, November 4-7, 1998 Page(s):476 vol.1  
Digital Object Identifier 10.1109/FIE.1998.736897
29. S. Mandayam, A. J. Marchese and J. L. Schmalzel, "Nondestructive evaluation of aircraft skin: product design and development in the sophomore engineering clinic," *Frontiers in Education Conference, 1998. FIE '98. 28th Annual*, Volume 3, 4-7 Nov. 1998 Page(s):1224 - 1229 vol.3  
Digital Object Identifier 10.1109/FIE.1998.738637
30. M. Yan, S. Udpa, S. Mandayam, Y. Sun, P. Sacks and W. Lord, "Solution of inverse problems in electromagnetic NDE using finite element methods," *Magnetics, IEEE Transactions on* Volume 34, Issue 5, Part 1, Sept. 1998 Page(s):2924 - 2927  
Digital Object Identifier 10.1109/20.717682
31. S. Mandayam and S. S. Udpa, "Motivating engineering freshmen with "buzz-words": high-tech applications in introductory engineering courses," *Frontiers in Education Conference, 1997. 27th Annual Conference. 'Teaching and Learning in an Era of Change'. Proceedings.*, Volume 3, 5-8 Nov. 1997 Page(s):1206 - 1211 vol.3  
Digital Object Identifier 10.1109/FIE.1997.632632
32. S. Mandayam, L. Udpa, S. S. Udpa and W. Lord, "Monte Carlo methods for modeling magnetostatic NDE phenomena: a feasibility study," *Magnetics, IEEE Transactions on*, Volume 32, Issue 3, Part 1, May 1996 Page(s):1425 - 1428  
Digital Object Identifier 10.1109/20.497515
33. S. Mandayam, L. Udpa, S. S. Udpa and W. Lord, "Invariance transformations for magnetic flux leakage signals," *Magnetics, IEEE Transactions on*, Volume 32, Issue 3, Part 1, May 1996 Page(s):1577 - 1580  
Digital Object Identifier 10.1109/20.497553
34. K. Hwang, S. Mandayam, L. Udpa, S. S. Udpa and W. Lord, "Application of wavelet basis function neural networks to NDE," *Circuits and Systems, 1996., IEEE 39th Midwest symposium on*, Volume 3, 18-21 Aug. 1996 Page(s):1420 - 1423 vol.3  
Digital Object Identifier 10.1109/MWSCAS.1996.593230

#### **Other Archival Peer-reviewed Publications**

35. K. Hwang, S. Mandayam, S. S. Udpa, L. Udpa, W. Lord, M. Afzal, "Characterization of gas pipeline inspection signals using wavelet basis function neural networks," *NDT & E International*, Volume 33, Issue 8, Pages 531-545, December 2000.
36. M. Yan, M. Afzal, S. S. Udpa, S. Mandayam, Y. Sun, L. Udpa and P. Sacks, "Iterative algorithms for electromagnetic NDE signal inversion," *Electromagnetic Nondestructive Evaluation (II) - Studies in Applied Electromagnetics and Mechanics*, Vol. 14, pp. 287-296, IOS Press, 1998.
37. S. Mandayam, L. Udpa, S. S. Udpa and W. Lord, "Wavelet based permeability compensation technique for characterizing magnetic flux leakage images," *NDT & E International*, Vol. 30, No. 5, pp. 297-303, 1997.

38. L. Udpa, S. Mandayam, S. Udpa, Y. Sun and W. Lord, "Developments in gas pipeline inspection technology," *Materials Evaluation*, Vol. 54, No. 4, pp. 467-472, April 1996.
39. S. Mandayam, L. Udpa, S. S. Udpa and W. Lord, "Signal processing for in-line inspection of gas transmission pipelines," *Research in Nondestructive Evaluation*, Vol. 8, no. 4, pp. 233-247, 1996.
40. S. Mandayam, L. Udpa and S. S. Udpa, "Parametric models for representing hysteresis curves," *Nondestructive Testing and Evaluation*, Vol. 11, No. 4, pp. 235-245, 1994.

