

## CURRICULUM VITAE

**Aggelos K. Katsaggelos**  
**Professor**  
**Joseph Cummings Chair**  
**Department of EECS**  
**Northwestern University**  
**Evanston, IL 60208-3118**  
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**<http://www.eecs.northwestern.edu/~aggk/>**

### EDUCATION

- 1985 Ph. D. Electrical Engineering  
Georgia Institute of Technology, Atlanta, Georgia  
Thesis advisor: R. W. Schafer
- 1981 M.S. Electrical Engineering  
Georgia Institute of Technology, Atlanta, Georgia
- 1979 B.S. Electrical and Mechanical Engineering  
Aristotelian University of Thessaloniki, Thessaloniki, Greece

### EMPLOYMENT HISTORY

- 1996 - present Professor, Northwestern University  
Department of EECS, Evanston, Illinois
- 2015 - present Joseph Cummings Chaired Professor  
Department of EECS, Evanston, Illinois
- 2011 - 2015 AT&T Chaired Professor  
Department of EECS, Evanston, Illinois
- 2009 - present STA Argonne National Laboratory
- 2008 - present Affiliated Faculty, Department of Linguistics  
Northwestern University, Evanston, Illinois
- 1998 - 2015 Co-Founder and Director  
Motorola Center for Seamless Communications
- 1998 - present Academic Affiliate Staff, Department of Medicine,  
Division of Cardiology, NorthShore University HealthCare System, Evanston, Illinois
- 1985 - present Director, Image and Video Processing Laboratory
- 2003 - 2004 Visiting Professor, University of Athens  
Department of Physics, Athens, Greece
- 1997 - 2003 Ameritech Chair of Information Technology

Northwestern University, Department of ECE, Evanston, Illinois  
 1992 - 1996 Associate Professor, Northwestern University  
 Department of EECS, Evanston, Illinois  
 1989 - 1998 Associate Staff, Department of Medicine, Division of  
 Cardiology, Evanston Hospital, Evanston, Illinois  
 1987 (summer) Visiting Professor, Delft University of Technology,  
 Delft, The Netherlands  
 1986 - 1987 Assistant Professor, Polytechnic University,  
 Department of EECS, Brooklyn, New York (on leave)  
 1985 - 1992 Assistant Professor, Northwestern University  
 Department of EECS, Evanston, Illinois  
 1980 - 1985 Research Assistant, School of Electrical Engineering,  
 Georgia Institute of Technology, Atlanta, Georgia  
 Teaching Assistant (Spring 1983, Spring 1984, Fall 1984)  
 1978 - 1979 Research Assistant, Aristotelian University  
 of Thessaloniki, Greece

## RESEARCH INTERESTS

Multidimensional Digital Signal Processing, Image Processing (Enhancement, Restoration, Coding, Analysis), Processing of Moving (Video) Images (Application of Rate-Distortion Theory to Motion Estimation, Very Low Bit Rate Coding, and Interpolation, Filtering, Recovery), Stereo and 3D Image Processing, Computational Vision, Implementations of Signal Processing Algorithms, Pattern Recognition, Computer Vision, Machine Learning, Multimodal Signal Processing (Speech-Assisted Video Analysis/Synthesis/Coding, bimodal speech recognition, biometrics), Multimedia Signal Processing, Multimedia Systems, (Wireless) Multimedia Communications, Multimedia over Networks, Multimedia and Knowledge, Multimedia and Internet Technologies, Medical and Biological Signal Processing, Scientific Studies in the Arts, Scientific Studies in Health, DNA-based Computing.

## ACADEMIC ACTIVITIES

### Courses and Laboratories Developed

“C59: Digital Signal Processing” (a lab was also developed)

“D18: Advanced Digital Signal Processing” (with B.J. Sullivan)

“D19: Multidimensional Digital Signal Processing” (was later merged with D18)

“D20: Digital Image Processing” (a lab was also later developed)

“EL913: Digital Image Processing and Pattern Recognition” (Polytechnic University)

A Digital Signal Processing TMS320C25-based lab was developed for “C98: Electrical Engineering Design.”

Instructional and Design Laboratory in Digital Signal Processing and Control (with J. C. Rutledge)

Image and Video Processing Research Laboratory

“Multimedia Technologies”, a course for the Master’s in Information Technology Program (winter 1999)

“ECE 222: Fundamentals of Signals and Systems,” one of the five fundamental courses for the revised ECE undergraduate curriculum (winter 2000)  
“ECE 421: Multimedia Signal Processing,” Spring 2001.  
“EECS 495: Sparse and low-rank recovery problems in signal processing and machine learning,” Winter 2014.  
“Coursera: Fundamentals of Image and Video Processing,” 12-week course, Spring 2014.  
“EECS 395/495: Machine Learning: Foundations, Applications, and Algorithms,” Winter 2015.

### **Courses Taught**

“B42: Circuits II”  
“C30: Linear Algebra and Eigenvalue Problems”  
“C51: Introduction to Computer Graphics”  
“C07: Communications”  
“D19: Multidimensional Digital Signal Processing”  
“D20: Digital Image Processing”  
“C59: Digital Signal Processing”  
“C02: Probabilistic Systems and Random Signals”  
“D23: Random Processes”  
“C98: Electrical Engineering Design”  
“B43: Signals and Systems”  
“C99: Electrical Engineering Design”  
“222: Fundamentals of Signals and Systems”  
“420: Digital Image Processing”  
“421: Multimedia Signal Processing”  
“D25: Multimedia Technologies” (for the MITP program)  
“495: Sparse and low-rank recovery problems in signal processing and machine learning”  
“Coursera: Fundamentals of Image and Video Processing,” 12-week course  
“395/495: Machine Learning: Foundations, Applications, and Algorithms”

### **Short Courses Taught**

“Computer Graphics and Algorithms,” course offered to AT&T Teletype Corporation by the Continuing Education Studies, Northwestern University, Fall 1986.  
“Image and Video Processing Techniques,” Bell and Howell, Fall 1993.  
“Image and Video Compression: Theory, Standards, and Architectures,” Imperial College of Science Technology and Medicine, London, July 1-3, 1996.  
“Fundamentals of Video Communications,” Master’s in Information Technology, Northwestern University, May 1998.  
“Image and Video Recovery and Enhancement Techniques,” Signal and Image Processing Conference, Las Vegas, NV, Oct. 1998.  
“Image and Video Compression and Transmission,” 2-day short course, University of Granada, Spain, July 1999.  
“Image and Video Recovery,” 3-hour tutorial, International Conference on Image Processing (ICIP99),

Cobe, Japan, Oct.24, 1999.

“Video Compression and Transmission,” 8-hour workshop, University of Genoa, Italy, Dec. 6-7, 1999.

“Multimedia Signal Processing,” 20-hour workshop, University of Trento, Trento, Italy, Sept. 11-16, 2002.

“Joint Audio-Visual Signal Processing,” 3 1/2-hour tutorial, with G. Potamianos, International Conference on Image Processing (ICIP03), Barcelona, Spain, Sept. 14, 2003.

“Multimedia Processing and Communications,” 15-hour short course, University of Granada, Granada, Spain, July 2004.

“Multimedia Processing and Communications,” 15-hour short course, University of Granada, Granada, Spain, Sept. 2005.

“Multimedia Signal Processing,” 3-hour tutorial, Summer School on Multimedia Semantics, Kallithea, Greece, Sept. 4-8, 2006.

“Multimedia Processing and Communications,” 15-hour short course, University of Granada, Granada, Spain, Sept. 2006.

“Multimedia Processing and Communications,” 15-hour short course, University of Granada, Granada, Spain, July 2007.

“Multimedia Processing and Communications,” 15-hour short course, University of Granada, Granada, Spain, June 2008.

“Multimedia Processing and Communications,” 15-hour short course, University of Granada, Granada, Spain, June 2009.

“Multimedia Processing and Communications,” 15-hour short course, University of Granada, Granada, Spain, June 2010.

“Multimedia Processing and Communications,” 15-hour short course, University of Granada, Granada, Spain, March 2011.

“Multimedia Processing and Communications,” 15-hour short course, University of Granada, Granada, Spain, March 2012.

“Multimedia Processing and Communications,” 15-hour short course, University of Granada, Granada, Spain, March 2013.

”Sparsity-Based Image Processing,” 3-hour short course, Latin American Conference on Networked and Electronic Media Conference, Manizales, Colombia, Sept. 3, 2013.

”Optimization Techniques for Sparse/Low-Rank Recovery Problems in Signal Processing and Machine Learning,” 3-hour short course, European Signal Processing Conference, Marrakesh, Morocco, Sept. 9, 2013.

”Optimization Techniques for Sparse/Low-rank Recovery Problems in Image Processing and Machine Learning,” 6-hour short course, Tarragona International Summer School on Trends in Com-

puting (SSTiC), Tarragona, Spain, July 7-11, 2014.

"Optimization Techniques for Sparse/Low-Rank Recovery Problems in Signal Processing and Machine Learning," 3-hour short course, IEEE International Conference on Image Processing, Paris, France, Oct. 27, 2014.

"Optimization Techniques for Sparse/Low-Rank Recovery Problems in Signal Processing and Machine Learning," 4-hour short course, Hochschule fur Technik Rapperswil, Switzerland, Oct. 30, 2014.

## UNDERGRADUATE ADVISING

Kenneth L. Carr; Project title: *The Analysis of an Iterative Algorithm for Image Restoration*, Winter 1986.

Faisal Ishtiaq; Project title: *TMS320-based Implementation of Iterative Image Restoration Algorithms*, Winter-Spring 1993.

Elisabeth Cheng; Project title: *The Analysis of a Motion Estimation Algorithm Considering Illumination Changes*, Spring 1995.

Jacob J. Brick; Project title: *Real-Time Web-Based Tracking Control System*, Spring 2000 (Motorola funded project).

Jacob J. Brick; Project title: *Implementation of an Iterative Image Restoration Algorithm on a Parallel Processor*, Spring 2001 (Motorola funded project).

Jonathan Bender; Project title: *Video Deinterlacer for Audio-Visual Automatic Speech Recognition*, Spring 2006 (Motorola funded project).

Alice Zhao; Project title: *Audio-Visual Signal Processing*, Spring 2007.

