Sundaresh Ram

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Research Interests

– **Signal Processing**   – **Image and Video Processing**   – **Computer Vision**   – **Pattern Recognition**
– **Machine Learning**   – **Computational Imaging**   – **Medical Imaging**   – **Inverse Problems**
– **Compressive Sensing**   – **Adaptive Imaging Systems**

Education

2011–Present   **The University of Arizona**, *Tucson*, AZ, USA.
Ph.D., Electrical and Computer Engineering
Advisor: Prof. Jeffrey J. Rodriguez

2008–2010   **The University of Arizona**, *Tucson*, AZ, USA.
M.S., Electrical and Computer Engineering
Advisor: Prof. Jeffrey J. Rodriguez

2003–2007   **Anna University**, *Chennai*, India.
B.E., Electrical and Electronics Engineering
Advisors: Prof. P. Chidambaram, Dr. V. Rajendran

Professional Experience

08/08– Present   **Signal and Image Laboratory (SaIL), The University of Arizona**, *Tucson*, AZ, USA.
Research Assistant: ***Signal and image processing***.
Advisor: Jeffrey J. Rodriguez.
Developed solutions for multiple applications in image and video processing, involving various data modalities, such as microscopy, CT, SPECT, MRI, and natural images and video. Research topics include sparsity-based image restoration, image reconstruction, graph theoretic image segmentation, non-rigid image registration, motion estimation, object classification, object detection and tracking, and feature extraction.

01/15–12/15   **Soft Tissue Biomechanics Lab (STBL), The University of Arizona**, *Tucson*, AZ, USA.
Research Assistant: ***Modeling the lamina cribrosa microstructure in the eye***.
Advisors: Prof. Jonathan Vande Geest and Prof. Jeffrey J. Rodriguez.
Developed an automated image analysis system for segmentation and registration of 3-D images of lamina cribrosa microstructure in the eye in order to understand the biomechanical structural properties and the role of mechanics in the development of glaucoma.

01/14–12/14   **Brooks Lab, The University of Arizona**, *Tucson*, AZ, USA.
Research Assistant: ***Understanding the role of primary cilia in lithium induced nephropathy***.
Advisors: Prof. Heddwen Brooks and Prof. Jeffrey J. Rodriguez.
Developed a novel image analysis system capable of detection, segmentation, classification and automatic length calculation of primary cilia in microscopy images in order to understand the role they play in lithium-induced nephropathy and polycystic kidney disease.

01/13–05/14	**The Image Science Lab, The University of Arizona**, *Tucson*, AZ, USA.
	Research Assistant: ***Adaptive SPECT imaging***.
	Advisors: Prof. Matthew Kupinski, Prof. Eric Clarkson, and Prof. Jeffrey J. Rodriguez.
	Developed an adaptive imaging system capable of autonomously modifying its configuration based on initial measurements for nuclear imaging applications to contribute to a more efficient medical imaging.
01/11–12/12	**The University of Arizona**, *Tucson*, AZ, USA.
	Graduate Teaching Assistant, Electrical and Computer Engineering
01/10–12/10	**The VIP Research Lab, The University of Arizona**, *Tucson*, AZ, USA.
	Research Assistant: ***Image classification and vegetation index calculation***.
	Advisor: Prof. Kamel Didan.
	Developed algorithms to detect and classify the vegetarian, arid lands in hyper-spectral image data and to perform data smoothing to fill the missing gaps in the data.
01/09–12/09	**The Bosco Lab, The University of Arizona**, *Tucson*, AZ, USA.
	Research Assistant: ***Spot detection and segmentation in microscopy images***.
	Advisors: Prof. Giovanni Bosco and Prof. Jeffrey J. Rodriguez.
	Developed novel algorithms for automatic detection, segmentation, and classification of fluorescent spots in fluorescence in-situ hybridization images for use in study of cytogenetic abnormalities.
08/08–12/09	**Planetary Image Research Lab (PIRL), The University of Arizona**, *Tucson*, AZ, USA.
	Research Assistant: ***Digital terrain modeling***.
	Advisors: Prof. Alfred S. McEwen and Prof. Jeffrey J. rodriguez.
	Developed algorithms for producing digital terrain models of moon using photometric stereo and multi-image shape from shading.
01/08–07/08	**Experimental Ultrasound and Neural Imaging Lab (EUNIL), The University of Arizona**, *Tucson*, AZ, USA.
	Research Assistant: ***Adaptive Photoacoustic Image Reconstruction***.
	Advisor: Prof. Russel Witte.
	Fast implementations of existing image reconstruction algorithms combining coherence factor weighting and the minimum variance method using FFT for photoacoustic imaging.
01/07–10/07	**National Institute of Ocean Technology (NIOT)**, *Chennai*, India.
	Intern: ***Signal Processing***.
	Advisor: Dr. V. Rajendran.
	Developed a system to detect and classify underwater acoustics and ambient noise. Distinguished different type of underwater signals from ambient noise including natural and man-made signals, using spectral analysis.
05/06–08/06	**Cirrus Logic Software Ltd.**, *Pune*, India.
	Summer Intern: ***Audio Processing***.
	Investigated the use of wavelet transform for audio compression. Increased the encoding speed by substituting the detailed psychoacoustic analysis for a wavelet-coefficient-based statistical analysis.