### Other Conference Proceedings

41. N. Das, P. Giordano, D. Barrot, S. Mandayam, A.K. Ashmawy, and B. Sukumaran, "Discrete Element Modeling and Shape Characterization of Realistic Granular Shapes," *ISOPE Annual Conference*, July 2008.
42. D. Barrot, J. Corriveau, P. Giordano, S. Mandayam and B. Sukumaran, "Three-dimensional shape characterization and tomographic reconstruction for granular materials," *International Symposium on Geomechanics and Geotechnics of Particulate Media*, Ube, Yamaguchi, Japan, September 2006.
43. P. Giordano, D. Barrot, J. Corriveau, S. Mandayam and B. Sukumaran, "Imaging systems and algorithms for the numerical characterization of 3D shapes of particle aggregates," *2006 IEEE International Workshop on Imaging Systems and Techniques*, Minori, Italy, April 2006.
44. D. Barrot, J. Corriveau, P. Giordano, S. Mandayam and B. Sukumaran, "Three-dimensional shape descriptors and tomographic reconstruction for granular materials," *World Congress on Particle Technology*, Orlando, FL, April 2006.
45. P. Giordano, D. Barrot, P. Mease, K. Garrison, S. Mandayam and B. Sukumaran, "An optical tomography system for characterizing 3D shapes of particle aggregates," *Proceedings of the IEEE Sensors Applications Symposium*, Houston, TX, February 2006.
46. D. Barrot, J. Corriveau, P. Giordano, S. Mandayam and B. Sukumaran, "Synthesis of sand particles from 3D shape descriptors using tomographic reconstruction techniques," *Geocongress*, Atlanta, February 2006.
47. J. Corriveau, D. Barrot, S. Mandayam and B. Sukumaran, "3-D shape descriptors for geomaterial aggregates using multiple projective representations," *Proceedings of the Geo-Frontiers Conference*, Austin, TX, January 2005.
48. J. Oagaro, S. Papson, J. Bram, P.J. Kulick, R. Polikar, J. Chen, J. Schmalzel, and S. Mandayam, "Multi-sensor NDE data integration and visualization for gas transmission pipelines," *Proc. 31st An. Rev. of Progress in Quant. NDE*, American Institute of Physics, New York, July 2004.
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## GRADUATE STUDENTS ADVISED

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1. Benjamin Wenger, *Master of Science*, Electrical Engineering, Thesis in progress, expected date of publication May 2010.
2. George D. Lecakes, Jr., *Master of Science*, Electrical Engineering, Thesis: *Integration of Multiple Data Types in 3-D Immersive Virtual Reality (VR) Environments*, May 2009.
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6. Patrick Giordano, *Master of Science*, Electrical Engineering, Thesis: *Optimization of Optical Computed Tomography Techniques for the Synthesis of Particle Aggregate Models*, Dec 2007.
7. Rafael Marañón-Abreu, *Master of Science*, Thesis: *Mejora De La Fiabilidad De Sistemas De Fusión De Datos Para Ensayos No Destructivos (END)*, Communications Engineering, University of Málaga, Spain, July 2007.
8. Daniel Randall-Barrot, *Master of Science*, Electrical Engineering, Thesis: *An Algebraic Reconstruction Technique (ART) for the Synthesis of Three-Dimensional Models of Particle Aggregates from Projective Representations*, May 2006.
9. Justin Bram, *Master of Science*, Electrical Engineering, Thesis: *A "Divide-and-Conquer" Strategy for NDE Signal Inversion in Gas Transmission Pipelines*, May 2006.
10. Joseph Oagaro, *Master of Science*, Electrical Engineering, Thesis: *Heterogeneous Multi-Sensor Data Fusion Using Geometric Transformations And Parzen Windows For The Nondestructive Evaluation Of Gas Transmission Pipelines*, Dec 2004.

