Marios S. Pattichis
Professor, Senior Member, IEEE
Image and Video Processing and Communication Lab (ivPCL)
Dept. of Electrical Engineering and Computer Engineering
The University of New Mexico, Albuquerque, NM 87131-0001
pattichis@ece.unm.edu
Tel: (505) 277-0486; Fax: (505) 277-1439
www.ivpcl.org

Education

Ph.D., Computer Engineering, The University of Texas at Austin, 1998
M.S.E., Electrical Engineering, The University of Texas at Austin, 1993
B.A., Mathematics, The University of Texas at Austin, 1991
B.Sc., Computer Sciences, (minor in EE), The University of Texas at Austin, 1991

Professional Experience

9/2012-Present Professor, Dept. of Electrical and Computer Engineering, UNM
1/2012-Present Chair, Computer Engineering Program, Dept. of Electrical and Computer Engineering, UNM
9/2007-9/2012 Associate Professor, Dept. of Electrical and Computer Engineering, UNM
9/2007-9/2012 Associate Professor (non-voting faculty), Dept. of Radiology, UNM
9/2006-2007 Adjunct Assistant Professor, Dept. of Radiology, University of New Mexico
9/2000-9/2007 Assistant Professor, Dept. of ECE, University of New Mexico
9/2003-2/2005 Visiting Assistant Professor, Dept. of Computer Science, The University of Cyprus (required return to home country for US CASP (scholarship) program)
9/1999-9/2000 Research Assistant Professor, Dept. of ECE, University of New Mexico
8/1998-8/1999 Visiting Assistant Professor, Dept. of EECS, Washington State University
6/1998-7/1998 Post-Doctoral Fellow, Dept. of ECE, The University of Texas at Austin

Primary Areas of Active Research Interests

- Mathematical and statistical representations for image and video processing
- Biomedical and space image processing methods and applications
- Dynamically reconfigurable systems for image processing
- Research in teaching digital image and video processing to middle school students from under-represented groups

Honors

2012 AFRL Summer Faculty Fellow
2010 Silver Zia Award from Santa Fe Public School System (co-recipient with ECE Department, cited for my work on teaching electronics at Larragoite Elementary School)
2006 Best paper award (co-author), *3rd IFIP Conference on Artificial Intelligence Applications and Innovations (AIAI06)*
2006 Senior Member of IEEE
2006 UNM School of Engineering Harrison Faculty Excellence Award
2003 Recognized by Xilinx Corporation for Contributions to Undergraduate ECE Education
2003 Teacher of the Year Award, Dept. of Electrical and Computer Engineering, UNM
1991 High honors in Computer Sciences, The University of Texas at Austin
1991 Special honors in Computer Sciences, The University of Texas at Austin
1991 High honors in Mathematics, The University of Texas at Austin
1987-1991 Full Scholar of Cyprus-America Scholarship Program (CASP) to support undergraduate studies at the University of Texas at Austin (US AID program and

Fulbright Commission of Cyprus).

Patents
"System and Methods for Optimized Resource Management in a Computer System," Inventors: **Marios S. Pattichis**, Yuebing Jiang, and Daniel Llamocca, *Provisional Patent Filed* on November 1st, 2012.

"System and Methods of Amplitude Modulation – Frequency Modulation (AM-FM) Demodulation for Image and Video Processing," Inventors: Victor Manuel Murray Herrera, **Marios S. Pattichis**, Peter Soliz, Carla Paola Agurto Rios and Herbert T. Davis III, *Filed* Sept. 18, 2009 (in revision), licensed to VisionQuest Biomedical, LLC.

"System and Methods of Regularized Optimization For Matrix Factorization And Image and Video Reconstruction," Inventors: Paul Rodriguez-Valderrama, **Marios S. Pattichis**, and Victor Manuel Murray-Herrera, *Provisional Patent Filed* on April 15th, 2011.

"Novel Motion Estimation Method," Inventors: Victor Manuel Murray-Herrera, Paul Rodriguez-Valderrama, and **Marios S. Pattichis**, *Provisional Patent Filed* on June 30th, 2011 (full patent application not filed).

Affiliations
- Configurable Space Microelectronics Innovation & Applications Center (COSMIAC, renamed from FPGA Mission Assurance Center (FMAC)), Board member and Co-PI (one of two Co-PIs) to the proposal that funded the Center at UNM, (2007-Present)
- UNM Center for Biomedical Engineering, General Affiliate, School of Engineering, UNM
- UNM Department of Radiology, School of Medicine (non-voting faculty member)
- UNM Junior Researcher Strategic Committee (2008)
- UNM Cancer Research and Treatment Center (CRTC) Group (2002 - present)
- Department of Computer Science, The University of Cyprus (2003-2004, 2008)
- Cyprus Institute of Neurology and Genetics (1990-2000)
- UNM School of Medicine/School of Engineering Collaboration Group (2002)
- UNM Biomedical Physics Group (2002)

Society Memberships
- IEEE (senior member)
- IEEE Engineering in Medicine and Biology Society
- IEEE Signal Processing Society
- IEEE Computer Society
- IEEE SP/COM Albuquerque Chapter, Vice-President (2011-present)
- American Association of University Professors (AAUP, 1999-present)

Editorial Service
- Associate Editor, *IEEE Transactions on Image Processing,* October 2010-Present.
- Guest Editor, *Special Issue on Biomedical Informatics*, *IEEE Transactions on Information Technology in Biomedicine*, (2011).
- Guest Editor, *Special Issue on Biomedical Signal Processing and Analysis*, *Biomedical Signal Processing and Control* (Elsevier), (2011).
- Guest Editor, *Special Issue on Computational Intelligence in Medical Systems*, *IEEE Transactions on Information Technology in Biomedicine*, September 2009.
- Associate Editor, *IEEE Transactions on Industrial Informatics*, July 2009-March 2011.
- Editorial Board, *International Journal of Experimental and Computational Biomechanics* (IJECB), since 2009.
- General Chair, *2008 IEEE Southwest Symposium on Image Analysis and Interpretation,* Santa-Fe, New Mexico, (Sponsored by the IEEE Computer Society Technical Committee on Computational Medicine).

- Associate Editor for *Pattern Recognition* (2005–present)

Human Research Certification
2009   Completed PI Human Research Certification, NIH.
2002   Completed Human Research Review Committee training course and test at UNM.

Research

Active Research Collaborations
- Air-Force Research Laboratory (AFRL), Albuquerque, New Mexico
- VisionQuest Biomedical, Albuquerque, New Mexico
- Division of Vascular Surgery, Department of Surgery, UNM
- Vascular Non-invasive Screening and Diagnostic Centre (VSNDC), London, UK
- Vascular Screening and Diagnostic Centre, Nicosia, Cyprus
- Department of Radiology, School of Medicine, The University of New Mexico
- Mathematical Modeling and Analysis, Center for Nonlinear Sciences, Los Alamos National Laboratory
- Medical Informatics Laboratory, Department of Computer Science, The University of Cyprus, Nicosia, Cyprus

Active and Completed Sponsored Research (only UNM awarded amounts are shown)
1. *Cellular Elements for Ensemble Based Programmable Matter*, $34,942 (UNM portion), ***AFRL STTR*** (Grant number AF11-BT26), 05/01/2012 – 12/31/2012.

2. *Real-time Image Quality Assessment for Digital Fundus Images*, $202,893, M.S. Pattichis, ***NIH STTR Phase II sub-award to UNM*** (Grant Number 42EY018971-02A1), 9/1/11 – 8/19/13.

3. *Advancing New Mexico Science and Engineering Education Through Student and Teacher Education in Digital Audio, Image, and Video Processing*, $87,750, PIs: M.S. Pattichis, S.C. Pattichis, C. LopezLeiva, ***UNM support*** for *Post-Doctor Fellow Position*, FY12-FY13.

4. *Tier 1 Interdisciplinary Summer Research Program: Out-of-School Learning in Mathematics & Engineering,* (~$48,000), PIs: C. Lopez and M.S. Pattichis, funded from the ***UNM College of Education and the School of Engineering***, 06/01/2012 – 05/01/2013,

5. *Role-specific Laparoscopic Imaging Feasibility Study,* $22,464, PI: T. Perez, Collaborator: M.S. Pattichis (support for ECE student, Y. Jiang), ***UNM RAC,*** 03/01/2012 – 03/01/2013.

6. *Real-Time Reconfigurable Systems for Space Applications*, $1,562,940. Lead PIs: C. Christodoulou, M.S. Pattichis. Co-PIs: P. Zarkesh-Ha, S. K. Jayaweera, **AFRL Award #FA9453-09-C-0309**, 11/24/2008-2/28/2014.

7. *FMAC Support Activity for Advanced Electronic Materials, Devices and Circuits for Space Electronics,* $5,059,324. Note that FMAC has been renamed to COSMIAC. Co-PIs: C. Christodoulou and M.S. Pattichis, **AFRL Award #FA9453-0802-0259**, 08/21/2008 – 07/31/2013.

8. *Stroke Risk Stratification Through Plaque Motion Analysis of Longitudinal Carotid Ultrasound*, ($200,000 total, $74,142 for UNM), Co-PIs: S. Barriga and M.S. Patichis. ***NIH SBIR Phase-I, Recovery Act Limited Competition: Small Business Catalyst Awards for Accelerating Innovative Research (R43),*** 08/16/2010–08/15/2011.

9. *Diabetic Retinopathy Image Analysis*, $277,418, PI: M.S. Pattichis, ***NIH RC3 Bridge Program and NIH SBIR Phase II*** sub-awards to UNM from VisionQuest Biomedical, 7/1/2009 - 12/31/2011.

10. *Diabetic Retinopathy Image Analysis*, $29,978, PI: M.S. Pattichis, NIH sub-award to UNM from ***NIH SBIR Phase II*** awarded to VisionQuest Biomedical, 10/1/08–9/30/09.

11. *Diabetic Retinopathy Image Analysis*, $107,100, PI: M.S. Pattichis, NIH sub-award to UNM from ***NIH SBIR Phase II*** awarded to VisionQuest Biomedical, 08/19/08–08/17/09.

12. *Design, Implementation and Dissemination of Multidisciplinary online Java Digital Signal Processing (J-DSP) Software Development*, $12,000. UNM PI: M.S. Pattichis, ***NSF Phase 3 Award # 0817596***, Performance Site to NSF collaborative multi-University, multidisciplinary project, 08/01/2008-08/01/2011.

13. *Reconfigurable Parallel Computer Architectures for Space Applications*, $2.4 million. Lead PI: M.S. Pattichis, Co-PIs: C. Christodoulou and H. Pollard, **AFRL Award #FA9453-06-C-0211**, 02/01/05 – 02/28/12.

14. *Continuous-Scale Image & Video Search*, PI: M.S. Pattichis, $75,000. **DARPA seed funding***, 09/15/2007 – 05/15/2008. The funding was executed as a subcontract to the *Reconfigurable Parallel Computer Architectures for Space Applications* contract.

15. *FMAC Support Activity at the University of New Mexico*, $478,995. Lead PI: C. Christodoulou, Co-PI: M.S. Pattichis, *AFRL,* 06/01/2007-09/30/2008.

16. *Education and Research in FPGAs for Space Applications*, $59,962. Lead PI: C. Christodoulou, Co-PIs: M.S. Pattichis and H. Pollard, *AFRL*, 06/02/06-02/28/07.

17. *New Technology for Space Applications*. $50,000. Lead PI: C. Christodoulou, Co-PIs: M.S. Pattichis and H. Pollard, ATK, 10/1/05-12/30/05.