Teaching Experience

The University of Arizona, Tucson, AZ, USA
Guest Lectures

Feb. 2017	**Optimization and Regularization Theory** for ECE523: Machine Learning and Data Analytics
Nov. 2016	**Image Segmentation: Methods & Evaluation** for ECE/OPTI 532: Digital Image Analysis
Nov. 2016	**Sorting Algorithms using Graphs and Trees in C++** for ECE 275: Computer Programming For Engineering Applications II
Nov. 2015	**Non-Linear Filters for Image Restoration** for ECE/OPTI 533: Digital Image Processing.
Jan. 2015	**Discrete-Time Signals and Systems** for ECE429/529: Digital Signal Processing.

Nov. 2014	**Operational Amplifiers: DC Imperfections, Differential & Instrumentation Amplifiers, and Integrators & Differentiators** for ECE 207: Elements of Electrical Engineering.
Nov. 2013	**Mean-Shift Filtering: Theory & Applications** for ECE/OPTI 532: Digital Image Analysis.
Oct. 2013	**Mathematical Morphology: Theory & Applications** for ECE/OPTI 532: Digital Image Analysis.
Sept. 2013	**Gradient-Based Edge Detection** for ECE/OPTI 532: Digital Image Analysis.
Mar. 2013	**Digital Filter Design Using Window Method** for ECE429/529: Digital Signal Processing.
Nov. 2012	**Cascaded Filters and Butterworth Filters** for ECE 320A: Circuit Theory.
Dec. 2011	**First and Second Order Circuits, Phasors, and Impedance** for ECE 220: Basic Circuits.
Oct. 2011	**Morphological Watershed Transform and its Applications** for ECE/OPTI 532: Digital Image Analysis.

Instructor

Summer 2016	PHYS 241: Introductory Electricity and Magnetism
Fall 2012	ECE 207: Elements of Electrical Engineering

Teaching Assistant

Spring 2017	ECE 275: Computer Programming For Engineering Applications II
Spring 2017	PHYS 241: Introductory Electricity and Magnetism
Fall 2016	ECE 532: Digital Image Analysis
Fall 2016	ECE 275: Computer Programming For Engineering Applications II
Spring 2016	PHYS 241: Introductory Electricity and Magnetism
Fall 2014	ECE 207: Elements of Electrical Engineering
Spring 2012	ECE 220: Basic Circuits
Fall 2011	ECE 220: Basic Circuits
Summer 2011	MATH 410: Matrix Analysis
Spring 2011	ECE 175: Computer Programming For Engineering Applications
Fall 2010	ECE 462/562: Computer Architecture and Design