Max Chiswick; Project title: *Audio-Visual Signal Processing*, Spring 2007.

Ron Chin; Project Title: *Object Tracking*, Winter, Spring 2008.

Anna Tarnikowa; Project Title: *Colorization of Paintings*, Winter, Spring 2008.

Yang Yang Chen; Project Title: *Interface for Blind Image Deconvolution*, Fall 2009, Winter 2010.

Ece Tumer and Todd Poole; Project Title: *A Novel Image Retrieval Algorithm*, Fall 2010.

Ece Tumer; Project Title: *A Novel Image Retrieval Algorithm*, Winter and Spring 2011.

Ahmad Hazim Mobashar; Project Title: *Image Retrieval*, Winter 2012.

Churukanti Shashaank Reddy; Project Title: *Speech Processing*, Winter 2012, Spring 2012.

Han Hazel Hye Jung; Project Title: *Image Retrieval Systems*, Winter 2012, Spring 2012.

Shuang Zhang; Project Title: *Motion Extraction for Cardiopulmonary Resuscitation Video Sequence Using Microsoft's Kinect Depth Sensor*, Winter 2013, Spring 2013.

## GRADUATE STUDENT SUPERVISION

### M.S. Students

1. Patrick Brady, M.S. degree awarded June 1987; Thesis title: *Computer Simulation of Electric Discharge Using Fractal Noise Functions.*
2. Joon K. Paik, M.S. degree awarded June 1987; Project title: *Adaptive Iterative Color Image Restoration Algorithms.*
3. Stephanie Lam, M.S. degree awarded December 1987 (Polytechnic University); Thesis title: *Maximum Entropy Based Iterative Image Restoration Algorithms.*
4. Seraphim N. Efstratiadis, M.S. degree awarded June 1988; Thesis title: *Fast Iterative Signal Restoration Algorithms.*
5. Kuen Tsai Lay, M.S. awarded June 1988.
6. Leonid Tokman, M.S. degree awarded June 1989; Project title: *Nonlinear Iterative Signal Restoration.*
7. Chakravart R. Triplicane, M.S. degree awarded Dec. 1989 ; Thesis title: *Recursive Restoration of Noisy Image Sequences.*
8. Tomas De Roux, M.S. degree awarded Dec. 1989; Thesis title: *Optical Implementation of an Iterative Image Restoration Algorithm.*
9. Yu-Chun Kuo, M.S. degree awarded June 1990; Project title: *A Constrained Iterative Algorithm for Identification and Restoration of Images.*
10. Jaeyoung Kwak, M.S. degree awarded June 1990; Thesis title: *Motion Estimation Using Skeletons.*
11. Shu-Yuan Yang, M.S. degree awarded June 1990; Thesis title: *Image Restoration with Ringing Reduction.*
12. Cheuk L. Chan, M.S. awarded June 1990.
13. Brian Tom, M.S. degree awarded June 1991; Project title: *Elastic Registration of Skeletons.*
14. Moon Gi Kang, M.S. awarded June 1990.
15. Mark Banham, M.S. awarded June 1990.
16. Dong-Joon Shin, M.S. degree awarded Aug. 1991; Thesis title: *Adaptive Interpolation Schemes for Digital Angiographic Sequences.*
17. Gregory J. Alexopoulos, M.S. degree awarded Dec. 1991; Thesis title: *Inbetweening Techniques with Free-Form Deformations for Computer Animation.*
18. Taner Ozcelik, M.S. degree awarded June 1992; Thesis title: *Image Restoration Using Maximum Likelihood and Cross Validation.*
19. Ozan Erdogan, M.S. degree awarded June 1992; Project title: *Restoration of Image Sequences.*
20. Min-Cheol Hong, M.S. awarded June 1993.
21. Tom Kostas, M.S. degree awarded Dec. 1993; Project title: *Adaptation of JPEG-Based Compression of Radiographic Images.*
22. Damon Lee Tull, M.S. degree awarded June 1994; Project title: *Iterative Restoration of Space Variant Blurs Caused by Fast Moving Objects in Image Sequences.*

23. Chun-Jen Tsai, M.S. awarded June 1993.
24. Johanis Hashim, M.S. degree awarded Dec. 1995; Project title: *Removal of Fingerprints from Digital Images.*
25. Rachel Smith, M.S. degree awarded Dec. 1995; Thesis title: *An Approach to Region Based Motion Estimation.*
26. Vania Estrela, M.S. degree awarded Dec. 1995; Thesis title: *Motion Estimation Using the Total Least Squares Approach.*
27. Faisal Ishtiaq, M.S. degree awarded Dec. 1996; Thesis title: *On Vector Quantization and its Application to the Encoding of the Anchor Frame.*
28. Lysimachos Kondi, M.S. degree awarded Dec. 1996; Thesis title: *On the Encoding of the Anchor Frame in Video Coding.*
29. Fabian Meir, M.S. degree awarded June 1997; Thesis title: *Optimal Boundary Encoding in the Rate-Distortion Sense.*
30. Marshall Robers, M.S. degree awarded June 1997; Thesis title: *Scalable Video Compression.*
31. Jay Williams, M.S. awarded June 1998.
32. Carlos Luna, M.S. awarded June 1998.
33. Gerry Melnikov, M.S. degree awarded June 1998; Thesis title: *Hybrid Fractal/DCT Image Compression Algorithms Using an Orthogonal Basis and Non-Square Partitions.*
34. Passant Karunaratne, M.S. degree awarded Dec. 1999; Thesis title: *Compressed Video Enhancement.*
35. Stavros Tzavidas, M.S. degree awarded June 2001; Thesis title: *Stereo Panoramic Video Generation and Processing.*
36. Yiftach Eisenberg, M.S. degree awarded Dec. 2001; Thesis title: *Joint Source Coding and Transmission Power Management for Energy Efficient Wireless Video Communications.*
37. Fan Zhai, M.S. degree awarded Dec. 2001.
38. Petar S. Aleksic, M.S. degree awarded Dec. 2001; Thesis title: *Audio-Visual Continuous Speech Recognition Using MPEG-4 Compliant Visual Features.*
39. Xiaohuan Li, M.S. degree awarded June 2002; Thesis title: *MPEG-4 Shape Error Concealment Techniques.*
40. Elias Fradelos, M.S. degree awarded June 2002.
41. Tien F. Lee, M.S. degree awarded June 2002.
42. Fei Wang, M.S. degree awarded June 2002.
43. Peshala Pahalawatta, M.S. degree awarded, Dec. 2002; Thesis title: *Collaborative Video-Based Target Tracking in Wireless Sensor Networks.*
44. Sotirios Tsiftaris, M.S. degree awarded, June 2003; Thesis title: *DNA Computing.*
45. Kostantinos Zachariadis, M.S. degree awarded, June 2004; Thesis title: *Resource Allocation in Wireless Communications.*

46. Mark R. Trandel, M.S. degree awarded, June 2005; Thesis title: *Scalable Video Compression*.
47. Morris M. Kabuage, degree awarded, June 2005.
48. Roger Biffiger, degree awarded, Dec. 2005; Thesis title: *Audio-Visual Isolated Digit Recognition*.
49. Adrian Schuster, degree awarded June 2006.
50. Ramandeep Ahuja, degree awarded June 2006; Thesis title: *Microarray Image Processing*.
51. Derek Shiell, degree awarded June 2007; Thesis title: *Object Tracking for Audio-Visual Signal Processing*.
52. Louis Terry, degree awarded June 2007; Thesis title: *New HMM Design for Visual Speech*.
53. Ehsan Maani, degree awarded June 2007; Thesis title: *Scalable Video Transmission*.
54. Xiaoming Yin, degree awarded June 2007; Thesis title: *Super-Resolution of MRI Images*.
55. Serhan Uslubas, degree awarded Dec. 2008; Thesis title: *Macroblock Based Resolution Adaptive Video Encoding*.
56. Eren Soyak; M.S. degree awarded June 2008.
57. Martin Luessi; M.S. degree awarded June 2008.
58. Tuo Huang, degree awarded June 2010.
59. Bruno Amizic, degree awarded June 2011.
60. Zingnan Wang, degree awarded Dec. 2011.
61. George Tzu-Jui Liu, degree awarded June 2012.
62. Xin Xin, degree awarded June 2012.
63. Leonidas Spinoulas, degree awarded June 2012.
64. Bao Wang, degree awarded June 2012.
65. Armin Kappeler, degree awarded June 2012.
66. Jonathan Springer, degree awarded Dec. 2012; Thesis title: *Forest Hashing: Expediting Large Scale Image Retrieval*.
67. Reza Borhani, degree awarded June 2013.
68. Yushen Liu, degree awarded Dec. 2013.
69. Jian Zhang, degree awarded Dec. 2013.
70. Qiqin Dai, degree awarded Dec. 2013.
71. Mengdi Bian, degree awarded June 2014.
72. Mengwei Li, degree awarded June 2014.
73. Zhenyu Zhang, degree awarded June 2014.
74. Naif Almakhdhub, degree awarded Dec. 2014.
75. Feng Liu, degree awarded Dec. 2014.



76. Yanran Wang, degree awarded June 2015.
77. Emre Besler, degree awarded June 2015.
78. Baiyu Yang, degree awarded June 2015.
79. Yimin Chen, degree awarded June 2015.
80. Yifei Ge, degree awarded June 2015.
81. Jingming Guo, degree awarded June 2015.
82. Shitij Rastogi, degree awarded Dec. 2015; Thesis title: *Detection and Recognition of Human Bodies in a Scene from a Robot Mounted Kinect Camera*
83. Chukwunyere Igbokwe, degree awarded Dec. 2015.
84. Prapul Nagaraja, degree awarded Dec. 2015.