18. *Signal and Image Processing for Modeling and Simulation in Biomedical Applications,* $20,000, PI: Marios S. Pattichis, *Orion International Technologies, Inc*, 8/23/05 - 5/31/06.

19. *Spatiotemporal Video Analysis for Biomedical Imaging,* $20,000, PI: M.S. Pattichis, *Kestrel Corporation*, 8/23/04 - 5/31/05.

20. *Machine Intelligence and Simulation*, $56,873, PIs: C. Abdallah, G. Heileman, and M.S. Pattichis, *Honeywell*, 3/04/04 - 9/30/04.

21. *Signal Detection in Retinal Videos*, $20,534, PI: Marios S. Pattichis, *Kestrel Corporation*, 8/25/03 - 5/30/04.

22. *Wireless Education (WED2003): Hands-on Education Services and R&D, and ChipsNSalsa Gateway*. ~$100,000, Co-PIs: C. Abdallah, C. Christodoulou, R. Jordan, M.S. Pattichis, C. Pedregal, and L. Padilla, Hewlett Packard, 9/2003 – 8/2004.

23. *Longitudinal Chest X-ray and CT-scan Lung Nodule Detection and Analysis.* $25,000, PIs: M.S. Pattichis and D. James*, UNM Cancer Research and Treatment Center,* 9/2002 - 8/2003.

24. *Implementation and Modernization of EDK and MicroBlaze Lab Requirements*. $34,781, PI: M.S. Pattichis, Xilinx Corporation, 1/1/2003 – 12/31/2003.

25. *Laser Hardening.* $98,736, Co-PIs: C. Christodoulou and M.S. Pattichis, Ball Aerospace, 5/01/2001 - 3/06/2002.

26. *Wireless Education (WED2002): Hands-on Education Services and R&D.* $127,260, Co-PIs: C. Abdallah, C. Christodoulou, R. Jordan, and M.S. Pattichis, Hewlett Packard, 9/2002 – 8/2003.

27. *Computer Assisted Chest Radiograph Reader I & II.* $76,299, UNM PI: M.S. Pattichis, Collaborator with Kestrel Corporation, ***NIH SBIR Phase-II***, 10/1/2000 - 5/31/2003.

28. *Optical Imaging Device of the Retinal Function.* $42,984, UNM PI: M.S. Pattichis, Collaborator with Kestrel Corporation, ***NIH SBIR Phase-II***, 10/01/2000 - 5/31/2003.

Pending Proposals with Approximate Funding Starting Dates
1. *CSR:Medium: Dynamically Reconfigurable Systems for Time-Varying Image Processing Constraints (DRASTIC),* PI: M.S. Pattichis, ***NSF***, 06/01/2013-05/31/2017.

Equipment Support (total for UNM ECE: $321,382)
1. *ECE Lab support.* $13,546, Xilinx Corp support for workshops, June, 2006.
2. *ISTEC Lab support.* $239,749, Co-PIs: R. Jordan and M.S. Pattichis, Xilinx Corporation, August 2005 (http://www.unm.edu/news/Aug05Releases/05-08-10istec.htm).
3. *ECE Lab support.* $1733, Xilinx Corporation, 2004.
4. *ECE Lab support.* $400, Xilinx Corporation, 2004.
5. *ECE Lab support.* $1733, Xilinx Corporation, 2004.
6. *ECE Lab Support.* $305,703, PI: M.S. Pattichis, equipment, software, and monetary support for EECE lab development, Xilinx Corporation, 09/2000–1/15/2003.

Journal Editorials
J1. Pattichis, C.S., Loizou, C., Kyriacou, E., Petroudi, S., Bamidis, P., and **Pattichis, M.S.**, "Guest Editorial to Special Issue on Biomedical Monitoring Technologies," to be published by *International Journal of Monitoring and Surveillance Technologies Research* (IJMSTR), to be published in 2013.

J2. Pattichis, C.S., Schizas, C.N., E., Kyriakou, E., Fotiadis, D. I., **Pattichis, M.S.**, and Bamidis, P.D., "Guest Editorial: Introduction to the Special Issue on Citizen Centered e-Health Systems in a Global Healthcare Environment: Selected Papers from ITAB 2009," *IEEE Transactions on Information Technology in Biomedicine*, vol. 15, no. 1, pp. 3-10, January 2011, PMID: 21172757.

J3. Pattichis, C.S., Bamidis, P.D., Christodoulou, C., Kyriakou, E., **Pattichis, M.S.**, Mitsis, G.D., and Pitris, C., "Editorial for Special Issue on Biomedical Signal Processing and Analysis," *Biomedical Signal Processing and Control*, vol. 6, no. 3, pp. 217-218, 2011.

J4. Pattichis, C.S., Schizas, C.N., **Pattichis, M.S.**, Micheli-Tzanakou, E., Kyriakou, E., and Fotiadis, D. I., "Guest Editorial: Introduction to the Special Section on Computational Intelligence in Medical Systems," *IEEE Transactions on Information Technology in Biomedicine*, vol. 13, no. 5, pp. 667-672, September 2009.

Journal Papers (published, accepted, or to appear)
J5. Panayides, A., Antoniou, Z., Mylonas, Y., **Pattichis, M.S.,** Pitsillides, A., Constantinides, A.G., Pattichis, C.S., "High-Resolution, Low-delay, and Error-resilient Medical Ultrasound Video Communication Using H.264/AVC Over Mobile WiMAX Networks," accepted, *IEEE Transactions on Information Technology in Biomedicine.*

J6. Murray, V., Llamocca, Lyke, J., Avery, K., Jiang, Y., and **Pattichis, M.S.**, "Cell-based Architecture for Adaptive Wiring Panels: A First Prototype," in press, *Journal of the American Institute of Aeronautics and Astronautics*.

J7. Llamocca, D. and **Pattichis, M.S.**, "A Dynamically Reconfigurable Pixel Processor System Based on Power/Energy-Performance-Accuracy Optimization," in press, *IEEE Transactions on Circuits and Systems for Video Technology.*

J8. Jeromin, O.M., **Pattichis, M.S.**, and Calhoun, V.D., "Optimal Compressed Sensing Reconstructions of fMRI using Deterministic and Stochastic Sampling Geometries," in press, *Biomedical Engineering Online.*

J9. Jeromin, O.M. and **Pattichis, M.S.**, "Spectral Statistical Interpolation Models of Magnitude and Phase Spectra for the Reconstruction of Satellite Imagery," *IEEE Transactions on Geosciences and Remote Sensing*, vol. 50, no. 10, pp. 3678-3692, Oct. 2012*.*

J10. Kyriacou, E., Petroudi, S., Pattichis, C.S., **Pattichis, M.S.**, Griffin, M., Kakkos, S., and Nicolaides, A., "Prediction of High Risk Asymptomatic Carotid Plaques Based on Ultrasonic Image Features," Special issue on "Atherosclerotic Cardiovascular Health Informatics: Risk Screening and Intervention," *IEEE Transactions on Information Technology in Biomedicine*, vol. 16, no. 5, pp. 966-973, 2012.

J11. Yu, H., Barriga, E.S., Agurto, C., Echegaray, S., **Pattichis, M.S.**, Bauman, W., and Soliz, P., "Fast and Robust Localization and Segmentation of Optic Disc Boundary in Retinal Images for Eye Disease Screening," *IEEE Transactions on Information Technology in Biomedicine*, vol. 16, no. 4, pp. 644-657, 2012.

J12. Christodoulou, C.I., Kaplanis, P.A., Murray, V., **Pattichis, M.S.**, Pattichis, C.S., and Kyriakides, T., "Multi-Scale AM-FM Analysis for the Classification of Surface Electromyographic Signals," *Journal of Biomedical Signal Processing and Control,* vol. 7, no. 3, pp. 265-269, 2012.

J13. Murray, V., **Pattichis, M.S.**, Barriga, E.S., and Soliz, P., "Recent Multiscale AM-FM Methods in Emerging Applications in Imaging," *EURASIP Journal on Advances in Signal Processing (Springer)*, vol. 2012, no. 1, 23 pages, 2012.

J14. Lambrou, A., Papadopoulos, H., Kyriacou, Pattichis, C.S., **Pattichis, M.S.**, Gammerman, A., and Nicolaides, A., "Evaluation of the Risk of Stroke With Confidence Predictions Based on Ultrasound Carotid Image Analysis," invited to Special Issue on Selected Papers from AIAI 2010, *International Journal on Artificial Intelligence Tools*, vol. 21, no. 4, 1240016, 18 pages, 2012.

J15. Agurto, C., Barriga, S., Murray, V., Nemeth, S., Crammer, R., Bauman, W., Zamora, G., **Pattichis, M.S.**, and Soliz, P., "Automatic Detection of Diabetic Retinopathy and Age-Related Macular Degeneration in Digital Fundus Images, " *Investigative Ophthalmology and Visual Science*, vol. 52, no. 8, pp. 5862-5871, July 2011, PMID: 21666234.

J16. Hoffman, C. and **Pattichis, M.S.**, "A High-Speed Dynamic Partial Reconfiguration Controller Using Direct Memory Access Through a Multiport Memory Controller and Overclocking with Active Feedback," *International Journal of Reconfigurable Computing*, vol. 2011, Article ID 439072, 10 pages, 2011.

J17. Vera, A.G., **Pattichis, M.S.**, and Lyke, J., "A Dynamic Dual Fixed Point Arithmetic Architecture for FPGAs," *International Journal of Reconfigurable Computing*, vol. 2011, Article ID 586865, 19 pages, 2011.

J18. Panayides, A., **Pattichis, M.S.**, Pattichis, C.S., Loizou, C., and Pitsillides, A., "A Tutorial for Emerging Wireless Medical Video Transmission Systems," *IEEE Antennas & Propagation Magazine*, vol. 53, no. 2, pp. 43-50, April 2011.

J19. Panayides, A., **Pattichis, M.S.**, Pattichis, C.S., Loizou, C.P., Patziaris, M., and Pitsillides, A., "Atherosclerotic Plaque Ultrasound Video Encoding, Wireless Transmission, and Quality

Assessment Using H.264," *IEEE Transactions on Information Technology in Biomedicine*, vol. 15, no. 3, pp. 387-397, May 2011, PMID: 21233053.

J20. Sergio, M., **Pattichis, M.S.**, and Barriga, E.S., "A Review of Motion Estimation Methods for Non-Invasive Ultrasound Motion and Emerging Strain Imaging Methods of Carotid Artery Plaques," *International Journal of Experimental and Computation* Biomechanics, vol. 1, no. 4, pp. 359-380, 2011.

J21. Ramachandran, J., **Pattichis, M.S.**, Scuderi, L.A., and Baba, J.S., "Tree Image Growth Analysis Using Instantaneous Phase Modulation," *EURASIP Journal on Advances in Signal Processing*, Special Issue: Recent Advances in Theory and Methods for Non-stationary Signal Analysis, vol. 2011, Article ID 518602, 22 pages, 2011.

J22. Loizou, C.P., Murray, V., **Pattichis, M.S.**, Pantziaris, M., and Pattichis, C.S., "Multiscale Amplitude-Modulation Frequency-Modulation (AM-FM) Analysis of Ultrasound Images of the Media Layer of the Carotid Artery," *IEEE Transactions on Information Technology in Biomedicine*, vol. 15, no. 2, pp. 178-188, 2011, PMID 20889436.

J23. Barriga, E.S., **Pattichis, M.S.**, Ts'o, D., Abramoff, M., Kardon, R., Kwon, Y. and Soliz, P., "Independent Component Analysis using Prior Information for Signal Detection in a New Functional Imaging Systems of the Retina," *Medical Image Analysis*, vol. 15, no. 1, pp. 35-44, February 2011, PMID 20655800.