Grader

Fall 2016	ECE 320A: Circuit Theory
Spring 2012	ECE 207: Elements of Electrical Engineering
Fall 2011	ECE 207: Elements of Electrical Engineering
Fall 2010	ECE 175: Computer Programming For Engineering Applications
Spring 2010	ECE 528: Advanced Digital Signal Processing
Fall 2009	ECE 340: Engineering System Analysis

Journal Publications

1. **Sundaresh Ram**, Jeffrey J. Rodriguez, and Giovanni Bosco, "3D Spot Detection and Segmentation in Fluorescent In-Situ Hybridization Images," *Cytometry Part A*, vol. 81A, no. 3, Feb. 2012, pp. 198-212.

2. **Sundaresh Ram** and Jeffrey J. Rodriguez "Size-Invariant Cell Nuclei Detection in Microscopy Images," *IEEE Transactions on Medical Imaging*, vol. 35, no. 7, July 2016, pp. 1753-1764.

3. Jonathan Vande Geest, **Sundaresh Ram**, Stephen J. Howerton, Forest Danford, Urs Utzinger, and Jeffrey J. Rodriguez, "Racioethnic Differences in The Biomechanical Environment of The Lamina Cribrosa," *Investigative Ophthalmology & Visual Science*, vol. 57, no. 12, May 2016, pp. 3555.

4. **Sundaresh Ram**, Forest Danford, Stephen Howerton, Jeffrey J. Rodriguez, and Jonathan Vande Geest, "Three-Dimensional Segmentation of the Ex-Vivo Anterior Lamina Cribrosa from Second-Harmonic Imaging Microscopy," *IEEE Transactions on Biomedical Engineering*, in press.

5. **Sundaresh Ram** and Jeffrey J. Rodriguez, "Robust Segmentation of Cell Nuclei in 3-D Microscopy Images," *IEEE Transactions on Image Processing*, under review.

6. Sree Ramya S. P. Malladi, **Sundaresh Ram**, and Jeffrey J. Rodriguez, "Evaluation of Under-Segmentation Metrics Used for Superpixel Segmentation Quality Assessment," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, under review.

7. Ding Ding, **Sundaresh Ram**, and Jeffrey J. Rodriguez, "Perceptually Aware Image Inpainting," *Pattern Recognition Letters*, under review.

8. **Sundaresh Ram**, Jeffrey J. Rodriguez "Single Image Super-Resolution Using Graph Sparse Representation," *IEEE Transactions on Image Processing*, in preparation.

9. Sree Ramya S. P. Malladi, **Sundaresh Ram**, and Jeffrey J. Rodriguez, "Comparison of Region-Based Metrics Used for the Evaluation of Image Segmentation Algorithms," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, in preparation.

10. **Sundaresh Ram**, Jianbo Shao, Yang Gao, Jeffrey J. Rodriguez, and Heddwen Brooks, "Detection and Segmentation of Primary Cilia in Microscopy Images," *IEEE Transactions on Medical Imaging*, in preparation.

Conference Publications

1. **Sundaresh Ram**, and Jeffrey J. Rodriguez, "Vehicle Detection in Wide Area Images Using Multiscale Structure Enhancement and Symmetry," *IEEE International Conf. on Image Processing (ICIP '16)*, September 25-28, 2016. pp.3817-3821.

2. **Sundaresh Ram**, and Jeffrey J. Rodriguez, "Image Super-Resolution Using Graph Regularized Block Sparse Representation," *2016 IEEE Southwest Symp. on Image Analysis and Interpretation (SSIAI '16)*, March 6-8, 2016, pp. 69-72.

3. Xin Gao, **Sundaresh Ram**, and Jeffrey J. Rodriguez, "A Performance Comparison of Automatic Detection Schemes in Wide-Area Aerial Imagery," *2016 IEEE Southwest Symp. on Image Analysis and Interpretation (SSIAI '16)*, March 6-8, 2016, pp. 125-128.