#### **Ph.D. Students**

1. Joon K. Paik, Ph. D. degree awarded June 1990; Thesis title: *Image Restoration and Edge Detection Using Neural Networks*; current position: Associate Professor, Chung-Ang University, Seoul, Korea.
2. Kuen Tsair Lay, Ph. D. degree awarded Dec. 1991 (defense date Aug. 1991); Thesis title: *Blur Identification and Image Restoration Using the EM Algorithm*; current position: Associate Professor, National Taiwan Institute of Technology, Tapei, Taiwan.
3. Seraphim N. Efstratiadis, Ph. D. degree awarded Dec. 1991 (defense date Oct. 1991); Thesis title: *Adaptive Constrained recursive Displacement Field and Image Sequence Estimation*; current position: Professor, Technological Education Institute of Thessaloniki, Thessaloniki, Greece.
4. Cheuk L. Chan, Ph.D. degree awarded Dec. 1993 (defense date July 1993; co-advisor); Thesis title: *Image Sequence Filtering and Displacement Field Estimation Under Quantum-Limited Imaging Conditions*; positions: PAR Government Systems Corporation, La Jolla, CA; Packet Video, San Diego, CA.
5. James C. Brailean, Ph.D. degree awarded Dec. 1993 (defense date July 1993); Thesis title: *Recursive Displacement Field Estimation with Application to Image Sequence Processing*. positions: Motorola, Schaumburg, IL; CEO, Packet Video, San Diego, CA.
6. Moon Gi Kang, Ph. D. degree awarded June 1994 (defense date Feb. 1994); Thesis title: *Adaptive Iterative Image Restoration Algorithms*; Position: Assistant Professor, University of Minnesota, Duluth, MN; current position: Professor, Yonsei University, Seoul, Korea.
7. Mark Banham, Ph. D. degree awarded June 1994; Thesis title: *Wavelet-Based Image Restoration Techniques*; positions: Motorola, Schaumburg, IL; Packet Video, San Diego, CA.
8. John A. Goyette, Ph. D. degree awarded Dec. 1994 (co-advisor); Thesis title: *Evaluation of the Point Spread Function for Restoration of Autoradiographic Images*; current position: XiTec, Inc., Windsor Locks, CT.

9. Taner Ozcelik, Ph.D. degree awarded June 1995 (defense date Dec. 1994); Thesis topic: *A Very Low Bit Rate Video Codec*; positions: SONY, San Jose, CA; President and CEO of MobileSmarts, Palo Alto, CA.
10. Brian C. Tom, Ph.D. degree awarded Dec. 1995 (defense date June 1995); Thesis topic: *Reconstruction of a High Resolution Image from Multiple Degraded Mis-Registered Low Resolution Images*; current position: MRI, Evanston, IL.
11. Guido M. Schuster, Ph.D. degree awarded June 1996; Thesis topic: *A Video Compression Scheme with Optimal Bit Allocation among Segmentation, Displacement Vector Field, and Displaced Frame Difference*; positions: US Robotics (3COM), Skokie, IL; Professor, HSR Hochschule fur Technik Rapperswil, Switzerland.
12. Min-Cheol Hong, Ph.D. degree awarded Dec. 1997; Thesis topic: *Adaptive Iterative Image and Video Recovery Approaches*; positions: LG, Seoul, Korea; Assistant Professor, Soongsil University, Seoul, Korea.
13. Damon Tull, Ph.D. degree awarded June 1998; Thesis topic: *Regularized Restoration of Partial-Response Distortions in Sporadically Degraded Images*; positions: Assistant Professor, University of Wisconsin, Madison, WI; CEO- DVIP Multimedia, Rockville, MD., Evanston, IL.
14. Javier Mateos, Ph.D. degree awarded summer 1998 (co-advisor, University of Granada); Thesis topic: *Hierarchical Bayesian Estimation for the Removal of Blocking Artifacts in Block-Compressed Images*; current position: Assistant Professor, University of Granada.
15. Chun-Jen Tsai, Ph.D. degree awarded Dec. 1998; Thesis topic: *Disparity and Motion Field Estimation in Bi-channel Video Sequences*; positions: Packet Video, San Diego, CA; Professor, National Chiao Tung University, HsinChu, Taiwan.
16. Lisimachos P. Kondi, defense date June 1999; Thesis topic: *Low Bit-Rate SNR Scalable Video Coding and Transmission*; current position: Assistant Professor, State University of New York, Buffalo, NY.
17. Faisal Ishtiaq, defense date June 1999; Thesis topic: *H.263 Scalable Video Coding and Transmission at Very Low Bitrates*; current position: Motorola, Schaumburg, IL.
18. Gerry Melnikov, defense date May 2000; Thesis topic: *Boundary Encoding for Multimedia Communications*; positions: Motorola, Schaumburg, IL; Ingenient Technologies, Chicago, IL.
19. Jay J. Williams, defense date May 2000; Thesis topic: *Speech-to-Video Conversion for Individuals with Impaired Hearing*; positions: Ingenient Technologies, Chicago, IL; Motorola, Schaumburg, IL.
20. Laura Drake, defense date June 2001; Thesis topic: *Sound Source Separation via Computational Auditory Scene Analysis (CASA)-Enhanced Beamforming*.
21. Carlos E. Luna, Ph. D. awarded June 2002; Thesis topic: *Video Quality and Network Efficiency Trade-Offs in Video Streaming Applications*; current position: Boeing, CA.
22. C. Andrew Segall, Ph. D. awarded June 2002; Thesis topic: *Framework for the Post-Processing, Super-Resolution and Deblurring of Compressed Video*; current position: Sharp Labs, WA.

23. Antonio Lopez Fernandez, Ph.D. degree awarded summer 2002 (co-advisor, University of Granada); Thesis topic: *Parameter Estimation in Bayesian Reconstruction of SPECT Images using Gauss Markov Models*; current position: Assistant Professor, University of Granada.
24. Javier Abad Ortega, Ph.D. degree awarded summer 2003 (co-advisor, University of Granada); Thesis topic: *Bayesian Image Restoration and Reconstruction Using Multichannel Decomposition*; current position: Assistant Professor, University of Granada.
25. Fan Zhai, Ph.D. degree awarded June 2004 Thesis topic: *Cross-layer Resource Allocation for Video Transmission over Packet Lossy Networks*; current position: Texas Instruments, TX.
26. Yiftach Eisenberg, Ph.D. degree awarded June 2004; Thesis topic: *Optimal Resource Allocation in Stochastic Video Communication Systems*; current position: Program Manager, DARPA, Washington, DC.
27. Petar Aleksic, Ph.D. degree awarded June 2004; Thesis topic: *Audio-Visual Interactions in Multimodal Communications Using Facial Animation Parameters*; current position: Google, NY, NY.
28. Haohong Wang, Ph.D. degree awarded June 2004; Thesis topic: *Optimal Resource Allocation in Object-Based Video Encoding*; current position: TCL-Thomson Electronics, San Jose, CA.
29. Zhilin Wu, Ph.D. degree awarded June 2004; Thesis topic: *Feature Extraction for Audio-Visual Interactions*; current position: University of Wisconsin, WI.
30. James Li, Ph.D. degree awarded June 2004; Thesis topic: *Rate-Distortion Based Video Summarization*; current position: Samsung, TX.
31. Sotirios Tsaftaris, Ph. D. degree awarded June 2006; Thesis topic: *DNA Computing*; current position: Assistant Professor, IMT Lucca, Italy.
32. Peshala Pahalawata, Ph. D. degree awarded Dec. 2007; Thesis topic: *Downlink Packet Scheduling and Resource Allocation for Multiuser Video Transmission Over Wireless Networks*; current position: Senior Research Engineer, Dolby Laboratories.
33. Stefanos Belekos, Ph.D. degree awarded June 2009; Thesis topic: *Bayesian Techniques for Super-Resolution of Compressed and Uncompressed Video*; current position: Vodafone, Greece.
34. Sevket Derin Babacan, Ph. D. degree awarded Dec. 2009; Thesis topic: *Bayesian Techniques for Image Recovery*; current position: Google, Mountain View, CA.
35. Ehsan Maani, Ph. D. degree awarded Dec. 2009; Thesis topic: *Scalable Video Transmission*; current position: Sony, San Jose, CA.
36. Passant Karunaratne, Ph. D. awarded June 2010; Thesis topic: *Pre-Processing and Post-Processing Methods for Video Compression*; current position: Microsoft, Seattle, WA.
37. Glafkos Stratis, Ph. D. awarded June 2010; Thesis topic: *Quantization of Polarization States through Scattering Mechanisms*; current position: Ryttheon, Tucson, AZ (co-advised with Prof. Taflove).

38. Fan Jiang, Ph. D. awarded Dec. 2010; Thesis topic: *Anomalous Event Detection from Surveillance Video*; current position: Amazon, Seattle, WA.
39. Eren Soyak, Ph. D. awarded March 2011; Thesis topic: *Tracking Optimized Video Compression*; current position: Director, Systems Engineering, AirTies Wireless Networks, Istanbul, Turkey.
40. Louis Terry, Ph. D. awarded March 2011; Thesis topic: *Audio-Visual Asynchrony Modeling and Analysis for Speech Alignment and Recognition*; current position: Quantitative Trader, Chopper Trading, Chicago, IL.
41. Xiaoming Yin, Ph. D. awarded June 2011; Thesis topic: *Exponential Signal Models for Gradient Echo Imaging in MRI*; current position: Citigroup, NY, NY.
42. Martin Luessi, Ph. D. awarded August 2011; Thesis topic: *Bayesian Approaches to Inverse Problems in Functional Neuroimaging*; current position: Postdoctoral Research Fellow, Massachusetts General Hospital and Harvard Medical School.
43. Bruno Amizic, Ph. D. awarded June 2014; Thesis topic: *Bayesian Blind Image Restoration*; current position: The Boeing Company, CA.
44. Li Gao, Ph.D. awarded June 2014; Thesis topic: *Use of Global and Local Features for Fast Video Search*; current position: Quantum Data Inc, IL.
45. Xin Xin, Ph.D. awarded June 2014; *Compact Descriptors for Visual Search*; current position: Microsoft, Seattle, WA.
46. Zhaofu Chen, Ph.D. awarded June 2014; *Multidimensional Signal Processing for Sparse and Low-Rank Problems*; **EECS Best Thesis Award**; current position: Google, Mountain View, CA.
47. Bao Wang, Ph.D. awarded June 2015; current position: Microsoft, Seattle, WA.
48. Pablo Ruiz, Ph.D. awarded September 2015; current position: University of Granada, Spain.
49. Jeremy Watt, Ph. D. awarded September 2015; current position: Northwestern University.