J24. Yu, H., **Pattichis, M.S.**, Agurto, C., and Goens, M. Beth, "A 3D Freehand Ultrasound System for Multi-view Reconstructions from Sparse 2D Scanning Planes," *Biomedical Engineering Online*, vol. 10, no. 7, 22 pages, Jan. 2011, PMID 21251284.

J25. Loizou, C.P., Murray, V., **Pattichis, M.S.**, Seimenis, I., Pantziaris, M., and Pattichis, C.S., "Multiscale Amplitude-Modulation Frequency-Modulation (AM-FM) Texture Analysis of Multiple Sclerosis in Brain MRI Images," *IEEE Transactions on Information Technology in Biomedicine*, vol. 15, no. 1, pp. 119-129, Jan. 2011, PMID 21062681.

J26. Llamocca, D., **Pattichis, M.S.**, and Vera, G.A., "Partial Reconfigurable FIR Filtering System Using Distributed Arithmetic," vol. 2010, 14 pages, *International Journal of Reconfigurable Computing,* vol. 2010, Article ID 357978, 14 pages, doi:10.1155/2010/357978.

J27. Kyriacou, E., Pattichis, C.S., **Pattichis, M.S.**, Loizou, C.P., Christodoulou, C., Kakkos, S. and Nicolaides, A., "A Review of Non-invasive Ultrasound Image Processing Methods in the Analysis of Carotid Plaque Morphology for the Assessment of Stroke," *IEEE Transactions on Information Technology in Biomedicine*, vol. 14, no. 4, pp. 1027-1038, July 2010, PMID 20378477.

J28. Meyer-Baese, U., Vera, A., Meyer-Baese, A., **Pattichis, M.** and Perry, R., "An Undergraduate Course and Laboratory in Digital Signal Processing with Field Programmable Gate Arrays," *IEEE Transactions on Education*, vol. 53, no. 4, pp. 638-645, Nov. 2010.

J29. Murray, V., Rodriguez, P. and **Pattichis, M.S.**, "Multi-scale AM-FM Demodulation and Reconstruction Methods with Improved Accuracy," *IEEE Transactions on Image Processing*, vol 19, no. 2, pp. 1138-1152, May 2010, PMID: 20071260.

J30. Agurto, C., Murray, V., Barriga, E., Murillo, S., **Pattichis, M.S.**, Davis, H., Russell, S.R., Abramoff, M.D., and Soliz, P., "Multiscale AM-FM Methods for Diabetic Retinopathy Lesion Detection," *IEEE Transactions on Medical Imaging*, vol. 29, no. 2, pp. 502-512, February 2010, PMID: 20129850.

J31. Kief, C. J., **Pattichis, M.S.**, Pollard, L.H., Vera, G.A. and Parra, J.E., "An XUP-UNM

Educational Platform – A Dual FPGA Platform for Reconfigurable Logic," *Computer Applications in Engineering Education*, Wiley Interscience, vol. 17, no. 2, pp. 232-239, June 2009.

J32. Loizou, C.P., Pantziaris, M., **Pattichis, M.S.**, Kyriakou, E. and Pattichis, C.S., "Ultrasound Image Texture Analysis of the Intima and Media Layers of the Common Carotid Artery and its Correlation with Age and Gender," invited from conference paper presentation in IEEE BIBE 2008, *Computerized Medical Imaging and Graphics* (Elsevier), vol. 33, no. 4, pp. 317-324, June 2009, PMID: 19304453.

J33. **Pattichis, M.S.**, Soliz, P. and Cacoullos, T., "New Models for Region of Interest Reader Classification Analysis in Chest Radiographs," *Pattern Recognition, Special Issue of Digital Image Processing and Pattern Recognition Techniques for the Detection of Cancer,* (doi: 10.1016/j.patcog.2008.09.021), vol. 42, no. 6, pp. 1058-1066, June 2009.

J34. E. Kyriacou, **Pattichis, M.S.**, Pattichis, C.S., Mavrommatis, A., Christodoulou, C.I., Kakkos, S. and Nicolaides, A., "Classification of Atherosclerotic Carotid Plaques Using Morphological Analysis on Ultrasound images," (**a best conference paper award**) *invited* in special issue on Emerging Artificial Intelligence Applications and Innovations: Papers from AIAI 2006, *Journal of Applied Intelligence*, Springer, vol. 30, no. 1, pp. 3-23, February 2009.

J35. Neofytou, M.S., Tanos, V., **Pattichis, M.S.**, Pattichis, C.S., Kyriacou, E.C., and Koutsouris, D.D., "A standardized protocol for texture feature analysis of endoscopic images in gynaecological cancer," *Biomedical Engineering OnLine*, 6:44, 44 pages, doi:10.1186/1475-925X-6-44, Nov 2007, PMID: 18047655*.*

J36. Kyriacou, E.C., Pattichis, C.S., Karaolis, M.A., Loizou, C.P., Christodoulou, C.I., **Pattichis, M.S.**, Kakkos, S., and Nicolaides, A., "An Integrated System for Assessing Stroke Risk," *IEEE Engineering in Medicine and Biology Magazine*, Special Issue on Image, Signal and Distributed Data Processing for Networked e-Health Applications, vol. 26, no. 5, pp. 43-50, Sept.-Oct. 2007, PMID: 17941322.

J37. Barriga, E. S., **Pattichis, M. S.**, Ts'o, D., Abramoff, M., Kardon, R., Kwon, Y., and Soliz, P., "Spatiotemporal independent component analysis for the detection of functional responses in cat retinal images," *IEEE Transactions on Medical Imaging*, vol. 26, pp. 1035-1045, Aug. 2007, PMID: 17695124.

J38. Kern, J. and **Pattichis, M.S.**, "Robust multispectral image registration using mutual information models", *IEEE Transactions on Geosciences and Remote Sensing*, vol. 45, no. 5, pp. 1494-1505, May 2007.

J39. **Pattichis, M.S.** and Bovik, A.C., "Analyzing image flow by multidimensional frequency Modulation," *IEEE Transactions on Pattern Analysis and Machine Intelligence,* vol. 29, no. 5, pp. 753-766, May 2007, PMID: 17356197.

J40. Kyriacou, E., **Pattichis, M.S.**, Pattichis, C.S., Panayides, A., and Pitsillides, A., "m-Health e-Emergency Systems: Current Status and Future Directions," *invited* in *IEEE Antennas and Propagation Magazine,* vol. 49., no. 1, pp. 216-231, Feb. 2007.

J41. "Educational Uses of FPGAs," D. Bouldin, Ed., short (<1 page) *invited article* describing UNM's labs, cites authors: **M.S. Pattichis**, H. Pollard., J. Parra, A. Vera, A., and C. Kief as "driving Personnel," *IEEE Circuits and Devices Magazine*, pp. 4, Sept/Oct 2004.

J42. Pattichis. C.S., Kyriacou, E., Voskarides, S., **Pattichis, M.S.**, Istepanian, R., and Schizas, C.N. "Wireless Telemedicine Systems: An Overview," *invited* in *IEEE Antennas and Propagation Magazine,* vol. 44, no. 2, pp. 143-153, April 2002.

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49. Panayides, A., **Pattichis, M.S.**, Pattichis, C.S., Loizou, C.P., and Pitsillides, A., "Robust and Efficient Ultrasound Video Coding in Noisy Channels Using H.264," *34th IEEE Annual International Conference of the Engineering in Medicine and Biology Society,* pp. 5143-5146, Sept. 2-6, 2009, PMID: 19964858.

50. Vera, A., Llamocca, D., **Pattichis, M.S.** and Lyke, J., "A Dynamically Reconfigurable Computing Model for Video Processing Applications," invited in *Proc. 43rd Asilomar Conference on Signals, Systems and Computers*, pp. 327-331, Nov. 1st-4th, 2009.

51. Jeromin, O.M., and **Pattichis, M.S.**, "Reconstruction of Aerial Image from Fourier Spectral Samples Using Statistical Models," invited in *Proc. 43rd Asilomar Conference on Signals, Systems and Computers*, pp. 1397-1401, Nov. 1st-4th, 2009.

52. Murray, V., **Pattichis, M.S.**, and Soliz, P., "Retrieval and Classification of Pneumoconiosis Images Using Multi-scale AM-FM Methods," invited in *Proc. 43rd Asilomar Conference on Signals, Systems and Computers*, pp. 746-750, Nov. 1st-4th, 2009.

53. Llamocca, D., Vera, A., and **Pattichis, M.S.**, "A Dynamic Computing Platform for Image and Video Processing Applications," invited in *Proc. 42nd Asilomar Conference on Signals, Systems and Computers*, pp. 412-416, Nov. 1st-4th, 2009.

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56. Kyriacou, E., Pattichis, C.S., Jossif, A., **Pattichis, M.S.**, Paraskeva, L., Hoplaros, D., Kounoudes, A. and Vogiatzis, D., "A Wireless System for Monitoring of Children with Suspected Cardiac Arrhythmias," accepted in the *2nd International Conference on PEervasive Technologies Related to Assistive Environments* (*PETRA'09*), 6 pages, Corfu, Greece, June 9-13, 2009.

57. Loizou, C.P., Murray, V., **Pattichis, M.S.**, Pantziaris, M., Nicolaides, A.N. and Pattichis, C.S., "AM-FM Texture Image Analysis and Retrieval of the Intima and Media Layers of the Carotid Artery," accepted, *19th International Conference on Artificial Neural Networks*, Limassol, Cyprus, 2009.

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59. Christodoulou, C.I., Pattichis, C.S., Murray, V., **Pattichis, M.S.** and Nicolaides, A, "AM-FM

Representation for the Characterization of Carotid Plaque Ultrasound Images," in *Proc. 4th European Congress of the International Federation for Medical and Biological Engineering*, Antwerp, Belgium, pp. 546-549, Nov. 23-27, 2008.

60. Kyriacou, E., Pattichis, C., **Pattichis, M.S.**, Jossif, A., Vogiatzis, D., Paraskeva, L. and Konstantinides A., "An M-heath System for Continuous Monitoring of Children with Suspected Cardiac Arrhythmias," in *Proc. 4th European Congress of the International Federation for Medical and Biological Engineering*, Antwerp, Belgium, pp. 1325-1328, Nov. 23-27, 2008.

61. Neofytou, M.S., Loizou, A., Pattichis, C.S., **Pattichis, M.S.** and Tanos, V., "Classification and Data Mining for Hysteroscopy Imaging in Gynaecology," in *Proc. 4th European Congress of the International Federation for Medical and Biological Engineering*, Antwerp, Belgium, pp. 918-922, Nov. 23-27, 2008.

62. Jeromin, O.M., Calhoun, V.D. and **Pattichis, M.S.**, "Optimal Sampling Geometries for TV-Norm Reconstruction of fMRI Data," invited in *Proc. 42nd Asilomar Conference on Signals, Systems and Computers*, pp. 1397-1401, Oct. 26-29, 2008.

63. Murray, V., **Pattichis, M.S.** and Soliz, P., "Analysis Methods for Retinal Image Characterization," invited in *Proc. 42nd Asilomar Conference on Signals, Systems and Computers*, pp. 664-668, Oct. 26-29, 2008.

64. Agurto, C, Murillo, S., Murray, V., **Pattichis, M.S.**, Russell, S., Abramoff, M. and Soliz, P., "Detection and Phenotyping of Retinal Disease using AM-FM Processing for Feature Extraction," invited in *Proc. 42nd Asilomar Conference on Signals, Systems and Computers*, pp. 659-663, Oct. 26-29, 2008.