4. **Sundaresh Ram**, and Jeffrey J. Rodriguez, "Single Image Super-Resolution Using Dictionary-Based Local Regression," *2014 IEEE Southwest Symp. on Image Analysis and Interpretation (SSIAI '14)*, April 22-24, 2012, pp. 121-124.

5. Sree Ramya S. P. Malladi, **Sundaresh Ram**, and Jeffrey J. Rodriguez, "Superpixels Using Morphology for Rock Image Segmentation," *2014 IEEE Southwest Symp. on Image Analysis and Interpretation (SSIAI '14)*, April 22-24, 2012, pp. 145-148.

6. Rohit C. Philip, **Sundaresh Ram**, Xin Gao, and Jeffrey J. Rodriguez, "A Comparison of Tracking Algorithm Performance for Objects in Wide Area Imagery," *2014 IEEE Southwest Symp. on Image Analysis and Interpretation (SSIAI '14)*, April 22-24, 2012, pp. 109-112.

7. **Sundaresh Ram**, and Jeffrey J. Rodriguez, "Symmetry-Based Detection of Nuclei in Microscopy Images," *IEEE International Conf. on Acoustics, Speech and Signal Processing (ICASSP '13)*, May 26-31, 2013 pp. 1128-1132.

8. **Sundaresh Ram**, and Jeffrey J. Rodriguez, "Random Walker Watersheds: A New Image Segmentation Approach," *IEEE International Conf. on Acoustics, Speech and Signal Processing (ICASSP '13)*, May 26-31, 2013, pp. 1473-1477.

9. **Sundaresh Ram**, Jeffrey J. Rodriguez, and Giovanni Bosco, "Size-Invariant Cell Nucleus Segmentation in 3-D Microscopy," *2012 IEEE Southwest Symp. on Image Analysis and Interpretation (SSIAI '12)*, April 22-24, 2012, pp. 37-40.

10. Sean Whitsitt, Armando Barreto, **Sundaresh Ram**, Hussian Al-Helal, Maribel Hudson, Diyang Chu, Jonathan Sprinkle, and Kamel Didan, "Citizen Science in Support of Vegetation Index and Phenology Research," *Phenology Research and Observations of Southwest Ecosystems Symposium (PROSE '10)*, Oct. 4, 2010.

11. **Sundaresh Ram**, Jeffrey J. Rodriguez, and Giovanni Bosco, "Segmentation and Classification of 3-D Spots FISH Images," *2010 IEEE Southwest Symp. on Image Analysis and Interpretation (SSIAI '10)*, May 23-25, 2010, pp.100-104.

12. Ajay S. Nath, **Sundaresh Ram**, V. Balaji, and K. Balachandar, "Multiple 3-D Objects Detection and Recognition Using Independent Component Analysis," *IEEE Intl. Conf. on Signal Processing, Communications and Networking (ICSCN '08)*, Jan. 4-6, 2008, pp.384-391.

13. **Sundaresh Ram**, and S. Jayendran, "Removing a Camera Shake From a Single Photograph," *2007 Annual IEEE India Conf. INDICON*, Sept. 6-8, 2007, pp.528-533.

Abstracts

1. **Sundaresh Ram**, Jonathan Vande Geest, Stephen J. Howerton, Forest Danford, Urs Utzinger, and Jeffrey J. Rodriguez, "Racioethnic differences in the biomechanical environment of the lamina cribrosa," *ARVO 2016 Annual Meeting*, ARVO abstract 3555, May 1-5, 2016.

Honors and Awards

2014   Awarded Technology Research and Initiative Fund (TRIF) Imaging Fellowship, The University of Arizona, Tucson, AZ.

2013   Awarded IEEE Travel Grant to attend IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP '13)

2010, 2012   Awarded GPSC Travel Grant to attend IEEE Southwest Symp. on Image Analysis & Interpretation (SSIAI '10)

2008–2010   Awarded Graduate Research and Tuition Scholarship, The University of Arizona, Tucson, AZ.