### **Pre-Doctoral Visitor Supervision**

1. Javier Mateos, Universidad de Granada, Spain, Fall 1997, Winter 1998.
2. Luis D. Alvarez, Universidad de Granada, Spain, 2003-2004.
3. Reto Ansorge, Hochschule fur Technik Rapperswil, Switzerland, Fall 2004.
4. Erwin Kirchmeier, Hochschule fur Technik Rapperswil, Switzerland, Fall 2004.
5. Martin Luessi, Hochschule fur Technik Rapperswil, Switzerland, Fall 2005.
6. Marco Eichmann, Hochschule fur Technik Rapperswil, Switzerland, Fall 2005.
7. Roger Merz, Hochschule fur Technik Rapperswil, Switzerland, Fall 2006.

8. Rolf Haller, Hochschule fur Technik Rapperswil, Switzerland, Fall 2006.
9. Valentin Andermatt, Hochschule fur Technik Rapperswil, Switzerland, Fall 2007.
10. Andr Schlegel, Hochschule fur Technik Rapperswil, Switzerland, Fall 2007.
11. Stefanos Belekos, National and Kapodistrian University of Athens, Greece, Spring 2008.
12. Haomian Zheng, Hong Kong Polytechnic University, Fall 2009.
13. Fang Liu, Hong Kong University of Science and Technology (HKUST), April-Sept. 2010.
14. Miguel Tallon, Universidad de Granada, Spain, Fall 2010.
15. Kevin Trmpi, Hochschule fur Technik Rapperswil, Switzerland, Fall 2010.
16. Marc Vettiger, Hochschule fur Technik Rapperswil, Switzerland, Fall 2010.
17. Lasya Priya Kotu, University of Stavanger, Stavanger, Norway, Fall 2011-Winter 2012.
18. Lei Song, Northwestern Polytechnical University, Xi'an, China, 2010-2012.
19. Li Tao, Beijing Institute of Technology, 2011-2013.
20. Pablo Ruiz, Universidad de Granada, Spain, Fall 2013, Fall 2014.
21. Thomas Niederberger, Hochschule fur Technik Rapperswil, Switzerland, Sept. 2013-Jan. 2014.
22. Lukas Schmid, Hochschule fur Technik Rapperswil, Switzerland, Febr. 2014-Aug. 2014.
23. Roman Koller, Hochschule fur Technik Rapperswil, Switzerland, Febr. 2014-Aug. 2014.
24. Ali Bahrami Rad, University of Stavanger, Stavanger, Norway, Summer-Fall 2014.
25. Huyen Vu, University of Stavanger, Stavanger, Norway, Spring-Summer 2015.

### **Post-Doctoral Supervision**

1. Moongi Kang, Northwestern University, 1994.
2. Lisimachos Kondi, Northwestern University, 1999.
3. Laurent Mugnier, Office national d'tudes et de recherches arospatiales (ONERA), Paris, France, 1995.
4. Derin Babacan, Northwestern University, 2010.
5. Jin Qi, University of Electronic Science & Technology of China, Chengdu, China, March 2012-Febr. 2013.
6. Chenghao Liu, Tampere University of Technology, Tampere, Finland, Winter 2014.

## **Current Students**

Matt Woods, Ph. D. expected June 2016.  
Leonidas Spinoulas, Ph. D. expected June 2016.  
Arun Sankisa, Ph. D. expected June 2018.  
Armin Kappeler, Ph. D. expected June 2016.  
Michail Iliadis, Ph. D. expected June 2016.  
Reza Borhani, Ph. D. expected June 2016.  
Qiqin Dai, Ph. D. expected June 2017.  
Seunghwan Yoo, Ph. D. expected June 2017.  
Neda Rohani, Ph. D. expected June 2018.  
Alice Lucas, Ph.D. expected June 2020.  
Arjun Punjabi, Ph. D. expected June 2020.  
Sara Bahaadini, Ph. D. expected June 2019.  
Charikelia Iakovidou, Ph. D. expected June 2020.  
Emre Besler, Ph. D. expected June 2019.  
Yanran Wang, M. S. expected June 2015.  
Ben Zhao, M.S. expected June 2016.  
Da Li, M.S. expected June 2016.  
Yaliang Wang, M. S. expected June 2015.  
Abdullah Thawad Althawad, degree awarded June 2016.  
Han Yu Tseng, degree awarded June 2016.  
Huanyu Wang, degree awarded June 2016.  
Omair Adnan Taibah, degree awarded June 2016.

## **SERVICE TO ACADEMIC COMMUNITY**

### **Departmental Committees**

EE PhD Qualifying Exam Committee (85/86)  
Colloquium Committee (87/88-90/91)  
Laboratory Budget Committee (87/88, 88/89)  
EE Programm Committee (87/88, 88/89)  
Faculty Search Committee, Communications Area (87/88, 98/99, 01/03)

Faculty Search Committee, Signal Processing Area (98/99, 01/02)  
Curriculum Committee (89/90, 90/91, 92/present)  
Computer Resources Committee (90/91, 91/92)  
Teaching Assistant Counselor (90/91, 91/92, 92/93, 93/94)  
Laboratory Committee (91/92, 92/93, 93/94)  
EE Junior Advisor (87/88, 91/92, 95/96, 99/00, 03/04, 07/08, 14/15), Senior Advisor (88/89, 92/93, 96/97, 00/01, 04/05, 09/10), Freshman Advisor(89/90, 93/94, 97/98, 01/02, 05/06, 09/00, 12/13), Sophomore Advisor (90/91, 94/95, 98/99, 02/03, 06/07, 10/11, 13/14)  
Graduate Committee (92/93; chair: 93/94; 2010-15)  
Group Coordinator (92-05)  
ECE Executive Committee Chair (96/98)  
ECE Member of the Promotions, Tenure, Recruitment and Improvement Committee (1998-2001)  
  
EE Undergraduate Curriculum Committee (2008-15)  
Publicity, Alumni and Industrial Relations Committee (2008-15)  
Teaching and External Awards Committee (2008-15)

### **McCormick Committees**

Tech Library Resource Committee (90/91)  
Academic Standing Committee (91/92, 92/93, 96/99, 00/03)  
Center for Information and Telecommunication Technology (1988-1992)  
Tech Corporate Partner Liaison: US Robotics (89-94), Ameritech (95-99)  
Promotion and Tenure Committee (1997-99, 2001-03, 2005-07, 2013-15)  
Promotion and Tenure Ad Hoc Committee Member (2003, 2004, 2008, 2009, 2010, 2011, 2012)  
Cooperative Engineering Education (2009-10)  
Computer Resources Committee (2005-2015)  
Global McCormick Ambassador for Spain (2014-present)

### **University Committees**

Medical School ad hoc Promotion and Tenure Committee (2000-2001)  
Nicholson Fellowship Committee (1998-2003)  
Steering Committee Member, Language, Music, and Communications Group, Northwestern Institute on Complex Systems (2006-present)

Member, Standing Advisory Limited Submissions Committee (2008-2010)  
Academic Advisory Board Member, Center for Advanced Molecular Imaging (2009-present)  
Advisory Board Member, Center for Interdisciplinary Exploration and Research in Astrophysics (2014-present)

## PROFESSIONAL ACTIVITIES

Editor-in-Chief, *IEEE Signal Processing Magazine* (1997-2002)  
Member, Board of Governors, IEEE Signal Processing Society (1999-2001)  
Member, Publication Board, IEEE Signal Processing Society (1997-2002)  
Member, IEEE TAB Magazine Committee (1998-2002)  
Member, IEEE Signal Processing Society Awards Board (2014-2016)  
Member of Scientific Board, Centre for Research and Technology Hellas-CE.R.T.H. (2000)  
Member, Advisory Board, International Graduate School in Information and Communication Technology, Trento, Italy (2004-present)  
Editorial Board Member of Academic Press (1998-present)  
Editorial Board Member of Marcel Dekker, Signal Processing Series (1998-present)  
Editorial Board Member of *Applied Signal Processing* (2001-2007)  
Editorial Board Member of *Computer Journal* (2001-2007)  
Editorial Board Member of *IEEE Proceedings* (2002-2007)  
Editorial Board Member of *IEEE Signal Processing Magazine* (2002-2006)  
Editorial Board Member of *EURASIP Journal on Image and Video Processing* (2006-present)  
Editorial Board Member of *Advances in Multimedia* (2006-present)  
Steering Committee Member, *IEEK Transactions on Smart Processing & Computing (IEEK SPC)* (2012-present)  
Associate Editor, *IEEK Transactions on Smart Processing & Computing (IEEK SPC)* (2012-present)  
Associate Editor, IEEE Transactions on Signal Processing (1990-1992)  
Area Editor, Graphical Models and Image Processing (1992-1995)  
Guest Editor, Journal of Visual Communications and Image Representation, special issue on *Image Restoration*, Nov. 1992  
Guest Editor, *IEEE Transactions on Image Processing*, Special issue on *Application of Artificial Neural Networks to Image Processing*, Aug. 1998.  
Editorial Board Representative, *Applied Signal Processing*, special issue on *Applied Visual Inspection*, 2002.  
Editorial Board Representative, *Applied Signal Processing*, special issue on *Multimedia Human-Computer Interface*, 2002.



Guest Editor, *EURASIP Journal on Applied Signal Processing*, special issue on "Signal Processing Technologies for Ambient Intelligence in Home-Care Applications, 2007.

Guest Editor, *Computer Journal*, special issue on *Super-resolution of Images and Video*, 2008.

Member, Editorial Advisory Board, *Visual Speech Recognition: Lip Segmentation and Mapping*, Information Science Reference, 2008.

Member, Advisory Board, *Journal of Communications*, Academy Publishers (2008-present).

Member, European Commission, *Future Media and 3D Internet Task Force (FM3DI-TF)*, (May 2008-present).

Participant, Cost Action 283 and Cost Action 292

Invited Member, 2008 Research and Development Exchange Workshop, President's National Security Telecommunications Advisory Committee, Sept. 2008.

Lead Guest Editor, *IEEE Transactions on Multimedia*, Special Issue on *Quality-Driven Cross-Layer Design for Multimedia Communications*, Oct. 2009.