65. Loizou, C.P., Pantziaris, M., Nicolaides A., Spanias, A., **Pattichis, M.S.** and Pattichis, C.S., "Ultrasound Imaging Media Layer Texture Analysis of the Carotid Artery," in *CD-ROM Proc. of the 8th IEEE International Conference on BioInformatics and BioEngineering* (BIBE 2008), Athens, Greece, pp. 1-6, Oct. 8-10, 2008.

66. Neofytou, M.S., Pattichis, C.S., **Pattichis, M.S.**, Tanos, V., Kyriacou, E.C. and Schizas, C., "Color Multiscale Texture Classification of Hysteroscopy Images of the Endometrium," in *Proc. of 30th Annual International conference of the IEEE engineering in Medicine and Biology Society*, (EMBS 2008), Vancouver, Canada, pp. 1226-1229, Aug. 20-24th, 2008 **(selected for Poster and Display Presentation)**.

67. Panayides, A., **Pattichis, M.S.** and Pattichis C.S., "Wireless Medical Ultrasound Video Transmission Through Noisy Channels," in *Proc. of 30th Annual International conference of the IEEE engineering in Medicine and Biology Society*, 20-24 August, Vancouver, Canada, pp. 5326-5329, Aug. 20-25th, 2008, PMID: 19163920.

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69. Acton, S.T., Soliz, P., Russell, S. and **Pattichis, M.S.**, "Content Based Image Retrieval: The Foundation for Future Case-Based And Evidence-based Ophthalmology," in *Proc. IEEE International Conference on Multimedia & Expo*, Hannover, Germany, pp. 541-544, Jun. 23-26, 2008.

70. Meyer-Bäse, Uwe, Vera, A., Meyer-Bäse, A., **Pattichis, M.S.** and Perry, R., "DSP with FPGAs: a Xilinx/Simulink-based course and laboratory", in *Proc of the SPIE. Independent Component Analyses, Wavelets, Unsupervised Nano-Biomimetic Sensors, and Neural*

Networks VI. Edited by Szu, Harold H.; Agee, F. Jack., vol. 6979, pp. 697907-697907-12, May, 2008.

71. Murray, V. and **Pattichis, M.S.**, "AM-FM Demodulation Methods for Reconstruction, Analysis and Motion Estimation in Video signals," *2008 IEEE Southwest Symposium on Image Analysis, and Interpretation*, Santa Fe, New Mexico, pp. 17-20, Mar., 2008.

72. Soliz, P., Russell, S.R., Abramoff, M.D., Murillo, S., **Pattichis, M.** and Davis, H., "Independent Component Analysis for Vision-inspired Classification of Retinal Images with Age-related Macular Degeneration," *2008 IEEE Southwest Symposium on Image Analysis, and Interpretation*, Santa Fe, New Mexico, pp. 65-68, Mar. 2008.

73. Pattichis, C.S., Kyriacou, E.C., **Pattichis, M.S.**, Panayides, A., Mougiakakou, S., Pitsillides, A. and Schizas, C.N., "A Brief Overview of m-Health e-Emergency Systems," in *CD-ROM Proc. of the 6th International IEEE EMBS Special Topic Conference on Information Technology Application in Biomedicine,* (ITAB-2007), Tokyo, Japan, pp. 53-57, Nov. 8-11, 2007.

74. Murray, V., Murillo, S.E., **Pattichis, M.S.**, Loizou, C.P., Pattichis, C.S., Kyriacou, E. and Nicolaides, A., "An AM-FM model for Motion Estimation in Atherosclerotic Plaque Videos," invited in the *41st Asilomar Conference on Signals, Systems, and Computers*, Asilomar Hotel and Conference Grounds, Pacific Grove, CA, pp. 746-750, Nov. 4-7, 2007.

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80. Vera, G.A., Meyer-Baese, U., and **Pattichis, M.S.**, "An FPGA-based Rapid Prototyping Platform for Wavelet Coprocessors," *in Proc. of SPIE Defense & Security Symposium,* Orlando, Florida, vol. 6576, pp. 657615-1 - 657615-10, Apr., 2007.

81. Meyer-Baese, U., Vera, A., Meyer-Baese, A., **Pattichis, M.S.** and Perry, R., "Smart Altera Firmware for DSP with FPGAs," *in Proc. of SPIE Defense & Security Symposium,* Orlando, Florida, vol. 6576, pp. 65760T-1 – 65760T-11, Apr., 2007.

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65760U-12, Apr., 2007.

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86. Yu, H., **Pattichis, M.S.**, and Goens, M.B., "Robust Segmentation and Volumetric Registration in a Multi-view 3D Freehand Ultrasound Reconstruction System," invited to the *40th Asilomar Conference on Signals, Systems, and Computers*, Asilomar Hotel and Conference Grounds, Pacific Grove, CA, pp. 1978-1982, 2006.

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94. Neofytou, M.S., **Pattichis, M.S.**, Pattichis, C.S., Tanos, V., Kyriacou, E.C., and Koutsouris D.D., "Texture-based Classification of Hysteroscopy Images of the Endometrium, in *Proc. of the 28th Annual International Conference of the IEEE Engineering in Medicine and Biology Society* (EMBS' 06), New York, pp. 3005-3008, Aug., 2006.

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96. Jeromin, O., **Pattichis, M.S.**, Pattichis, C.S., Kyriacou, E., and Nicolaides, A., "Variogram Methods for Texture Classification," in *Proc. of SPIE Medical Imaging*, San Diego, pp. 61440D-1 – 61440D-12, vol. 6144D, Feb., 2006.

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Preliminary Results," *Proc. IEEE 26th International Conference of the IEEE Engineering in Medicine and Biology Society* (EMBS 2004), pp. 1483-1486, vol. 1, Sept., 2004.

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Systems, and Computers, Asilomar Hotel and Conference Grounds, Pacific Grove, CA, vol. 2, pp. 1263-1267, Nov., 2001.

129. Pattichis, C.S., Christodoulou, C.I., **Pattichis, M.S.**, Pantziaris, M., and Nicolaides, A., "An Integrated System for the Assessment of Ultrasonic Imaging Atherosclerotic Carotid Plaques," in *Proc. 2001 IEEE Int. Conf. on Image Processing 2001*, Thessaloniki, Greece, vol. 1, pp. 325-328, Oct., 2001.

130. **Pattichis, M.S.**, Zhou, R., and Raman, B., "New Algorithms for Computing Directional Discrete Fourier Transforms," in *Proc. 2001 IEEE Int. Conf. on Image Processing*, Thessaloniki, Greece, vol. 3, pp. 322-325, Oct., 2001.

131. Ray, N., Havlicek, J., Acton, S.T. and **Pattichis, M.S.**, "Active Contour Segmentation Guided by an AM-FM Dominant Component Analysis," in *Proc. 2001 IEEE Int. Conf. on Image Processing*, Thessaloniki, Greece, vol. 1, pp. 78-81, Oct., 2001.

132. **Pattichis, M. S.**, Ramachandran, J., Wilson, M., Pattichis, C.S. and Soliz, P., " Optimal Scanning, Display, and Segmentation of the International Labor Organization (ILO) X-Ray Images Set for Pneumoconiosis," in *Proceedings of the 14th IEEE Symposium on Computer-Based Medical Systems,* Bethesda, MD, pp. 511-515, Jul., 2001.

133. Soliz, P., **Pattichis, M.S.**, Ramachandran, J., and James, D.S., "Computer-assisted diagnosis of chest radiographs for pneumoconiosis," in Proceedings of the *SPIE Medical Imaging Conference*, San Diego, California, vol. 1, pp. 667-675, Feb., 2001.

134. **Pattichis, M.S.**, Petropoulos, H., and Brooks, W.H., "MRI Brain Image Segmentation Using an AM-FM Model," invited in the 34th Asilomar Conference on Signals, Systems, and Computers, Asilomar Hotel and Conference Grounds, Pacific Grove, CA, vol. 2, pp. 906-910, Nov., 2000.

135. Pizano, C.E., Heileman, G.L., Abdallah, C.T. and **Pattichis, M.S.**, "Are Perfect Image Watermarking Schemes Possible?," invited in the *Proc. 10th IEEE Mediterranean Electromechanical Conference (MELECON 2000)*, Limassol, Cyprus, vol. 2, pp. 669-672, May 2000.

136. **Pattichis, M.S.**, "Novel Algorithms for the Accurate, Efficient and Parallel Computation of Multidimensional, Regional Discrete Fourier Transforms," invited in the *Proc. of the 10th IEEE Mediterranean Electrotechnical Conference (MELECON 2000)*, Limassol, Cyprus, pp. 53-533 May, 2000.

137. **Pattichis, M.S.**, "Least Squares FIR Filter Design Using Frequency Domain Piecewise Polynomial Approximations," published in the proceedings of *X European Signal Processing Conference*, Tampere, Finland, Sept. 5-8, 2000.

138. **Pattichis, M.S.**, Bovik, A.C., Havlicek, J.W., and Sidiropoulos, N.D., "On the Representation of Wideband Images Using Permutations for Lossless Coding," in Proc. of *IEEE Southwest Symposium on Image Analysis and Interpretation*, Austin, Texas, pp. 237-241, Apr., 2000.

139. **Pattichis, M.S.**, Pattichis, C.S., Avraam, M., Bovik, A.C., and Kyriakou, K., "AM-FM Texture Segmentation in Electron Microscopic Muscle Imaging," invited in *Proc. of the 1999 IEEE International Conference on Acoustics, Speech and Signal Processing,* (ICASSP), Phoenix, Arizona, vol. 4, pp. 2331-2334, Mar., 1999.

140. Sidiropoulos, N.D., **Pattichis, M.S.**, Bovik, A.C., and Havlicek, J.W., "COPERM: Transform-domain Energy Compaction by Optimal Permutation," in *Proc. of the 1998 IEEE*

International Conference on Acoustics, Speech and Signal Processing, (ICASSP), Seattle, WA, vol. 6, pp. 3301-3304, 1998.

141. Lee, S., **Pattichis, M.S.**, and Bovik, A.C., "Foveated Image/Video Quality Assessment in Curvilinear Coordinates", *Int. Workshop on Very Low Bitrate Video Coding 98,* pp. 189-192, Oct. 1998.

142. Lee, S., **Pattichis, M.S.**, and Bovik, A.C., "Rate Control for Foveated MPEG/H.263 Video," in *Proc. IEEE Int. Conf. on Image Processing 98*, vol. 2, pp. 365-369, Oct., 1998.

143. **Pattichis, M.S.**, Pattichis, C.S., Avraam, M., Bovik, A.C., and Kyriakou, K. "Non-Stationary Texture Segmentation in Electron Microscopy Muscle Imaging Using an AM-FM Model," in *CD-ROM proceedings of the VIII Mediterranean Conference on Medical and Biological Engineering and Computing*, Limassol, Cyprus, Jun., 1998.

144. **Pattichis, M.S.**, Christodoulou, C., Pattichis, C.S., and Bovik, A.C., "Non-Stationary Texture Classification Using an AM-FM Model," in *Proceedings of International Conference on Neural Networks*, Houston, Texas, vol. 3, pp. 1552-1557, Jun. 1997.

145. **Pattichis, M.S.**, and A.C. Bovik, "AM-FM Expansions for Images," in *Proc. European Signal Processing Conf.*, Trieste, Italy, Sept., 1996.

146. Havlicek, J.P., **Pattichis, M.S.**, Harding, D.S., Christofides, A.C., and Bovik, A.C., "AM-FM Image Analysis Techniques," in *Proc. of the IEEE Southwest Symposium on Image Analysis, and Interpretation*, San Antonio, Texas, pp. 195-200, Apr., 1996.