11. Min Kim, *Master of Science*, Electrical Engineering, Thesis: *Automated Evaluation Of Radiodensities In A Digitized Mammogram Database Using Local Contrast Estimation*, Dec 2004.
12. Jonathan Corriveau, *Master of Science*, Electrical Engineering, Thesis: *Three-Dimensional Shape Characterization For Particle Aggregates Using Multiple Projective Representations*, Dec 2004.
13. Patrick Violante, *Master of Science*, Electrical Engineering, Dec 2004.
14. Scott Papson, *Master of Science*, Electrical Engineering, Thesis: *An Investigation Of Multi-Dimensional Evolutionary Algorithms For Virtual Reality Scenario Development*, May 2004.
15. Richard Eckert, *Master of Science*, Electrical Engineering, Thesis: *Spatially Varying Threshold Models for the Automated Segmentation of Radiodense Tissue in Digitized Mammograms*, Dec 2003.
16. Philip J. Kulick, *Master of Science*, Electrical Engineering, Thesis: *Multi-Sensor Data Fusion Using Geometric Transformations For The Nondestructive Evaluation Of Gas Transmission Pipelines*, Dec 2003.
17. Gregory McDermott, *Master of Science*, Electrical Engineering, Dec 2002.
18. Jeremy T. Neyhart, *Master of Science*, Electrical Engineering, Thesis: *Automated Segmentation of Radiodense Tissue in Digitized Mammograms Using a Constrained Neyman-Pearson Classifier*, May 2002.
19. Michael D. Ciocco, *Master of Science*, Electrical Engineering, Thesis: *An Invariance Algorithm for Defect Characterization of Ultrasonic Signals for the Nondestructive Evaluation of Concrete*, May 2002.
20. Samuel J. Greenfeld, *Master of Science*, Electrical Engineering, May 2001.

#### **PROFESSIONAL MEMBERSHIPS:**

Institute of Electrical and Electronics Engineers (IEEE) – *Senior Member*  
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Vice-President for Finance, *IEEE Instrumentation and Measurement Society*, 2009 – present  
 Chair, Educational Activities, *IEEE Instrumentation and Measurement Society*, 2008 – present  
 Member, *IEEE Systems Council*, 2009 – present  
 Student Activities Chair, *IEEE Region-2 (Eastern United States)*, 2004 – 2008  
 Member, *IEEE Region-2 Executive Committee*, 2004 – 2008  
 Member, *IEEE Instrumentation and Measurement Society Administrative Committee*, 2007 – present  
 Chair, *IEEE Sensors Applications Symposium, 2008, 2009, 2010*  
 Vice- Chair, *IEEE Sensors Applications Symposium, 2007*  
 Technical Program Chair, *IEEE Sensors Applications Symposium, 2006*  
 Reviewer for the *IEEE Transactions on Instrumentation & Measurement*  
 Reviewer for the *IEEE Sensors Journal*  
 Reviewer for the *IEEE Transactions on Magnetics*  
 Reviewer for the *International Conference on Electromagnetic NDE*  
 Session Chair, Midwest Electrotechnology Conference, Ames, IA, 1996  
 Treasurer, American Society for Nondestructive Testing, Iowa Chapter, 1996 – 1997

#### **SERVICE TO THE DEPARTMENT & UNIVERSITY:**

Chair, University Task Force on Systems Engineering, 2009  
 Chair, ECE Department Graduate Committee, 2002 – 2006  
 Chair, College of Engineering Planning Committee, 2001 – 2002  
 Chair, College of Engineering Laboratory Committee, 1998 – 1999  
 Chair, University Technology Task Force, 2004

Chair, University Networking and Infrastructure Sub-Committee  
Assessment Activities Coordinator, ECE Department, 1998 – 2002  
IEEE Student Branch faculty advisor, 1997 – 2002  
Academic Policies and Procedures Committee member, 1997 –1999  
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**SEARCH COMMITTEES:**

Dean of the Medical School, 1 Position, 2009  
Associate Provost for Research, 1 Position, 2008  
Electrical and Computer Engineering Faculty, 1 Position, 2008  
Electrical and Computer Engineering Technician (Committee Chair), 1 Position, 2004, 2006  
Electrical and Computer Engineering Faculty, 2 Positions, 2001  
Electrical and Computer Engineering Faculty, 3 Positions, 2000  
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**AWARDS AND HONORS:**

NSF New Century Scholars Fellowship, Stanford University, August 1999.  
Research Excellence Award, Iowa State University, 1996.  
National Merit Scholar, India, 1983.

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