Member, IEEE Connexions Lensing Oversight Committee (2007-present)

Advisory Board Member, Knowledge Space of Shared Technology and Integrative Research to Bridge the Semantic Gap, European Network of Excellence, 2005-2008.

Advisory Board Member, 3D Life, European Network of Excellence, 2010-2013.

Advisory Board Member, REVERIE, European Network of Excellence, 2012-2015.

Advisor, Image, Video and Mesh Coding Interest Group (IMVIMEC-IG), 2012-present

Member, Senior Editorial Board, *IEEE Journal of Selected Topics in Signal Processing* (2009-present)

Editorial Board Member, *ICT Academy of Tamil Nadu, ICTACT Journals* (2011-present)

Member, Steering Committee, *IEEE International School of Imaging* (2013-present)

Editorial Board Member, *Journal of Imaging* (2014-present)

Member of SPIE

Member of the IEEE-SP Technical Committee on Image and Multidimensional Signal Processing (IMDSP) (1990-1998)

Founding Member of the IEEE-SP Technical Committee on Multidimedia Signal Processing (MMSP) (1996-present)

Member of the IEEE-CAS Technical Committee on Visual Signal Processing and Communications (1989-present)

Member of the Steering Committee of the IEEE Transactions on Medical Imaging as a representative of the IEEE Signal Processing Society (1990-1999)

Member of the Steering Committee of the IEEE Transactions on Image Processing as a representative of the IEEE Control Systems Society (1991-1997)

Member of the Executive Committee of SPIE Chicago Regional Chapter (1988-1991; chaired the Nominating Committee 1990-1991)

Member of the Steering Committee of Visual Communications and Image Processing Conference (1988-present)

Member of the Executive Committee of Visual Communications and Image Processing Conference (1994-present)

Member of the Organizing Committee of Optical Engineering Midwest Conference (1989-1994)

Chairman of the IEEE-MDSP Technical Subcommittee for the establishment of an IEEE Digital Image Database

Registration Chairman, 1992 American Control Conference, Chicago, IL, June 1992.

Publicity Chairman, IEEE 1993 International Conference on Acoustics, Speech, Signal Processing, Minneapolis, MN.

Publicity Chairman, 1993 European Signal Processing Conference, Edinburgh, Scotland, Sept. 1994.

General Chairman, 1994 SPIE Conference on Visual Communications and Image Processing, Chicago, Illinois, Sept. 1994

General Co-Chairman, SPIE Conference on Artificial Neural Networks for Image Processing, San Jose, CA, 1995-present.

Member of Program Committee, International Workshop on Stereoscopic and Three Dimensional Imaging, Santorini, Greece, Sept. 6-8, 1995.

Member of International Program Committee, IASTED International Conference on Signal and Image Processing, SIP-95, SIP-96, SIP-97

General Co-Chairman, 1996 Conference on Digital Compression Technologies and Systems for Video Communications, Berlin, Germany, Oct. 1996.

Member of Program Committee, International Workshop on Synthetic-Natural Hybrid Coding and Three Dimensional Imaging (IWSNHC3DI'97), Rhodes, Greece, Sept. 7-9, 1997.

Technical Program Co-Chair, IEEE 1998 International Conference on Image Processing, Chicago, IL, Oct. 1998.

Member of Technical Program Committee, Erlangen Workshop '99, "Vision, Modeling, and Visualization," Nov. 17-19, 1999, Erlangen, Germany.

Member of Technical Program Committee, Int. Workshop on Synthetic-Natural Hybrid Coding and 3D Imaging, Sept. 15-17, 1999, Santorini, Greece.

Member of Technical Program Committee, Packet Video Workshop (PV2000), Cagliari, Sardinia, Italy, May 1-2, 2000.

Member of Technical Program Committee, Workshop on Vision, Modeling, and Visualization 2000, Max-Planck-Institut fuer Informatik, Saarbruecken, Germany, Nov. 22-24, 2000.

Advisory Committee Member, International Symposium on Multimedia Information Processing, Dec. 13-15, 2000, Sydney, Australia.

Member of Program Committee, EUROIMAGE 2001, International Conference on Augmented, Virtual Environments and 3D Imaging, Mykonos, Greece, May 30-June 1, 2001.

Member of Technical Program Committee, IEEE International Conference on Multimedia and Expo (ICME 2001), Tokyo, Japan, Aug. 2001.

Member of Technical Program Committee, IEEE Workshop on Multimedia Signal Processing 2001, Cannes, France, Oct. 3-5, 2001.

Member of Program Committee, IEEE 2001 International Conference on Image Processing, Thessaloniki, Greece, Oct. 2001.

Member International Technical Program Committee, 14th International Conference on Digital Signal Processing, Santorini, Greece, July 1-3, 2002.

Member International Technical Program Committee, IEEE Intl. Conf. on Multimedia and Expo (ICME 2002), Lausanne, Switzerland, August 2002.

Member Technical Program Committee, 4th International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-03), London, England, April 9-11, 2003.

Member Technical Program Committee, 1st Iberian Conference on Pattern Recognition and Image Analysis (IbPRIA 2003), Puerto de Andratx, Mallorca, Spain, June 4-6, 2003.

Member, Steering Committee, International Workshop Very Low-Bit Video (VLBV03), Madrid, Spain, September 18-19, 2003.

Member Technical Program Committee, 5th International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-04), Lisboa, Portugal, April 21-23, 2004.

Panelist, *Image and Video Analysis: Trends and Challenges*, 5th International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-04), Lisboa, Portugal, April 21-23, 2004.

Member Technical Program Committee, 3rd International Symposium in Sensor Networks (IPSN'04), Berkeley, CA, April 26-27, 2004.

Member Technical Program Committee, IEEE International Workshop on Multimedia Signal Processing (MMSP-04), Siena, Italy, Sept. 29 - Oct. 1, 2004.

Member Technical Program Committee, 6th International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-05), Montreux, Switzerland, April 13-15, 2005.

Member Technical Program Committee, IEEE Int. Workshop on Genomic Signal Processing and Statistics (GENSIP-05), Newport, Rhode Island, May 22-24, 2005.

Member Technical Program Committee, OSA Computational Sensing and Imaging, Charlotte, NC, June 6-9, 2005.

Member Technical Program Committee, 2nd Iberian Conference on Pattern Recognition and Image Analysis (IbPRIA 2005), Estoril, Portugal, June 7-9, 2005.

General Co-Chairman, First International Conference on Multimedia Services Access Networks (MSAN 2005), Orlando, FL, June 13-15, 2005.

Member Technical Program Committee, IEEE International Conference on Multimedia and Expo (ICME 2005), Amsterdam, The Netherlands, July 6-8, 2005.

Member International Program Committee, 12th Int. Workshop on Systems, Signals and Image Processing, Chalkida, Greece, Sept. 22-24, 2005.

Member Technical Program Committee, Intern. Workshop on Multimedia Signal Processing (MMSP-05), Shanghai, China, Oct. 30 - Nov. 2, 2005.

Member Technical Program Committee, Pacific-Rim Conference on Multimedia (PCM2005), Jeju, Korea, Nov. 13-16, 2005.

Member Scientific Committee, X Iberoamerican Congress on Pattern Recognition, Havana, Cuba, Nov. 15-18, 2005.

Member Technical Program Committee, 2nd European Workshop in the Integration of Knowledge, Semantic, and Digital Media Technologies (EWIMT2005), London, UK, Nov. 30 - Dec. 1, 2005.

Member Technical Program Committee, 7th International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-06), Incheon, Korea, April 19-21, 2006.

Member Technical Program Committee, IEEE Int. Workshop on Genomic Signal Processing and Statistics (GENSIP-06), College Station, TX, May 28-30, 2006.

Member Technical Program Committee, 2nd Int. Symposium of Multimedia over Wireless (IWCMC 2006), Vancouver, Canada, July 3-6, 2006.

Member Technical Program Committee, 14th European Signal Processing Conference (EUSIPCO 2006), Florence, Italy, Sept. 4-8, 2006.

Member International Program Committee, 13th International Conference on Systems, Signals and Image Processing, Budapest, Hungary, Sept. 21-23, 2006.

Member Technical Program Committee, IEE Conference on Visual Information Engineering, Bangalore, India, Sept. 26-28, 2006.

Member Technical Program Committee, Pacific-Rim Conference on Multimedia (PCM2006), Hangzhou, China, Nov 2-4, 2006.

Member Technical Program Committee, 11th Iberoamerican Congress on Pattern Recognition, Cancun, Mexico, Nov. 14-17, 2006.

Member Technical Program Committee, International Conference on Semantic and Digital Media Technologies (SAMa06), Athens, Greece, Dec. 7-8, 2006.

Member Technical Program Committee, International Workshop on Advanced Multimedia Technology and Applications (AMTA2006), Korea, 2006.

Member International Program Committee, International Workshop on Telecommunications (IWT07), Santa Rita do Sapucaí, Brazil, Feb. 12-15, 2007.

Member Technical Program Committee, 8th International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-07), Santorini, Greece, June 6-8, 2007.

Member International Steering Committee, Computational Optical Sensing and Imaging, Vancouver, Canada, June 18-20, 2007.

Member Technical Program Committee, IEEE International Conference on Multimedia and Expo (ICME 2007), Beijing, China, July 2-5, 2007.

Member Technical Program Committee, 15th European Signal Processing Conference (EUSIPCO 2007), Poznan, Poland, Sept. 3-7, 2007.

Member International Steering Committee, Picture Coding Symposium (PCS 2007), Lisbon, Portugal, Nov. 7-9, 2007.

Member Technical Program Committee, 12th Iberoamerican Congress on Pattern Recognition, Via del Mar-Valparaiso, Chile, Nov. 13-16, 2007.

Member Technical Program Committee, Int. Conf. on Advanced Engineering Computing and Applications in Sciences (ADVCOMP 2008), Valencia, Spain, Sept. 29 - Oct. 4, 2008.

Special Sessions/Workshops Co-Chair, Int. Conf. on Image Processing (ICIP 2008), San Diego, CA, Oct. 12-15, 2008.

Member Technical Program Committee, Mosharaka Int. Conf. on Communications, Networking and Information Technology (MIC-CNIT 2008), Amman, Jordan, Dec. 4-6, 2008.