147. Pattichis, C.S., **Pattichis, M.S.**, Schizas, C.N., "Wavelet Analysis of Motor Unit Action Potentials," in *Proc. of Engineering in Medicine and Biology Society, 1996. Bridging Disciplines for Biomedicine, 18th Annual International Conference of the IEEE*, vol. 4, pp. 1493-1495, 1996.

148. **Pattichis, M.S.**, and Bovik, A.C., "A Fluid Model for Texture Images," in *Proc. Workshop on Image and Multidimensional Signal Processing*, Belize City, Belize, pp. 18-19, Mar., 1996.

149. **Pattichis, M.S.**, and Bovik, A.C., "Multi-Dimensional Frequency Modulation in Texture Images," in *Proc. International Conference on Digital Signal Processing*, Limassol, Cyprus, pp. 753-758, Jun., 1995.

150. **Pattichis, M.S.**, and Bovik, A.C., "A Nonlinear Fluid Model for Describing Frequency Modulation of Image Orientations," in *Proc. IEEE Workshop on Non-Linear Signal and Image Proc.*, Neos Marmaras, Halkidiki, Greece, pp. 198-201, Jun., 1995.

151. **Pattichis, M.S.**, and Pattichis, C.S., "Fast Wavelet Transform in Motor Unit Action Potential Analysis," in *Proc. Int. Conf. of the IEEE Engineering in Medicine and Biology Society*, San Diego, California, pp. 1225-1226, Oct., 1993.

152. **Pattichis, M.S.**, and Bostick, F.X., "Fast Wavelet Transform Applications in Electromagnetics," in *Proc. of the Int. Conf. on Digital Signal Processing*, Nicosia, Cyprus, pp. 106-111, July 1993.

Refereed Conference Presentations:

1. LópezLeiva, C., Celedón-Pattichis, S., **Pattichis, M.S.**, & Llamocca, D., "Successes and challenges of supporting interactive learning in a mathematics and engineering afterschool program for middle

school students," paper to be presented at the annual meeting of the *American Educational Research Association*, San Francisco, California, April, 2013.

2. LópezLeiva, C., & **Pattichis, M. S.**, "With our feet on the ground": Affordances and challenges of developing an integrated STEM approach for Latina/o middle school students. In S. Celedón-Pattichis (Chair), Making our voices heard: Negotiating the promises and challenges of STEM education for historically underrepresented youth. Scientific Research Symposium presented at the annual meeting of the *Society for the Advancement of Chicanos and Native Americans in the Sciences*, Seattle, Washington, October, 2012.

3. Murray, V., Llamocca, D., Yuebing, J., Lyke, J., Pattichis, M.S., Achramowicz, S., and Keith A., "Adaptive Wiring Panels using Cell-based Architectures: A First Approach," *Reconfigurable Systems Workshop*, Albuquerque, New Mexico, 2010.

4. Murillo S, Zamora G., Barriga S., Nemeth S., Crammer R., Edwards A., Bauman W., Soliz P., **Pattichis M.**, "Low-Cost Super Resolution Retinal Imaging with Embedded Denoising: Quantitative and Qualitative Assessment of Reconstructed Images from a Scanning Laser Ophthalmoscope," in the *2010 Meeting for Research in Vision and Ophthalmology*, ARVO 2010, *Investigative Opthalmology and Visual Sciences*, Abstract number 1803.

5. Barriga, E.S., Murray, V., Agurto, C., **Pattichis, M.S.**, Russel, S.R., and Soliz, P., "Automatic Computer-Based Grading for Age Related Maculopathy," in the *2010 Meeting for Research in Vision and Ophthalmology*, ARVO 2010, *Investigative Opthalmology and Visual Sciences*, Abstract number 1793.

6. Agurto, C., Murray, V., Barriga, E.S., **Pattichis, M.S.**, Baumann, W., and Soliz, P., "Automatic Classification of Diabetic Retinopathy Photographs Using AM-FM," in the *2010 Meeting for Research in Vision and Ophthalmology*, ARVO 2010, Investigative Opthalmology and Visual Sciences, Abstract number 1795.

7. Rodriguez, P., Murray, V., and **Pattichis, M.S.**, "A Basis Pursuit Approach for Multi-Scale AM-FM Reconstructions," *SIAM Conference on Imaging Science*, Chicago, Illinois, April, 2010.

8. Murray, V. and **Pattichis, M.S.**, "Adaptive Wiring Manifold," ReSpace/MAPLD Conference, Albuquerque, 2010.

9. Davis, H.T., Heileman, G., **Pattichis, M.S.**, Murillo, S., Barriga, E.S. and Soliz, P., "Real-time image quality feedback for fundus camera photography," in the *2009 Meeting of the Association for Research in Vision and Ophthalmology*, ARVO 2009.

10. Agurto, C., **Pattichis, M.S.**, Murillo, S., Murray, V., Abramoff, M.D., Russell, S.R., Barriga, E.S., Davis, H., Soliz, P., "Detection of Structures in the Retina Using AM-FM for Diabetic Retinopathy Classification," in the *2009 Meeting of the Association for Research in Vision and Ophthalmology*, ARVO 2009.

11. Barriga, E.S., Russell, S.R., **Pattichis, M.S.**, Murray, V., Murillo, S., Davis, H., Abramoff, M.D. and Soliz, P., "Relationship Between Visual Features and Analytically Derived Features in Non-Exudated AMD Phenotypes: Closing the Semantic Gap," in the *2009 Meeting of the Association for Research in Vision and Ophthalmology*, ARVO 2009.

12. Panayides, A., **Pattichis, M.S.**, Pattichis, C.S., Loizou, C.P. and Pitsillides, A., "Diagnostically Resilient Medical Ultrasound Video Streaming using H.264," in online *Proc. 2nd Cyprus Workshop on Signal Processing and Informatics,* Nicosia, Cyprus, July 14th, 2009.

13. Loizou, C.P., **Pattichis, M.S.**, Pattichis, C.S., "AM-FM Texture Image Analysis of the Intima and Media Layers of the Carotid Artery," in online *Proc. 2nd Cyprus Workshop on Signal Processing and Informatics,* Nicosia, Cyprus, July 14th, 2009.

14. **Pattichis, M.S.**, Murillo, S., and Panayides, A., "Diagnostically Driven Image Processing Systems," in online *Proc. 2nd Cyprus Workshop on Signal Processing and Informatics,* Nicosia, Cyprus, July 14th, 2009.

15. Kyriacou, E., Pattichis, C., **Pattichis, M.**, Jossif, A., Vogiatzis, D., Paraskeva, L., Konstantinides, A., "An m-health System for Continuous Monitoring of Children with Suspected Cardiac Arrhythmias," in *Proc. 1st Cyprus Workshop on Signal Processing and Informatics,* Nicosia, Cyprus, July 8, 2008.

16. Hadjiprokopis, E., Kaplanis, P., **Pattichis, M.S.** and Pattichis, C.S., "AM-FM Analysis of SEMG," in *Proc. 1st Cyprus Workshop on Signal Processing and Informatics,* Nicosia, Cyprus, July 8, 2008.

17. Panayides, A., **Pattichis, M.S.**, Loizou, C.P. and Pattichis, C.S., "Error Resilience Wireless Transmission of Medical Ultrasound Video Through Noisy Channels Using Segmentation," in *Proc. 1st Cyprus Workshop on Signal Processing and Informatics,* Nicosia, Cyprus, July 8, 2008.

18. Murillo, S. and **Pattichis, M.S.**, "Robust Motion Estimation Using Global Optimization Techniques: Application in Ultrasound Imaging," in *Proc. 1st Cyprus Workshop on Signal Processing and Informatics,* Nicosia, Cyprus, July 8, 2008.

19. Kief, C., Suddarth, S., Christodoulou, C., **Pattichis, M.S.**, Pollard, H.E., "Educational Activities for the FPGA Mission Assurance Center," in *Proc. 2008 ASEE Gulf-Southwest Annual Conference,* UNM, Albuquerque, New Mexico, March 26-28, 2008.

20. Cacoullos, T. and **Pattichis, M.S.**, "Pneumoconiosis Revisited: Classifiers Viewed via ROC Curves and Logic Functions," in *Proc. of International Conference of Statistical Models for Biomedical and Technical Systems* (*Biostat 2006*), Limassol, Cyprus, May, 2006.

21. Lund, A., Rodriguez, P., **Pattichis, M.S.**, Walker, M., and Goens, M.D., "Ultrasound Evaluation of Cardiac Fibrosis in Transgenic Mice," presented in the 2003 Pediatric Research Forum, School of Medicine, the University of New Mexico, April 16, 2003.

22. **Pattichis, M.S.**, "AM-FM Analysis of Medical Images," invited in Los Alamos National Laboratory Workshop on Image Analysis and Understanding Data from Scientific Experiments, Los Alamos, NM, December 2-6, 2002.

23. Yu, H., **Pattichis, M.S.**, and Goens, M.B., "3-D Object Reconstruction using Tracking of Freehand Ultrasound," invited in Los Alamos National Laboratory Workshop on Image Analysis and Understanding Data from Scientific Experiments, Los Alamos, NM, December 2-6, 2002.

24. Cai, S. and **Pattichis, M.S.**, "Tumor Growth Image Analysis," invited in Los Alamos National Laboratory Workshop on Image Analysis and Understanding Data from Scientific Experiments, Los Alamos, NM, December 2-6, 2002.

25. Rodriguez, P. V. and **Pattichis, M.S.**, "Fast Computation of Multidimensional Discrete Fourier Transforms on Modern Single Instruction Multiple Data (SIMD) Architectures," invited in Los Alamos National Laboratory Workshop on Image Analysis and Understanding Data from Scientific Experiments, Los Alamos, NM, December 2-6, 2002.

26. Kyriacou, K., Schnorrenberg, F., Schizas, C.N., **Pattichis, M.S.**, Pattichis, C.S., *A Modular Neural Network System for the Analysis of Immunostained Nuclei in Histopathological Sections,* XIV Congress of the International Society of Diagnostic Quantitative Pathology, Oviedo (Spain), September 26-29, 2001.

27. Pattichis, C., Schizas, C., Dimopoulos, Y., Samaras, G., Christodoulou, C., Karaolis, M., Pantziaris, M., **Pattichis, M.S.** and Nicolaides, A., *Evaluation of the Risk of Stroke by Telemedicine,* World Congress on Medical Physics and Biomedical Engineering, Scientific Session: *WE-A201-01* Telecom, Telemetry & High Speed Data Transmission, Track: 04, Medical Informatics and Biomedical Information Technology, Chicago, USA, July 23-28, 2000.

28. Pattichis, C.S., **Pattichis, M.S.**, and Middleton, L.T., *The Wavelet Transform in MUAP Analysis,* Abstracts of Electromyography and Motor Control, The X International Congress of EMG, and Clinical Neurophysiology, Kyoto, Japan, vol. 97, no. 4, pp. S167, October 15-19, 1995.

29. Middleton, L., Pattichis, C., Petrondas, D., Souropetsis, M., Schizas, C., and **Pattichis, M.** *Numerical Pattern Recognition in the Automatic Analysis of Motor Unit Potentials: Technical Considerations*, IIIrd International Conference of Quantitative EMG, Larnaca, Cyprus, June 5-8, 1988.

30. Pattichis, C., Spanias, A., **Pattichis, M.S.**, Souropetsis, M., Petrondas, D., Schizas, C., and Middleton, L., *Linear Prediction analysis applied in EMG*, IIIrd International Conference on Quantitative EMG, Larnaca, Cyprus, June 5-8, 1988.