2005   Selected as KVPY - National Science Fellow of Indian Institute of Science, Bangalore, India.

2003   Won Britannia general quiz, South Zone, India

2000   Awarded certificate of credit in Australian Mathematics competition for the Westpac Awards conducted by The Australian Mathematics Trust.

Invited Talks

Nov. 2016   Sparse Modeling and Inverse Problems in Image Processing *Postdoctoral Candidate Seminar, Brigham and Women's Hospital & Dana Farber Cancer Institute, Harvard Medical School*, Boston, MA.

Oct. 2016   Sparse Modeling and Inverse Problems in Image Processing *Postdoctoral Candidate Seminar, Image Guided Therapy Group, Department of Medical Physics & Department of Biomedical Engineering, University of Wisconsin–Madison*, Madison, WI.

Sept. 2016	Sparse Modeling and Inverse Problems in Image Processing. *Postdoctoral Candidate Seminar, Brigham and Women's Hospital & Department of Radiology, Harvard Medical School*, Boston, MA.
Sept. 2016	Sparse Modeling and Inverse Problems in Image Processing. *Postdoctoral Candidate Seminar, Division of Imaging, Diagnostics, and Software Reliability, Food and Drug Administration*, Bethesda, MD.
May 2016	Inverse Problems in Signal and Image Processing. *Postdoctoral Candidate Seminar,Center for Biomedical Engineering, Brown University*, Providence, RI.
June 2016	Inverse Problems in Imaging: Theory and Applications. *Student Seminar, Los Alamos National Laboratory*, Los Alamos, NM.
May 2015	Sparse Modeling of Signals and Images: Theory and Applications. *MRI Seminar, Department of Medical Imaging, The University of Arizona*, Tucson, AZ.

Presentations

Sept. 2016	Vehicle Detection in Wide Area Images Using Multiscale Structure Enhancement and Symmetry. *IEEE International Conference on Image Processing* (ICIP '16), Phoenix, AZ.
March 2016	Image Super-Resolution Using Graph Regularized Block Sparse Representation. *IEEE Southwest Symp. on Image Analysis and Interpretation* (SSIAI '16), Santa Fe, NM.
March 2016	A Performance Comparison of Automatic Detection Schemes in Wide-Area Aerial Imagery. *IEEE Southwest Symp. on Image Analysis and Interpretation* (SSIAI '16), Santa Fe, NM.
April 2014	Single Image Super-Resolution Using Dictionary-Based Local Regression. *IEEE Southwest Symp. on Image Analysis and Interpretation* (SSIAI '14), San Diego, CA.
April 2014	Superpixels Using Morphology for Rock Image Segmentation. *IEEE Southwest Symp. on Image Analysis and Interpretation* (SSIAI '14), San Diego, CA.
April 2014	A Comparison of Tracking Algorithm Performance for Objects in Wide Area Imagery. *IEEE Southwest Symp. on Image Analysis and Interpretation* (SSIAI '14), San Diego, CA.
May 2013	Random Walker Watersheds: A New Image Segmentation Approach. *IEEE International Conference on Acoustics, Speech, and Signal Processing* (ICASSP '13), Vancouver, Canada.
May 2013	Symmetry-Based Detection of Nuclei in Microscopy Images. *IEEE International Conference on Acoustics, Speech, and Signal Processing* (ICASSP '13), Vancouver, Canada.
April 2012	Size-Invariant Cell Nucleus Segmentation in 3-D Microscopy. *IEEE Southwest Symp. on Image Analysis and Interpretation* (SSIAI '12), Santa Fe, NM.
April 2012	Cell Splitting Using Dynamic Programming. *IEEE Southwest Symp. on Image Analysis and Interpretation* (SSIAI '12), Santa Fe, NM.
April 2010	Segmentation and Classification of 3-D Spots FISH Images. *IEEE Southwest Symp. on Image Analysis and Interpretation* (SSIAI '10), Austin, TX.