Member Technical Program Committee, 7th ACM SIGGRAPH Int. Conf. on Virtual-Reality Continuum and its Applications in Industry (VRCAI 2008), Biopolis, Singapore, Dec. 8-9, 2008.

Technical Program Co-Chair, Int. Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-09), London, UK, May 6-8, 2009.

Technical Program Co-Chair, Picture Coding Symposium (PCS-09), Chicago, IL, May 6-8, 2009.

Member, Technical Program Committee, IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS 2009), Minneapolis, Minnesota, May 17-21, 2009.

Member International Program Committee, Int. Symposium on Programming and Systems (ISPS 2009), Algiers, Algeria, May 18-20, 2009.

Member, Program Committee, International Workshop on Content-Based Multimedia Indexing (CBMI 2009), Chania, Crete, Greece, June 3-5, 2009.

Member, Technical Program Committee, Int. Conf. on Digital Signal Processing (DSP 2009), Santorini, Greece, July 5-7, 2009.

General Co-Chair, Int. Conf. on Computer Communications and Networks (ICCCN 2009), San Francisco, CA, Aug. 2-6, 2009.

Member, Technical Program Committee, IEEE Workshop on Multimedia Computing and Communications, San Francisco, CA, Aug. 2-6, 2009.

General Co-Chair, Latin-American Conference on Networked and Electronic Media (LACNEM 2009), Bogota, Colombia, Aug. 4-6, 2009.

Reviewer for the Department of Energy of the Large Scale Geospatial Image Indexing and Retrieval Program, Oak Ridge National Laboratory, Oak Ridge, TN, March 23, 2010.

Member Technical Program Committee and US Liaison, 11th International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-10), Desenzano de Garda, Italy, April 12-14, 2010.

General Co-Chair, 1st Int. ICST Conf. on User Centric Media - UCMedia 2009, Venice, Dec. 9-11, 2009.

Member International Advisory Committee, 5th IEEE Int. Conf. on Industrial Electronics and Applications (ICIEA 2010), Taichung, Taiwan, June 15-17, 2010.

Member Technical Program Committee, Visual Communications and Image Processing, Huang Shan, China, July 11-14, 2010.

Technical Program Co-Chair, Latin-American Conference on Networked and Electronic Media (LACNEM 2010), Cali, Colombia, Sept. 8-10, 2010.

Member, International Advisory Committee, Sensor Signal Processing for Defense Conference, London, UK, Sept. 29-30, 2010.

Member, Best Paper Award Committee, IEEE Global Communications Conference (GLOBECOM 2010), Miami, FL, Dec. 6-10, 2010.

Member, International Steering Committee, Picture Coding Symposium, Nagoya, Japan, Dec. 7-10, 2010.

Member, Programme Committee, ACM SIGGRAPH Int. Conf. on Virtual-Reality Continuum and its Applications to Industry (VRCAI 2010), Seoul, Korea, Dec. 12-13, 2010.

Member, Technical Program Committee, Workshop on Future Media Networks and IP-based TV (FMN-IPTV), Shanghai, April 10-15, 2011.

Member, Technical Program Committee, 12th International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-11), Delft, The Netherlands, April 13-15, 2011.

Member, Technical Program Committee, Int. Conf. on Digital Signal Proc. (DSP 2011), Corfu, Greece, July 6-8, 2011.

Member, Technical Program Committee, IEEE Int.Conf. on Multimedia and Expo (ICME 2011), Barcelona, Spain, July 11-15, 2011.

Area Chair and Member, Technical Program Committee, Int. Conf. on Image Processing (ICIP 2011), Brussels, Belgium, Sept. 11-14, 2011.

Member, International Advisory Committee, Sensor Signal Processing for Defense Conference, London, UK, Sept. 28-29, 2011.

Member, Technical Program Committee, Int. Visual Communications and Image Processing (VCIP2011) Conference, Tainan City, Taiwan, Nov. 6-9, 2011.

Panelist, "Future of 3D Media Industry," EMC<sup>2</sup> Industry Day, Berlin, Germany, Nov. 14, 2011.

Member, Technical Program Committee, The 16th Iberoamerican Congress on Pattern Recognition, Pucon, Chile, Nov. 15-18, 2011.

Technical Program Co-Chair, Latin-American Conference on Networked and Electronic Media (LACNEM 2011), San Jose, Costa Rica, Nov. 17-19, 2011.

Member, Technical Program Committee, 10th Int. Conf. on Virtual Reality Continuum and Its Applications in Industry (ACM SIGGRAPH VRCAI 2011), Hong Kong, Dec. 11-12, 2011.

Site reviewer at Trinity College Dublin, for the Science Foundation Ireland, Dublin, Ireland, Jan. 30-31, 2012.

Member, Technical Program Committee, Int. Conf. on Computing, Networking and Communications, Multimedia Computing and Communications Symposium (ICNC-12), Maui, Hawaii, Jan. 30 - Feb. 2, 2012.

Member, Technical Program Committee, 8th Int. Conf. on Networking and Services (ICNS 2012), St. Maarten, The Netherlands Antilles, March 25-29, 2012.

Member, Technical Program Committee, Int. Conf. on Systems, Signals and Image Processing (IWSSIP 2012), Vienna, Austria, April 11-13, 2012.

Member, Technical Program Committee, IEEE Southwest Symposium on Image Analysis and Interpretation (SSIAI), Santa Fe, NM, April 22-24, 2012.

Member, International Steering Committee, Picture Coding Symposium (PCS-12), Krakow, Poland, May 7-9, 2012.

Member, Technical Program Committee, 19th Int. Packet Video Workshop, Munich, Germany, May 10-11, 2012.

US Liaison, 13th Int. Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS-12), Dublin City University, Ireland, May 23-25, 2012.

Member, Technical Program Committee, The IET Image Processing Conference (IPR-12), London, UK, July 3-4, 2012.

Member, Technical Program Committee, Int. Conf. on Advances in Computing, Communications and Informatics (ICACCI-2012), Chennai, India, August 3-5, 2012.

Member, Technical Program Committee, IEEE Statistical Signal Processing (SSP) Workshop, Ann Arbor, MI, Aug. 5-8, 2012.

Member, Technical Program Committee, The 17th Iberoamerican Congress on Pattern Recognition, Buenos Aires, Argentina, Sept. 3-6, 2012.

Member, Regional Chair, Latin-American Conference on Networked and Electronic Media (LAC-NEM 2012), Santiago de Chile, Chile, Oct. 17-19, 2012.

Member, Technical Program Committee, Int. Conf. on Digital Signal Processing (DSP 2013), Santorini, Greece, July 1-3, 2013.

Member, Technical Program Committee, International Conference on Systems, Signals and Image Processing (IWSSIP 2013), Bucharest, Romania, July 7-9, 2013.

Member, Technical Program Committee, First IEEE Workshop of GREEN Multimedia: Energy-efficient Multimedia Computing, Communication and Presentation, San Jose, CA, July 15 - 19, 2013.

Member, International Steering Committee, Latin-American Conference on Networked and Electronic Media (LACNEM 2013), Manizales, Colombia, Sept. 2-5, 2013.

Member, Technical Program Committee, 8th International Symposium on Image and Signal Processing and Analysis (ISPA 2013), Trieste, Italy, Sept. 4-6, 2013.

Member, International Program Committee, The 2013 Intern. Conf. on Systems, Control and Informatics, Venice, Italy, Sept. 28-30, 2013.

Member, International Program Committee, The 2013 Intern. Conf. on Applied Mathematics and Computational Methods, Venice, Italy, Sept. 28-30, 2013.

Member, International Program Committee, The 2013 Intern. Conf. on Electronics, Signal Processing and Communication Systems, Venice, Italy, Sept. 28-30, 2013.

Member, Technical Program Committee, Picture Coding Symposium (PCS-13), San Jose, CA, Dec. 8-11, 2013.

Member, Technical Program Committee, Packet Video Workshop, San Jose, CA, Dec. 12-13, 2013.

Member, Program Committee, International Conference on Educational Technologies and Education, Interlaken, Switzerland, February 22-24, 2014.

Member, Technical Program Committee, IEEE Southwest Symposium on Image Analysis and Interpretation (SSIAI), San Diego, CA, April 6-8, 2014.

Member, Scientific Committee, SIAM Conference on Imaging Science (SIAM-IS14), Hong Kong Baptist University, Hong Kong, May 12-14, 2014.

Member, Technical Program Committee, International Conference on Systems, Signals and Image Processing (IWSSIP 2014), Dubrovnik, Croatia, May 12-15, 2014.

Member, International Scientific Committee, 18th Intern. Conf. on Circuits, Systems, Communications and Computers (CSCC 2014), Santorini Island, Greece, July 17-21, 2014.

Member of International Program Committee, IEEE Int. Conference on Digital Signal Processing (DSP 2014), Hong Kong, Aug. 20-23, 2014.

Member Technical Program Committee, European Conference on Computer Vision (ECCV 2014), Workshop on "Video Event Categorization, Tagging and Retrieval Towards Big Data," Zurich, Switzerland, Sept. 6, 2014.

General Co-Chair, IEEE International Conference on Imaging Systems and Techniques, Santorini, Greece, Oct. 14-17, 2014.

Member Technical Program Committee, IEEE International Conference on Image Processing (ICIP 2014), Paris, France, Oct. 27-30, 2014.

Member Technical Program Committee, Int. Conf. on Signal Processing and Integrated Networks, Noida, India, Feb. 19-20, 2015.

Member, Technical Program Committee, The Seventh International Conferences on Advances in Multimedia (MMEDIA 2015), Barcelona, Spain, April 19-24, 2015.

Member, International Steering Committee, Picture Coding Symposium (PCS-15), Cairns, Australia, May 31-June 3, 2015.

Member of Technical Program Committee, Packet Video Workshop (PV 2015), Sydney, Australia, June 4-5, 2015.

Member of Technical Program Committee, IEEE Intern. Conference on Multimedia and Expo (ICME2015), Torino, Italy, June 29-July 3, 2015.

Member of International Program Committee, IEEE Int. Conference on Digital Signal Processing (DSP 2015), Singapore, July 21-24, 2015.



Member of Technical Program Committee, 9th Int. Symposium on Image and Signal Processing and Analysis (ISPA 2015), Zagreb, Croatia, Sept. 7-9, 2015.