Technical Reports

1. Rodriguez, P., **Pattichis, M.S.** and Jordan, R., "Parallel Single Instruction Multiple Data (SIMD) FFT: Algorithm and Implementation," HPCERC2003-002, January, 2003.

2. **Pattichis, M.S.** and Zhou, R., " A Novel Directional Approach for the Scalable, Accurate and Efficient Computation of Two Dimensional Discrete Fourier Transforms," AHPCC2000-019 report, Fall 2000.

3. Pattichis, C.S. and **Pattichis, M.S.**, "Time-Scale Analysis of Motor Unit Action Potentials," Technical Report TR-97-11, Department of Computer Science, University of Cyprus, September, 1997.

4. Sidiropoulos, N.D., **Pattichis, M.S.**, Bovik, A.C., and Havlicek, J.W., "COPERM: Transform-Domain Energy Compaction by Optimal Permutation," Technical Report UT-CVIS-TR-97-002, Center for Vision and Image Sciences, The University of Texas at Austin, July, 1997.

Selected Invited Talks (not including UNM talks or Conference paper presentations)
1. M.S. Pattichis, "A Survey of Methods in Digital Image and Video Analysis," October 18th, AFRL, Albuquerque, NM, 2011.

2. M.S. Pattichis, "The UNM ECE Graduate Program," Pontificia Universidad Catolica del Peru, June 17th, 2010.

3. M.S. Pattichis, "Wireless Ultrasound Video Transmission and Analysis For Stroke Assessment," Pontificia Universidad Catolica del Peru, June 16th, 2010.

4. M.S. Pattichis, "Dynamically Reconfigurable Systems," Pontificia Universidad Catolica del Peru, June 15th, 2010.

5. M.S. Pattichis, "New Multidimensional AM-FM Signals and Systems with Applications in Biomedical Image Processing", Arizona State University, January 5th, 2010.

6. M.S. Pattichis, "*Building and Analyzing Electronic Circuits for Elementary School Children,*" Larragoite Elementary School, Santa Fe, New Mexico, August 24th, 2009.

7. M.S. Pattichis, "*Dynamically Reconfigurable Systems for Image and Video Processing,*" presented for the Next Generation of Space Electronics Program, Air Force Research Laboratory, Albuquerque, New Mexico, August 11th, 2009.

8. M.S. Pattichis, "*Diagnostically Driven Image Processing for Emerging Software and Hardware Systems,*" presented at the Center for Nonlinear Studies, Los Alamos National Lab, June 4th, 2009.

9. M.S. Pattichis, "*Dynamically Reconfigurable Systems for Signal, Image and Video Processing,*" Xilinx Corp., Albuquerque, New Mexico, November 7th, 2008.

10. M.S. Pattichis, "*An Introduction to AM-FM Methods,*" Department of Ophthalmogy and Visual Sciences, University of Iowa, September 10th, 2008.

11. M.S. Pattichis, "*Intelligent Image Processing,*" Summer School on Intelligent Systems, European Thematic Network for Doctoral Education in Computing, Nicosia, Cyprus, July 6th 2007.

12. M.S. Pattichis, "*Atherosclerotic Plaque Motion Analysis from Ultrasound Videos: Can we predict rupture?,*" presented at the Center for Nonlinear Studies, Los Alamos National Lab, June 19th, 2006.

13. M.S. Pattichis, "*AM-FM models with applications in medical image analysis,*" presented by the Dept of Electrical and Computer Engineering, the Dept. of Biomedical Engineering, and the Center for Perceptual Studies at the University of Texas at Austin, December 19th, 2005.

14. M.S. Pattichis, "*AM-FM models with applications in medical image processing,*" Oct. 13th, 2005, presented in the Data driven modeling and analysis speaker series, Los Alamos National Lab.

Teaching

Courses (20 courses, 15 unique courses, 10 unique courses at UNM)
Taught at The University of New Mexico, Dept. of ECE, (since September 1999):
      ECE 101. An Introduction to Electrical and Computer Engineering (UG)
      ECE 213. Circuit Analysis II (UG)
      ECE 238. Computer Logic Design (UG regular and internet offerings)
      ECE 338L. Intermediate Logic Design (UG)
      ECE 314. Signals and Communications (UG)
      ECE 533. Digital Image Processing (GRAD)
      ECE 595.1. Medical Imaging **(new course number: ECE 510)**
      ECE 595.2. Advanced Topics in Image Processing **(new course number: ECE 633)**
      ECE 506 Optimization Theory
      ECE 539 Digital Signal Processing I (GRAD)
Taught at the University of Cyprus, Dept. of CS, (Sep 2003-Dec 2004, Oct 2008):
      EPL 445. Digital Image Processing (UG)
      EPL 033. An Introduction to Programming in C for Engineers (UG)

EPL 121. Digital Systems (UG)
        EPL 231. Data Structures and Algorithms (UG)
        EPL 607. Visual Computing (GRAD)
Taught at Washington State University, Dept. of EECS, (September 1998 – August 1999):
        EE 304. An Introduction to Electrical Engineering (UG Circuits I)
        EE 321. Circuits II (UG)
        EE 314. Microprocessor Systems (UG)
        CptS 445. Digital Image and Video Processing (UG)
        CptS 251. Programming in C (UG)

Ph.D. Graduates (Advisor)

1. Carla Agurto, "Detection and Classification of Diabetic Retinopathy Pathologies in Fundus Images,"
    Fall 2012. Currently a **Research Scientist** with VisionQuest Biomedical.

2. Daniel Llamocca, "Dynamically Reconfigurable Management of Energy, Performance, and Accuracy
    Applied to Digital Signal, Image, and Video Processing Applications," (successfully defended on Dec.
    2nd, 2011), Spring 2012. Currently Post-Doc with College of Education, UNM.

3. Sergio Murillo, "Global Optimization Methods for Full-Reference and No-Reference Motion Estimation
    With Applications to Atherosclerotic Plaque Motion and Strain Imaging," Spring 2010. He is currently
    a **Research Scientist** with VisionQuest Biomedical.

4. Oliver Jeromin, "Optimal Spectral Reconstructions from Deterministic and Stochastic Sampling
    Geometries using Compressive Sensing and Spectral Statistical Models," Summer 2009. He has
    been with Sandia National Laboratories. He is now **director of Computer Vision Research** with
    Gentex Corporation.

5. Victor Murray, "Multidimensional AM-FM Models with Applications," December 2008. He is currently a
    Research Assistant Professor with the Department of ECE at the University of New Mexico. He
    also holds a visiting faculty position with Pontificia Universidad Catolica del Peru.

6. Janakiramanan Ramachandran, "Image Analysis of Wood Core Using Instantaneous
    Wavelength and Frequency Modulation," December 2008. He is currently a **Senior Research
    Scientist** at Aureon, New York, NY.

7. Alonzo Vera, "A Dynamic Arithmetic Architecture: Precision, Power and Performance
    Considerations," May 2008. He has been an Engineer-I with Microelectronics Research and
    Development Corporation. He is currently a **Research Assistant Professor** at UNM
    working at COSMIAC.

8. Hongang Yu. "A 3-D Multi-View Freehand Ultrasound Reconstruction System Using
    Volumetric Registration and Geometric Level Set Segmentation," December 2006. She held
    a 50% lecturer appointment with ECE and a 50% research scientist appointment with
    the Keck-UNM Small-Animal Imaging Lab at the School of Medicine at the University of New
    Mexico. She is currently a **Research Scientist** with VisionQuest Biomedical.

9. Eduardo S. Barriga, "Spatiotemporal Independent Component Analysis with Applications to
    Optical Imaging," Ph.D in Electrical Engineering, August 2006. He was a lead software
    engineer, with Orion International Technologies. He was then appointed as a Research
    Assistant Professor with ECE at the University of New Mexico. He is currently the **Chief Research
    Scientist** at VisionQuest Biomedical.

10. Paul Rodriguez V. "Fast and Accurate AM-FM Demodulation with Applications," Ph.D. in Electrical Engineering, August 2005. He was hired by the Mathematical Modeling and Analysis group at the Los Alamos National Laboratory. He is now an **Associate Professor** with the Pontificia Universidad Catolica del Peru.

11. Jeff Kern, "Multispectral Image Registration using Mutual Information," Ph.D. (with distinction) in Electrical Engineering, May 2003. Jeff is now a **distinguished member of the technical staff** at Sandia National Laboratories. He also served as a part-time instructor with the Department of ECE at the University of New Mexico.

M.Sc. Graduates with Thesis Option (Advisor)

1. Paul E. Essenmacher, "A Real-Time, Reconfigurable System for Energy, Error-Resilient, and Scalable Lossless ECG Coding," M.Sc. Thesis in Computer Engineering, August 2011, UNM. He is currently with Sandia National Laboratories.
2. Colby Hoffman, "High-Speed Dynamic Partial Reconfiguration for Field Programmable Gate Arrays," M.Sc. Thesis in Computer Engineering, August 2009, UNM. He was with Xilinx Corporation. He is now with Raytheon. **His M.Sc. Thesis was nominated for the Xilinx Ross Freeman Award for Technical Innovation.**
3. Andrew Mihalik, "Optimal Digital Filter Design for Dispersed Signal Equalization,"

   M.Sc. in Electrical Engineering, August, 2007. He is now with Sandia National Laboratories.
4. Benjamin Mar "SIMD Pipelined Processor Implemented on an FPGA," M.Sc. in Electrical Engineering, August, 2007. He is now with Sandia National Laboratories. **Awarded the 2011 American Indian Science and Engineering Society (AISES) Most Promising Engineer or Scientist Award.**
5. Craig Kief, "XUP-UNM Educational Platform-Large Scale Prototyping Platform," M.Sc. in Electrical Engineering, May 2006. He is now **Deputy Director of the Configurable Space Microelectronics Innovation & Applications Center (COSMIAC)** at UNM.
6. Steve M. Drescher Jr., "Feature Extraction for Improved Efficacy and Precision of a Robust and Automatic Image Registration Method," M.Sc. in Electrical Engineering, August 2005. He is with Sandia National Laboratories.
7. Oliver Jeromin, "Variogram Methods for Texture Classification and Segmentation," M.Sc. in Electrical Engineering, August 2005. He was with Sandia National Laboratories. He is now **director of Computer Vision Research** with Gentex Corporation.
8. Rob Warrick, "Multisensor Multitarget Tracking Detected from Noisy Images with a Cumulative Track Score Method for Real time Applications," M.Sc. (**with distinction**) in Electrical Engineering, May 2005. He is with Sandia National Laboratories.
9. Harini Muralidharan. "Lossless Image Compression and Nodule Detection in Chest Radiographs," M.Sc. in Electrical Engineering, August 2003.
10. Janakiramanan Ramachandran, "Hierarchical Lung Image Segmentation," M.Sc. in Electrical Engineering (Computer Engineering), May 2003. He is currently a **Senior Research Scientist** at Aureon, New York, NY.
11. Balaji Raman, "Image Processing Algorithm Analysis for the Intel Pentium-III Architecture," M.Sc. in Electrical Engineering (Computer Engineering), December 2001. He is now with GE healthcare.

M.Sc. Graduates with Report Option (Advisor)

1. C. Carranza, "GPU Acceleration for Multiscale AM-FM Decompositions for Diabetic Retinopathy Screening," M.SC. report in ECE, UNM, Dec. 2012.
2. Kirk Bennett, "Diabetic Retinopathy Image Analysis," M.Sc. report in ECE, UNM, May 2012.