Grant Proposals

2016	**Multimodal Imaging System for Evalauting Transdermal Irritation**, *NIH/FDA*, Grant.

- Helped write a joint grant proposal with research collaborators within Electrical & Computer Engineering Dept. and Optical Sciences Dept. at The University of Arizona for building an optical imaging system capable of detection, and evaluation of skin irritation and sensitization, during the development of transdermal drug products.

2016 **The Development of Novel Diagnostic and Therapeutic Agents for Abdominal Aortic Aneurysms**, *NIH*, Grant.
- Helped write a joint grant proposal with research collaborators within Aerospace & Mechanical Engineering Dept. at The University of Arizona and Bioengineering Dept. at University of Pittsburgh for developing an automated image analysis system capable of measuring local mechanical properties and the wall stress within the aorta, and quantitatively evaluate aorta-related drugs.

2015 **Low-Cost Mobile Oral Cancer Screening Device for Low Resource Setting**, *NIH/NCI*, Grant.
- Helped write a joint grant proposal with research collaborators within Electrical & Computer Engineering Dept. and Optical Sciences Dept. at The University of Arizona for building an optical imaging system in conjunction with mobile phones for oral cancer detection.
- Grant has been funded for 5 years (expected $4 million)

2014 **Secure Cloud-Based Cancer Image Processing with Interactive Segmentation and Compression**, *NIH SBIR*, Grant.
- Helped write a joint grant proposal with research collaborators within Electrical & Computer Engineering Dept. at The University of Arizona and MIAO IC Design, LLC for developing an image processing framework to transmit region of interest compressed images over the cloud.

2014 **Primary Cilia Regulate Therapeutic Response to Hedgehog Inhibitors**, *UACC Barrett Cancer Imaging*, Grant.
- Helped write a joint grant proposal with research collaborators within Electrical & Computer Engineering Dept. and Cellular and Molecular Medicine Dept. at The University of Arizona for developing an automated image analysis system capable of measuring primary cilia growth in images.

2013 **COMET: Continuous Object Motion Estimation and Tracking**, *TRIF Funding for New Initiatives in Optics and Imaging*, Grant.
- Helped write a joint grant proposal with research associates within Electrical & Computer Engineering Dept. at The University of Arizona for building a general purpose automatic detection and tracking system for understanding the automobile traffic patterns in urban environments.

2013 **Development of a Precision Automated Weeding Machine for Leaf Lettuce and Spinach**, *NIFA/AFRI*, Grant.
- Helped write a joint grant proposal with research collaborators in Electrical & Computer Engineering Dept. and Agricultural & Biosystems Engineering Dept. at The University of Arizona for developing an automated weeding machine to control the growth of weeds among lettuce and spinach crops.

2012 **Image Analysis for Rock Particle Segmentation**, *Split Engineering*, LLC.
- Wrote a joint grant with research collaborators in Electrical & Computer Engineering Dept. at The University of Arizona for developing an automated image analysis system for rock particle size distribution.
- Budget: $50,000   Dates: 05/12 - 12/12

Professional Activities

2014-Present	Member of IEEE
2004-2013	Student Member of IEEE
2008-Present	Member of IEEE Signal Processing Society
2009-Present	Member of IEEE Communications Society
2013-Present	Member of IEEE Computer Society
2013-Present	Student Member of SIAM
2010-Present	Affiliate Member of IEEE Technical Committee on Image, Video, and Multidimensional Signal Processing
2010-Present	Affiliate member of IEEE Technical Committee on Bio Imaging and Signal Processing