General Co-Chair, IEEE International Conference on Imaging Systems and Techniques, Macau, China, Sept. 16-18, 2015.

Member of Technical Program Committee, IEEE Southwest Symposium on Image Analysis and Interpretation (SSIAI), Santa Fe, NM, March 6-8, 2016.

Member of Organizing Committee, 2nd Global Summit and Expo on Multimedia and Applications, London, UK, Aug. 15-16, 2016.

General Co-Chair, IEEE International Conference on Image Processing (ICIP), Phoenix, Arizona, Sept. 25-28, 2016.

Co-Chair, Special Session, IEEE Int. Conference on Acoustics Speech and Signal Proc. (ICASSP), New Orleans, LA, March 5-9, 2017.

Member, Advisory Board, IEEE International Conference on Image Processing (ICIP), Athens, Greece, Oct. 7-10, 2018.

Co-Chair, Plenary Sessions, IEEE International Conference on Image Processing (ICIP), Abu Dhabi, UAE, Oct. 25-28, 2020.

Reviewer, National Science Foundation; IEEE Press; IEEE Transactions on Signal Processing, Image Processing, Multimedia Signal Processing, Circuits and Systems for Video Technology; Circuits, Systems and Signal Processing; Signal Processing; Signal Processing: Image Communications; Computer Vision, Graphics and Image Processing; Journal of the Optical Society of America; Optical Engineering; Journal of Visual Communications and Image Processing.

### **Selected Sessions Organized and Chaired**

Session Chairman: *Image Restoration and Modeling*, IEEE International Conference on Acoustics, Speech and Signal Processing, New York City, N.Y., April 11-14, 1988.

Session Chairman: *Image Analysis*, SPIE Conference on Visual Communications and Image Processing, Philadelphia, PA, Nov. 5-10, 1989.

Session Chairman: *3-D Image Processing*, SPIE Conference on Visual Communications and Image Processing, Lausanne, Switzerland, Oct. 1-4, 1990.

Organizer and Session Chairman: *Image Restoration*, Conference on Information Sciences and Systems, Johns Hopkins University, April 1991.

Session Chairman: *Image Restoration*, IEEE International Conference on Acoustics, Speech and Signal Processing, Toronto, Canada, May 1991.

Session Chairman: *Motion Estimation and Motion Analysis*, SPIE Conference on Visual Communications and Image Processing, Boston, MA, Nov. 11-13, 1991.

Session Chairman: *Motion Analysis and Video Coding*, SPIE Conference on Visual Communications and Image Processing, Boston, MA, Nov. 18-20, 1992.

Organizer and Session Chairman: *Video Signal Processing for Military Applications*, MILCOM '93, Boston, MA, Oct. 11-14, 1993.

Session Chairman: *Motion Estimation, Compensation II*, SPIE Conference on Visual Communications and Image Processing, Boston, MA, Nov. 9-11, 1993.

Session Chairman: *Multispectral Image Processing*, IEEE International Conference on Image Processing, Austin, TX, Nov. 13-16, 1994.

Session Chairman: *Motion Analysis and Video Coding*, SPIE Conference on Visual Communications and Image Processing, Taipei, Taiwan, May 23-26, 1995.

Organizer and Session Chairman: *Nonlinear Techniques in Image Restoration and Recovery*, 1995 IEEE Workshop on Nonlinear Signal and Image Processing, Neos Marmaras, Greece, June 20-22, 1995.

Organizer and Session Chairman: *Very Low Bit Rate Video Coding*, International Conference on Digital Signal Processing, Limassol, Cyprus, June 26-28, 1995.

Session Chairman: *Restoration/Enhancement*, IEEE International Conference on Image Processing, Washington, D.C., Oct. 23-26, 1995.

Session Chairman: *Video Coding*, SPIE Conference on Visual Communications and Image Processing, Orlando, FL, March 18-20, 1996.

Session Chairman: *Image Enhancement and Restoration*, IEEE International Conference on Acoustics, Speech and Signal Processing, Atlanta, GA, May 7-10, 1996.

Session Chairman: *Region Segmentations*, IEEE International Conference on Image Processing, Lausanne, Switzerland, Sept. 16-19, 1996.

Organizer and Session Chairman: *Multimedia Signal Processing*, International Conference on Digital Signal Processing, Santorini, Greece, July 2-4, 1997.

Session Chairman: *Image Processing*, IEEE International Symposium on Circuits and Systems, Hong Kong, June 9-12, 1997.

Session Chairman: *Robust Video*, IEEE International Conference on Image Processing, Santa Barbara, CA, Oct. 26-29, 1997.

Organizer and Session Chairman: *Video Compression and Communications*, European Signal Proc. Conference, Rhodes, Greece, Sept. 8-11, 1998.

Session Chairman: *Video Processing*, 1999 IEEE Workshop on Nonlinear Signal and Image Processing, Antalya, Turkey, June 20-23, 1999.

Session Chairman: *Transform Techniques*, IEEE International Conference on Acoustics, Speech and Signal Processing, Phoenix, Arizona, March 15-19, 1999.

Session Chairman: *Motion Estimation*, IEEE International Conference on Image Processing, Kobe, Japan, Oct. 24-28, 1999.

Session Chairman: *Motion Estimation*, IEEE International Conference on Acoustics, Speech and Signal Processing, Istanbul, Turkey, June 5-9, 2000.

Session Chairman: *Face Video Analysis and Synthesis*, IEEE International Conference on Multimedia and Expo, New York, NY, July 30-Aug. 2, 2000.

Session Chairman: *Motion Estimation*, IEEE International Conference on Image Processing, Vancouver, Canada, Sept. 10-13, 2000.

Session Chairman: *Signal Processing for Media Integration*, IEEE International Conference on Acoustics, Speech and Signal Processing, Salt Lake City, Utah, May 7-11, 2001.

Session Chairman: *Image Restoration*, IEEE International Conference on Image Processing, Thessaloniki, Greece, Oct. 7-10, 2001.

Panel Chair: *Wireless, Internet, and Mobile Communications*, Inter. Workshop on Very Low Bit Rate Video Coding, Athens, Greece, Oct. 11-12, 2001.

Session Chairman: *Motion Detection and Estimation*, IEEE International Conference on Image Processing, Rochester, NY, Sept. 22-25, 2002.

Session Chairman: *Robust and Scalable Coding*, IEEE International Conference on Acoustics, Speech and Signal Processing, Montreal, Canada, May 17-21, 2004.

Session Chairman: *Video Object Segmentation and Tracking*, IEEE International Conference on Image Processing, Genova, Italy, Sept. 11-14, 2005.

Special Session Organizer, *Content Aware Video Coding and Communication for Ubiquitous Adaptation*, IEEE Int. Workshop on Multimedia Signal Processing (MMSP), Shanghai, China, Oct. 30 - Nov. 2, 2005.

Session Chairman: *Block Matching-Based Motion Estimation*, IEEE International Conference on Image Processing, Atlanta, GA, Oct. 8-11, 2006.

Panel Organizer and Chair: *Multimedia Communications*, IEEE Int. Conf. on Computer Communications and Networks (ICCCN 2007), Hawaii, Aug. 13-16, 2007

Session Chairman: *Image Restoration*, IEEE International Conference on Image Processing, San Antonio, Texas, Sept. 2007.

Session Chairman: *Descriptors and Metrics*, Sixth Int. Workshop on Content-Based Multimedia Indexing (CBMI), London, UK, June 18-20, 2008.

Panel Organizer and Chair: *The Future of Multimedia Retrieval Research*, Sixth Int. Workshop on Content-Based Multimedia Indexing (CBMI), London, UK, June 18-20, 2008.

Session Chairman: *COST292 Special Session*, 5th Int. Conference on Visual Information Engineering (VIE 2008), Xi'an China, July 29- Aug. 1, 2008.

Session Chairman: *Biomedical Image Processing*, Int. Conf. on Signal Processing, Santorini, Greece, July 5-7, 2009.

Session Chairman: *Image Deconvolution*, IEEE International Conference on Image Processing, Cairo, Egypt, Nov. 2009.

Session Chairman: *Video Transmission*, IEEE International Conference on Image Processing, Honk Kong, Sept. 2010.

Session Chairman: *Image Processing 3*, Int. Technical Conf. on Circuits/Systems, Computers and communications (ITC-CSCC), Gyeongju, Korea, June 2011.

Session Chairman: *Error Resilience and Channel Coding for Image and Video Systems*, IEEE International Conference on Image Processing, Brussels, Belgium, Sept. 2011.

Session Chairman: *Machine Learning: Signal Processing Applications*, European Signal Proc. Conference, Lisbon, Portugal, Sept. 1-5, 2014.

Session Chairman: *Face Recognition*, IEEE International Conference on Image Processing, Paris, France, Oct. 27-30, 2014.

Session Chairman: *Multi-image and Video Super-Resolution and Restoration*, IEEE International Conference on Image Processing, Quebec, Canada, Sept. 27-30, 2015.

## **SELECTED TALKS**

### **Plenary/Keynote Talks**

*A Hybrid Object-Oriented Approach to Very Low Bit Rate Coding of Video*, 1995 International Conf. on Digital Signal Processing, Limassol, Cyprus, June 26, 1995.

*Recent Results on Very Low Bit Rate Video Coding*, IEEE Southwest Symposium on Image Analysis and Interpretation, San Antonio, TX, April 9, 1996.

*Recent Trends in Image Restoration and Enhancement Techniques*, IEEE Asia Pacific Conf. on Circuits and Systems, Seoul Korea, Nov. 21, 1996.

*Very Low Bit Rate Video Coding: Some Optimal Results and Some Open Questions*, VII National Symposium on Pattern Recognition and Image Analysis, Barcelona, Spain, April 25, 1997.

*Recent Advances in Video Compression*, IASTED Int. Conf. on Signal and Image Processing, New Orleans, LA, Dec. 5, 1997.

*Advances and Challenges in Multimedia Communications*, IASTED Int. Conf. on Signal and Image Processing, Las Vegas, NV, Oct. 28, 1998.

*Current Issues and Developments in Multimedia Signal Processing*, Motorola Science Advisory Board (SABA) Induction meeting, Motorola Galvin Center, Schaumburg, IL, May 11, 1999.