Current Student Supervision (Advisor)

Ph.D. Students

1. Yuebing Jiang, "Dynamically Reconfigurable Image and Video Compression for Low-Power Applications," (ECE Ph.D. candidate).
2. Hamed Nasrabadi, "Real-time Video Motion Analysis for Biomedical Applications," (ECE post-qualifying exam).
3. Victor Stone, "Object and Motion Activity Detection with Applications to Aerospace and Biomedical Video Image Analysis," (ECE Ph.D. candidate).
4. Cesar Alberto Carranza, "GPU and FPGA Implementations of AM-FM Methods," (ECE post-qualifying exam). He is also a faculty member at Pontifica Universidad Catholica of Peru.
5. Colby Hoffman, "Dynamically Reconfigurable Arithmetic for Digital Image and Video Processing," (ECE Ph.D. candidate). He is currently with Raytheon.
6. Alvaro Ulloa, "Multiscale AM-FM Methods and Models with Application to MRI Image Analysis," (ECE pre-qualifying exam). He is also enrolled in the double degree program with PUCP.
7. Cody Eilar, "Real-time Image Processing Using FPGAs," Ph.D. in ECE, UNM.
8. Gangadharan Esakki, "Dynamically Reconfigurable Methods in Video Communications," Ph.D. in ECE, UNM (strated in Jan. 2012).
9. Venkata Pochiraju, "MRI Image Analysis," Ph.D. in ECE, UNM (to start in Sept. 2012).
10. Sang Jae Nam, "TBD," Ph.D. in ECE, UNM, starting in Sept. 2012.

M.Sc. Students
1. Philip G. Ortiz, "Dynamically Reconfigurable DSP," M.Sc. report in ECE, UNM. He is with the Synthetic Aperture Group at Sandia National Laboratories.
2. Rahul Vora, "Spectral Statistics Mehods," M.Sc. Thesis in ECE, UNM. He is with Sandia National Laboratories.
3. Gary Sandine, "Differential Geometry Methods in Image Processing," He is also affiliated with the Los Alamos National Laboratory.

Current Associated Faculty
Active Research Faculty
1. C. Kief, Deputy Director, Configurable Space Microsystems Innovations & Applications Center, UNM, ECE Research Staff, June 2006 - Present.
2. D. Llamocca, Post-Doc, Department of Language, Literacy and Social Studies, Jan. 2012 – Present.
3. A. Vera, ECE Research Assistant Professor, Jan. 2011–Present.

Previous Research Faculty
1. V. Murray, Research Assistant Professor, UNM ECE, Jan. 2009 – Feb. 2012.
2. S. Barriga, Research Assistant Professor, UNM ECE.
3. H. Yu, Research Assistant Professor, UNM ECE.

Service

UNM Service
- Organized ECE Department presentations for East San Jose Elementary and Washington Middle School, May 2001.
- Developed the Embedded Systems and DSP lab (funded by Xilinx in 2003, converted to research lab for ongoing research in reconfigurable computing)
- Developed and maintained state of the art Logic Design Lab for ECE 238 Computer Logic Design Course (used in several workshops by Xilinx, 2000 - present)
- Developed state of the art Advanced Logic Design Lab for ECE 338 Intermediate Logic Design (used for Xilinx workshops in Summer 2006, Fall 2006)

- Supported ECE 447 Computer Design Laboratory with Xilinx Lab donations
- Supported General ECE lab with Xilinx software donations (2000 – present)
- Computer Engineering and Signals and Systems undergraduate committees
  co-chairman, helped in curriculum design for Signals and Systems and Computer Engineering, worked on course content for: (i) ECE 238 Computer Logic Design course (to include VHDL material), (ii) ECE 314 Signals and Systems (renamed from Signals and Communications) and (iii) the proper introduction of Matlab into the programming courses, served 2000-2003.
- Undergraduate Ad-Hoc Committee for Electrical Engineering, participation in re-defining the undergraduate Electrical Engineering degree at UNM, (2005).
- Computer Engineering representative in Undergraduate committee (2005-Present)
- Computer Engineering representative in Graduate committee (2011-Present)
- Program Chair, Computer Engineering, January 2012 – Present

Other UNM Professional Activities
- UNM Medical Imaging Group (2010-2011)
- UNM Graduate Committee Proposal for Ph.D. Qualifying Exam (2010-present)
- UNM ECE Publicity Committee (2010-2011)
- UNM ECE Promotion and Tenure Committee (2009-2011)
- UNM Junior Researcher Strategic Committee (2008)
- UNM ECE library liaison for ECE (2006 – present)
- Computer Usage Committee (CUC) for ECE (2005 – 2006)
- Computer Engineering representative substitute in Graduate committee (2005–2009)
- Computer Engineering representative in Graduate committee (2011-present)
- UNM health sciences summit on health care, UNM SUB, December 5th, 2005.
- UNM CIRT, helped coordinate UNM Departments bring *Mathematica* to UNM (2008).
- Participated in meetings for defining and organizing Biomedical Physics graduate program (2002 - 2003).
- Participated in the DARPA ENCOMPASS exercise on July 12th, 2000. Co-authored: Dale Alverson (M.D.) and Marios S. Pattichis. *Report on Enhanced Consequence Management Program And Support System (ENCOMPASS) Demonstration, Charleston, SC, July 12th, 2000.*

Journal and Conference Editorial Service
- Guest Editor, "Special Issue on Biomedical Informatics," *IEEE Transactions on Information Technology in Biomedicine*, (2011).
- Guest Editor, "Special Issue on Biomedical Signal Processing and Analysis," *Biomedical Signal Processing and Control* (Elsevier), (2011).
- Guest Editor, "Special Issue on Computational Intelligence in Medical Systems," *IEEE Transactions on Information Technology in Biomedicine*, 2009.
- General Chair *2008 IEEE Southwest Symposium on Image Analysis and Interpretation,* Santa-Fe, New Mexico, (Sponsored by the IEEE Computer Society Technical Committee on Computational Medicine).
- Editorial Board, *International Journal of Experimental and Computational Biomechanics* (IJECB), since 2009.
- Associate Editor for *Pattern Recognition* (2005 – present)

Conference Service
- Reviewer, *IEEE BIBE*, 2012.

- Session Chair, *IEEE ICIP*, 2012.
- Reviewer, *Eusipco*, 2012.
- Session Chair, Image and Video Coding, Asilomar 2012
- Local arrangements chair, technical program committee, session chair, *2012 IEEE Southwest Symposium on Image Analysis and Interpretation*
- Reviewer, IEEE EMBS 2011
- Reviewer, IEEE ICIP 2010, IEEE ICIP 2011.
- Organizing Committee, *3rd and 4th Cyprus Workshop on Signal Processing and Informatics, 2010 and 2011.*
- Poster Session Co-Chair, *Respace/MAPLD* 2010.
- Local arrangements chair, technical program committee, sessions chair, *2010 IEEE Southwest Symposium on Image Analysis and Interpretation*
- International Program Committee, *The 10th IEEE International Conference on Information Technology and Applications in Biomedicine*, ITAB 2010, Corfu, Greece.
- Technical Program Committee for *4th International Symposium on Communications, Control and Signal Processing*, (*IEEE Signal Processing Society* sponsored), 2010.
- Technical Co-Chair, Biomedical Imaging and Image Processing track, *The International Special Topic Conference on Information Technology in Biomedicine*, (IEEE EMBS sponsored), 2009.
- **Technical Program Committee Chair** for area *H. Speech, Image and Video Processing*, *Fortieth-third Annual Asilomar Conference on Signals, Systems, and Computers*, Asilomar Hotel and Conference Grounds, Pacific Grove, CA, Nov. 1st – Nov. 4th, (Sponsored by the IEEE Signal Processing Society), Organized several sessions in this area, 2009.
- Technical Program Co-chair for *2nd Cyprus Workshop on Signal Processing and Informatics,* 2009.
- Referee, *31st Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 2009
- Reviewer, *IEEE International Conference on Image Processing*, 2009.
- Reviewer, *2009 IEEE International Symposium on Biomedical Imaging*.
- Reviewer, *the IEEE International Conference on Image Processing*, 2008.
- *General Chair*, *2008 IEEE Southwest Symposium on Image Analysis and Interpretation,* (Sponsored by the *IEEE Computer Society Technical Committee on Computational Medicine*), 2008.
- Reviewer, *IEEE International Conference on Image Processing*, 2007.
- Technical Program Committee member, *IEEE International Conference on Systems, Man and Cybernetics*, 2006.
- **Technical Program Committee Chair** for *D. Biomedical Signal and Image Processing*, *Fortieth Annual Asilomar Conference on Signals, Systems, and Computers*, Asilomar Hotel and Conference Grounds, Pacific Grove, CA, Oct. 29 – Nov. 1,(Sponsored by the IEEE Signal Processing Society), 2006. Organized several sessions in this area.
- Session Chair for *Image Acquisition, Rendering, and Visualization*, *2006 IEEE Southwest Symposium on Image Analysis and Interpretation.*
- Technical Program Committee, *2006 IEEE Southwest Symposium on Image Analysis and Interpretation.*
- Publications Chair, *2006 IEEE Southwest Symposium on Image Analysis and Interpretation*, 2006.
- Technical Program Committee member, *IEEE International Conference on Systems, Man and Cybernetics*, 2005.
- Technical Program Committee member, *IEEE International Conference on Image Processing*, 2005.

- Technical Program Committee member, *2004 IEEE Southwest Symposium on Image Analysis and Interpretation*, 2004*.*
- Reviewer, *IEEE International Conference on Image Processing*, 2004.
- Session Chair for *TA2: Wavelets, Transforms, & Filterbanks*, *2004 IEEE Southwest Symposium on Image Analysis and Interpretation,* 2004*.*
- Publicity Chair, *2004 IEEE Southwest Symposium on Image Analysis and Interpretation*, 2004.
- Reviewer, *IEEE International Conference on Image Processing*, 2003.
- Chair for *Biomedical Signal and Image Processing* session, for the *45th IEEE Midwest Symposium on Circuits and Systems*, Tulsa, Oklahoma, August 4-7, 2002.
- Chair for *Image Analysis II* session, for the *5th IEEE Southwest Symposium on Image Analysis and Interpretation*, Santa Fe, New Mexico, April 7-9, 2002.
- Local arrangements chair for the *5th IEEE Southwest Symposium on Image Analysis and Interpretation*, Santa Fe, New Mexico, April 7-9, 2002.
- Chair for special session on *Adaptive Techniques in Image Processing*, 35th Asilomar Conference on Signals, Systems, and Computers, Asilomar Hotel and Conference Grounds, Pacific Grove, CA, November, 2001.
- Technical Program Committee member and session chair for Image and Multidimensional Image Processing, the *10th IEEE Mediterranean Electrotechnical Conference (MELECON 2000)*, Limassol, Cyprus, pp. 53-533 May 2000.

Journal Reviewer Service
- Reviewer for *VLSI* (2012)
- Reviewer for *RTIP* (2012)
- Reviewer for *Pattern Recognition* (2012)
- Reviewer for *IEEE Geosciences and Remote Sensing Letters* (2012)
- Reviewer for *IEEE Transactions on Medical Imaging* (2012)
- Reviewer for *IEEE Transactions for Pattern Analysis and Machine Intelligence* (2010)
- Reviewer for *IEEE Geoscience and Remote Sensing Letters* (2010-present)
- Reviewer for *IEEE Transactions on Industrial Informatics* (2009-2011)
- Reviewer for *International Journal of Cardiovascular Imaging* (2009).
- Reviewer for *IEEE Transactions on Information Technology in Biomedicine* (2005 – present)
- Reviewer for Real-Time Image Processing (2008, 2009)
- Reviewer for *Optics Express* (2005)
- Reviewer for *IEEE Transactions on Biomedical Engineering* (2005, 2011)
- Reviewer for *IEEE Signal Processing Letters* (2005)
- Reviewer for *IEEE Transactions on VLSI Systems* (2005)
- Reviewer for *IEEE Transactions on Neural Networks* (2004 - present)
- Reviewer for *IEEE Transactions on Multimedia* (2004)
- Reviewer for *IEEE Transactions on Signal Processing* (1996 - present)*.*
- Reviewer for *IEEE Transactions on Image Processing* (1996 - present)*.*
- Reviewer for *Pattern Recognition*
- Reviewer for *Pattern Recognition Letters* (2009)
- Reviewer for *Annals of Biomedical Engineering* (2009)

Other Professional Service
- Portugese Foundation for Science and Technology, Proposal Reviewer, 2012.
- W.M. Keck Foundation Proposal Reviewer, 2011.