2010-Present	Affiliate member of IEEE Technical Committee on Machine Learning for Signal Processing
2010-Present	Affiliate Member of IEEE Technical Committee on Multimedia Signal Processing
2012-Present	Affiliate Member of IEEE Technical Committee on Signal Processing Theory and Methods
2014-Present	Affiliate Member of IEEE Technical Committee on Information Forensics and Security
2014-Present	Member of IEEE Computer Society Technical Committee on Pattern Analysis and Machine Intelligence
2016-Present	Affiliate Member of IEEE Computational Imaging Special Interest Group
2016-Present	Affiliate Member of IEEE Big Data Special Interest Group
2006-2007	Chairman of IEEE Student Chapter, College of Engineering, Guindy
2009-Present	Member of Uncertainty Quantification Group, The University of Arizona
2009-2013	Member of Bayesian Study Group, The University of Arizona

Professional Services

Conference Planning

– IEEE *Intl. Conf. on Multimedia and Expo (ICME 15', 16')*, **Program Committee**

– IEEE Southwest Symp. on Image Analysis and Interpretation (SSIAI 16'), **Session Chair**

– IEEE *Intl. Conf. on Computational Intelligence and Communication Networks (CICN 17')*, **Program Committee**

Reviewer

– IEEE *Transactions on Image Processing*

– IEEE *Transactions on Medical Imaging*

– IEEE *Transactions on Biomedical Engineering*

– IEEE *Transactions on Signal Processing*

– IEEE *Transactions on Circuits and Systems for Video Technology*

– IEEE *Signal Processing Letters*

– *Signal Processing*

– *Pattern Recognition*

– *Pattern Recognition Letters*

– *Cytometry: Part A*

– *Image and Vision Computing*

– *BMC Bioinformatics*

– *Biomedical Engineering OnLine*

– *Journal of Circuits, Systems and Computers*

– IEEE *Intl. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*

– IEEE *Intl. Conf. on Image Processing (ICIP)*

– IEEE *Intl. Symp. on Biomedical Imaging (ISBI)*

– IEEE *Intl. Workshop on Multimedia Signal Processing (MMSP)*

– IEEE *Intl. Conf. on Multimedia and Expo (ICME)*

– IEEE *Southwest Symp. on Image Analysis and Interpretation (SSIAI)*

– IEEE *Intl. Conf. on Visual Communications and Image Processing (VCIP)*

– IEEE *Intl. Conf. on Computational Intelligence and Communication Networks (CICN)*

- IEEE *Intl. Conf. on Communication System and Network Technologies (CNST)*
- IEEE *Wireless Communications and Networking Conference (WCNC)*

Skills

Languages	C, C++, OpenCV, OpenGL, WinMips64, Analog Devices Blackfin BF533 ADSP, TI TMSS320C50/20
Software	MATLAB, R (CRAN), LabVIEW, Verilog, Mathematica, Visual DSP++, ISIS-3, VHDL, Code-Composer Studio, PSpice
Tools	LaTeX, MS Office, MS Visio, Adobe Premiere, GIMP, HTML, XML, PHP
OS	Mac OS X, MS Windows, UNIX, SQL

Relevant Graduate Coursework

- Advanced Digital Signal Processing
- Computer-Aided Logic Design
- Advanced Medical Imaging
- Radar Signal Processing
- Statistical Modeling and Inference
- Principles of Image Science
- Noise in Imaging Systems
- Advanced Linear Systems Theory
- Mathematical Optics Lab
- Theoretical Statistics I
- Theoretical Statistics II
- Statistical Pattern Recognition
- Detection and Estimation Theory
- Convex Analysis and Variational Problems

- Random Processes
- Digital Image Processing
- Data Compression
- Stochastic Processes
- Digital Image Analysis
- Computer Graphics
- Information Theory
- Matrix Analysis
- Real Analysis
- Linear Algebra
- Introduction to Machine Learning
- Mathematical Methods For Optics
- Computational Photography
- Machine Learning and Data Analytics

References

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Prof. Michael W. Marcellin
Regents' Professor
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