- National Science Foundation Panelist (CISE), 2003, 2006, 2011.
- National Institutes of Health (NIH) Review Panel, 2009.
- Co-chair for *W2: Medical Image Analysis, the II Mediterranean Conference on Medical Physics: The Analog to Digital Migration of the Hospital Working Environment,* Limassol, Cyprus, April 26-30, 2004.
- Section Editor for Signal and Image Processing Methods Section for Wireless Health Systems for M-Health: Emerging Mobile Health Systems, Ed. R.H. Istepanian, S. Laxminarayan, and C.S. Pattichis, published in 2005.

Public Service
- Science Fair Judge, Longfellow Elementary, Albuquerque Public Schools, 2008-2011.
- Santa Fe Public Schools Presentations, 2009, 2010.
- Career Enrichment Center Presentations, 2008, 2009.

Ph.D. Dissertation Committee Service at UNM (not including committee chair)
1. F. Gu, "Survivability for Cloud Networking Services," Ph.D. proposal, ECE (Chair: Prof. N. Ghani), 2012.
2. J. Chen, "Parallel Independent Component Analysis with Reference for Imaging Genetics: A Semi-blind Multivariate Approach," Ph.D. proposal, ECE (Chair: Prof. V. Calhoun), 2012.
3. R. Kalyanam, "Application of Independent Component Analysis to Magnetic Resonance Spectroscopy," Ph.D. proposal, ECE (Chair: Prof. V. Calhoun), 2012.
4. R. Silva, "Extending JICA to Directly Model Multimodal Joint Distributions," Ph.D. proposal, ECE (Chair: Prof. V. Calhoun), 2012.
5. E. Castro, "Application of Multiple Kernel Learning on Brain Imaging for Mental Illness characterization," Ph.D. proposal, ECE (Chair: Prof. V. Calhoun), 2012.
6. N. Xu, "Applications of Support Vector Machines in Electromagnetic Problems," Ph.D., ECE, Spring 2011 (Chair: Prof. Christodoulou).
7. L. Xu, "Independent Component Analysis for Structural Magnetic Resonance Imaging," Ph.D., ECE, Summer 2010 (Chair: Prof. V. Calhoun).
8. Xie (Kevin) Chongyang, "Advance Reservation in Distributed Computer Networks," Ph.D., ECE, Fall 2010 (Chair: Prof. N. Ghani).
9. M. Wang, "Capacitive Micromachined Ultrasonic Transducer Arrays for Blood Flow Ultrasound Doppler and Photoacoustic Imaging Applications," Ph.D., ECE, Summer 2010, (Chair: Prof. J. Chen).
10. T. Thach, "Information Similarity Metrics in Information Security and Forensics," Ph.D., ECE, Fall 2009.
11. S. Xia, "A Conceptual Framework for Visual Data Mining with Continuous Semantic Zooming," Ph.D., ECE, Summer 2009.
12. Q. Liu, "Multi-Domain Hierarchical Routing in DWDM Networks," Ph.D., ECE, Fall 2008.
13. J. Parra, "A Reconfigurable Multiprocessor Architecture For Space Missions: The AFRL-UNM HERC," Ph.D., ECE, Spring 2008.
14. J. Ricardo Otazo Torres, "Advanced Parallel Magnetic Resonance Imaging Methods with Applications to Spectroscopic Imaging," Ph.D., ECE, Fall 2007.
15. Y. Wang, "Enhanced Intelligent Image Classification Techniques with Remote Sensing Applications," Ph.D., ECE, Summer 2004.
16. J. Liu, "Human Cardiovascular Dynamics Identification, Simulation, and Applications," Ph.D., ECE, Summer 2004.
17. W. Abd-Almageed, "Active Contours Using Density Estimation with Applications to MRI Segmentation and Target Tracking," Ph.D., ECE, Spring 2004.
18. T. Song, "Intelligent Image Processing of MRI/FMRI Images," Spring, 2004.
19. M. Mowafi, "Design and Evaluation of a New System for Collaborative Virtual Environments," Ph.D., ECE, Summer 2003.
20. J. Greenfield, "A Perceptual Study of the Effects of Localized Sound in Increasing the Human Participation in Video Conferencing and Virtual Reality Environments," Ph.D., ECE, Summer 2003.

21. W. Luo, "Characterizing the Behavior of Open Address Hash Functions," Ph.D., ECE, Summer 2003.
22. S. Ma, "A Scalable Scheduled Video Delivery Paradigm," Ph.D., ECE, Summer 2003.
23. A. Martinez, "Two-Pass, Two-Antenna Target Parametric Estimation for Interferometric Synthetic Aperture Radar," Ph.D., ECE, Summer 2002.
24. R. Zhou, "Accurate and Reliable Numerical Simulations of Combustion Phenomena Using Complex Models," Ph.D., Mathematics, Summer 2001.

M.Sc. Project Committee Service at UNM (not including committee chair)
1. V. Jacob, "A Survey of Cellular Technologies and Interference Mitigation Techniques," 2012, (Chair: Assoc. Prof. B. Santhanam).
2. R. Williams, "Low Earth Orbit Ionospheric Spectrum Analyzer (LEISA)," 2012, (Chair: Assoc. Prof. N. Ghani).
2. S. Keshavmurthy, "Fault Tolerant Systems in VLSI Circuits," 2012, (Chair: Assoc. Prof. P. Zarkesh-Ha).
3. J. Hundal, "Performance Evaluation of TCP Protocol in Satellite Networks," 2012, (Chair: Assoc. Prof. N. Ghani).

M.Sc. Thesis Committee Service at UNM (not including committee chair)
1. A. Ghassemi, "Neural Processing in Criminal Psychopaths Using fMRI," 2012, (Chair: Prof. V. Calhoun).
2. Lei Xiao, "Edge-Aware Filters for Separable Irradiance in Global Illumination Rendering," Summer 2012, (Chair: Assist. Prof. Sen).
3. J. Aarestad, "Characterizing Within-Die and Die-To-Die Delay Variation Introduced by Process Variations and SOI History Effect," Spring 2011, (Chair: Assoc. Prof. J. Plusquellic).
4. I. Wilcox, "Analysis of Gradient Estimation and Quantization Effects on Optical Flow Algorithms," M.Sc. Thesis, Spring 2011, (Chair: Assoc. Prof. R. Jordan).
5. L. Martinez, "Agile Testing Methods for IC Radios," Fall 2010, (Chair: Assoc. Prof. R. Jordan).
6. M. Juarez, "On the Use of Independent Component Analysis & Functional Network Connectivity Analysis: Evaluation of Two Distinct Large-Scale Psychopathology Studies," Summer 2010, (Chair: Prof. V. Calhoun).
7. P. Palanisamy, "Global Energy Observatory System For Understanding, Visualizing and Analyzing Global Energy," M.Sc. report, Spring 2010, (Chair: Prof. N. Ghani).
8. G. Feucht, " Design & Control of a Cell-Based Architecture for Adaptive Wiring Manifolds," M.Sc., ECE, Spring 2010 (Chair: Prof. J. Plusquellic).
9. S. Arja, "Incorporation of Phase Changes in Functional Magnetic Resonance Imaging," M.Sc., ECE, Fall 2009.
10. A.R. Church, "An Iterative Algorithm for Simultaneous Suppression of Multiple Narrowband Interferers in Spread Spectrum Systems," M.Sc., ECE, Fall 2008.
11. E. Castro, "Recommender Systems Based on Collaborative Filtering," M.Sc., ECE, Fall 2008.
12. J. Krein, "Modeling Dynamic Susceptibility Enhanced MRI for Application in Angiogenesis," M.Sc., ECE, Summer 2007.
13. R. Peralta-Meza, "Interference and Power Control in Ad Hoc Wireless Networks," M.Sc., ECE, Summer 2007.
14. R. L. Hospelhorn, "Implementation of Steerable Pyramids with Hexagonal Sampling," M.Sc., CS, Fall 2006.
15. J. Farrow, "Customizable FPGA Hardware Based Sound Processing Unit," M.Sc., ECE, Fall 2006.
16. B.G. Henderson, "A Novel Method for Extrinsic Self-Calibration of Wide-Baseline Three-Dimensional Computer Vision Systems," M.Sc., ECE, Summer 2006.
17. E. Altunok, "Fuzzy and Possibility Methods for Damage Detection in Structural Health Monitoring," M.Sc., ECE, Summer 2006.
18. P. Davidson Jr., "Laser Extraction Using Spectral Estimation and Pulsing in Ambient Lighting Conditions," M.Sc., ECE, Fall 2005.
19. Y. Sun, "Real-time Virtual Classrooms Based on Application Layer," M.Sc., ECE, Fall 2005.

20. A. Franco, "Automated Classification of Concrete Components," M.Sc., ECE, Fall 2005.
    J. Parra, "Design and Implementation of a Hardware Platform for a Reconfigurable Vector Coprocessor," M.Sc., ECE, Summer 2004.
21. Y. Xiao, "Development and Testing of a Graph Simulation Tool for Modeling Complex Neural Network Architectures," M.Sc., ECE, Summer 2003.
22. D. Vargas, "Circular Sections Constant Modulus Algorithm (CS-CMA)," M.Sc., ECE, Spring 2003.
23. H. Jerez, "The Chipsnsalsa Unified Portal-Gateway for Distributed Knowledge Objects," M.Sc., ECE, Fall 2002.
24. Y. Ding, "Improving Detector Performance in Watermarking Systems Using RBF Neural Networks," M.Sc., ECE, Summer 2002.
25. D. de Oliveira Ourique, "Image Watermarking to Improve the Information Payload and Robustness Against Noise Attacks," Summer 2002.
26. D. He, "Real-time Multiplexing of Variable Bit Rate Video Streams," Summer 2002.
27. M. J. Thurgood, "Derivation of a Closed Form for the Original PONS Matrix and Fast Algorithms for Generating the Original and Symmetric PONS Matrices," M.Sc., ECE, Spring 2002.
28. Y. Yang, "The effects of invisible watermarking on Satellite Image Classification," M.Sc., ECE, Fall 2001.
29. Y. Wu, "LabView Programming for Lithographic Applications," M.Sc., ECE, Spring 2001.
30. Z. Gao, "Autonomous Resonance Neural Networks in Autonomous Robotics," M.Sc., ECE, Fall 2000.
31. N. Prabhu, "Practical Parallel Algorithms for Cycle Detection in Planar Partitioned Digraphs," M.Sc., ECE, Fall 2000.
32. A. J. Matteucci, "Improved Digital Signal Processing for Hypersectral Imaging of the Ocular Fundus," M.Sc., ECE, Fall 2000.
33. B. Gu, "A study of Bluetooth Technology," M.Sc., ECE, Fall 2000.
34. C.E. Pizano, "Deconstructing Digital Image Watermarking," M.Sc., ECE, Spring 2000.