*Rate-Distortion Techniques in Image and Video Coding*, Norwegian Signal Processing Conference, NORSIG-99, Asker, Norway, Sept. 10, 1999.

*Rate-Distortion Techniques in Video Coding and Transmission*, Irish Machine Vision and Image Processing Conference, IMVIP 2000, Belfast, UK, Aug. 31 - Sept. 2, 2000.

*When Signal Compression Meets Signal Recovery*, Workshop on Mathematics in Image Processing, WMIP 2000, Hong Kong, Dec. 14-16, 2000.

*Rate-Distortion Techniques in Video Processing and Communications*, Distinguished Lecture Series, University of Toronto, Canada, March 6, 2001.

*Trends in Information Technology*, Conference on "New Developments in Research and Innovative Products in: Information Technologies, Environmental Technologies, Agrobiotechnologies, and Water Management Technologies", Thessaloniki, Greece, June 23, 2001.

*Recent Advances in Multimedia Signal Processing and Communications*, Keynote Talk, EURASIP-IEEE International Symposium on Video/Image Processing and Multimedia Communications, Zadar, Croatia, June 16-19, 2002.

*Audio-Visual Interaction in Multimedia Communications*, Plenary talk, International Conference on Telecommunications, Santa Rita, Brazil, Oct. 22, 2002.

*Resource Allocation Techniques in Video Coding and Transmission*, Plenary talk, International Conference on Telecommunications, Santa Rita, Brazil, Oct. 23, 2002.

*Efficient Video Communication over Lossy Channels*, Plenary Talk, Workshop on the Computational and Information Infrastructure in the Astronomical DataGrid, Granada, Spain, Feb. 21, 2003.

*Audio-Visual Interaction in Multi-Modal Communications*, Plenary Talk, 4th European Workshop on Image Analysis for Multimedia Interactive Services, London, UK, April 10, 2003.

*Superresolution of Compressed Images and Video*, Workshop on Mathematics in Image Processing, WMIP 2003, Singapore, Dec. 17, 2003.

*Dynamic Resource Allocation in Video Communications*, Virtual observatories: Plate Content Digitization, Archive Mining and Image Sequence Processing, Sofia, Bulgaria, April 28, 2005.

*Recent Advances in Video Communications: Challenges and Opportunities*, Plenary Talk, IEEE WirelessComm 2005, Maui, Hawaii, June 16, 2005.

*When Superresolution Meets Compression*, Workshop on Mathematics in Image Processing, WMIP 2005, Hong Kong, Aug. 30, 2005.

*Challenges and Opportunities in Video Communications*, Plenary Talk, 2005 Pacific-Rim Conference on Multimedia (PCM2005), Jeju, Korea, Nov. 14, 2005.

*Image and Video Recovery*, IEEE SPS Distinguished Lecture, University of Toronto, Toronto, Canada, May 14, 2007.

*Image and Video Recovery*, IEEE SPS Distinguished Lecture, Hong Kong Baptist University, Hong Kong, June 18, 2007.

*New Results in Image and Video Recovery*, IEEE SPS Distinguished Lecture, Hong Kong Polytechnic University, Hong Kong, June 18, 2007.

*Bayesian Image and Video Recovery*, IEEE SPS Distinguished Lecture, Universidad Carlos III de Madrid, Madrid, Spain, June 29, 2007.

*Challenges and Opportunities in Video Transmission*, Plenary Talk, IEEE Int. Conf. on Computer Communications and Networks, Oahu, Hawaii, Aug. 15, 2007.

*Recent Results in Video Transmission*, IEEE SPS Distinguished Lecture, Universidad Distrital Francisco Jose de Caldas, Bogota, Colombia, Sept. 24, 2007.

*Recent Advances in Image and Video Recovery*, Plenary Talk, Symposium on Signal and Image Processing and Computer Vision, Barranquilla, Colombia, Sept. 27, 2007.

*Recent Advances in Image and Video Recovery*, Plenary Talk, Western New York Image Processing Workshop, Rochester, NY, Sept. 28, 2007.

*Recent Advances in Image and Video Recovery*, IEEE SPS Distinguished Lecture, University of Illinois, Chicago, March 21, 2008.

*Recent Advances in Image and Video Recovery*, IEEE SPS Distinguished Lecture, Bogazici University, Istanbul, Turkey, March 25, 2008.

*Challenges and Opportunities in Video Transmission*, IEEE SPS Distinguished Lecture, Santa Clara Valley Chapter, Santa Clara, CA, May 12, 2008.

*Challenges and Opportunities in Video Transmission*, Plenary Talk, 5th Int. Conference on Visual Information Engineering (VIE 2008), Xi'an China, July 31, 2008.

*Video Transmission*, Plenary Talk, Cali, Colombia, Oct. 2008.

*Challenges and Opportunities in Video Transmission*, IEEE SPS Distinguished Lecture, King's College, London, UK, Dec. 2008.

*Challenges and Opportunities in Video Transmission*, IEEE SPS Distinguished Lecture, De Montfort University, Leicester, UK, Dec. 2008.

*Future Content Networks in the US*, Invited Talk, European Commission, Future Internet Assembly, Madrid, Spain, Dec. 2008.

*Current Advances on Video Transmission*, Keynote Speech, 13th WSEAS Multiconference, Rodos Island, Greece, July 23, 2009.

*Compressive Sensing*, plenary talk, Latin-American Conference on Networked and Electronic Media (LACNEM2009), Bogota, Colombia, Aug. 5, 2009.

*Multimedia Content Delivery*, plenary talk, Networked and Electronic Media (NEM) Summit, St. Malo, France, Sept. 30, 2009.

*Peer-to-Peer Networks*, plenary talk, 1st Int. ICST Conf. on User Centric Media - UCMedia 2009, Venice, Dec. 9-11, 2009.

*Bayesian Techniques for Image Recovery*, plenary talk, IEEE Southwest Symposium on Image Analysis and Interpretation (SSIAI), Austin, TX, May 23-25, 2010.

*Sparse Representation for Image Retrieval*, plenary talk, Latin-American Conference on Networked and Electronic Media (LACNEM2010), Cali, Colombia, Sept. 9, 2010.

*Video Transmission: Recent Results, Challenges, and Opportunities*, plenary talk, IEEE Global Communications Conference (GLOBECOM), Miami, Florida, Dec. 9, 2010.

*Sparse Representation and Low-Rank Matrix Recovery*, keynote talk, First Huawei Workshop on Multimedia Processing and Computing in Cloud Computing, Bridgewater, NJ, April 4, 2011.

*Sparse and Redundant Representations in Signal Processing*, plenary talk, 26th Int. Technical Conf. on Circuits/Systems, Computers and Communications (ITC-CSCC), Gyeongju, Korea, June 21, 2011.

*Sparse and Redundant Representations: Theory and Applications*, plenary talk, IEEE Int. Conf. on Multimedia and Expo (ICME), Barcelona, Spain, July 11-15, 2011.

*Recent Results on Compressive Sensing*, plenary talk, Latin-American Conference on Networked and Electronic Media (LACNEM2011), San Jose, Costa Rica, Nov. 18, 2011.

*Theory and Applications of Sparse and Redundant Representations*, plenary talk, EURASIP Second Greek Signal Processing Jam, Thessaloniki, Greece, May 17, 2012.

*On Video Surveillance*, Video Analytics in the Wild, Big Data Week, Chicago, IL, April 26, 2013.

*Compressive Sensing and Blind Image Deconvolution*, Computational Optical Sensing and Imaging (COSI), Arlington, VA, June 24, 2013.

*Advances in Sparsity-Based Image Processing*, plenary talk, Latin-American Conference on Networked and Electronic Media (LACNEM2013), Manizales, Colombia, Sept. 2, 2013.

*Recent Advances in Medical Imaging*, keynote talk, 10th Int. Symposium on Medical Information Processing and Analysis (SIPAIM 2014), Cartagena, Colombia, Oct. 14, 2014.

*Learning for Future Video*, keynote talk, 22nd Int. Conference on Systems, Signals and Image Processing (IWSSIP 2015), London, UK, Sept. 12, 2015.

*Deep Learning for Video Super-Resolution*, plenary talk, Latin-American Conference on Networked and Electronic Media (LACNEM2015), Medellin, Colombia, Sept. 23, 2015.

*Learning for Future Video*, keynote talk, IEEE Int. Symposium on Multimedia, Miami, FL, Dec. 15, 2015.

### **Selected Invited Talks/Lectures**

University of California, Irvine, CA, March 1985.

University of Pennsylvania, Philadelphia, PA, April 1985.

Jet Propulsion Laboratories, Pasadena, CA, May 1985.

Polytechnic University, Brooklyn, NY, May 1985.

Institute of Imaging Sciences, Polytechnic University, Brooklyn, NY, October 1986.

New York State Center for Advanced Technology in Telecommunications, Brooklyn, NY, February 1987.

Board of Trustees, Polytechnic University, March 1987.

*Iterative Image Restoration*, Riverside Research Center, New York, NY, April 1987.

Delft University of Technology, Delft, The Netherlands, August 1987, September 1988, May 1989.

*VLSI Implementation of an Iterative Image Restoration Algorithm*, 5th MDSP Workshop, Noordwijkerhout, The Netherlands, Sept. 1987.

*Simultaneous Identification and Restoration of Images Using Maximum Likelihood Estimation*, 1989 IEEE Int. Conf. on Control and Applications, Jerusalem, Israel, April 1989.

*Parallel Iterative Image Restoration Algorithms*, 32nd Midwest Symposium on Circuits and Systems, Urbana, IL, Aug. 1989.

*Maximum Likelihood Blur Identification and Image Restoration*, 6th MDSP Workshop, Monterey, CA, Sept. 1989.

*Iterative Identification and Restoration of Images*, SPIE Conf. on Visual Communications and Image Processing, Philadelphia, PA, Nov. 1989.

GE Medical Systems, Tech Corporate Partners, March 29, 1990.

Technology Reviews: Executive Briefings for Managers of Technology, Northwestern University, April 30, 1990.

*Digital Image Processing Research*, McCormick Faculty, Northwestern University, May 1, 1990.

*Image Identification and Restoration Based on the EM Algorithm*, Illinois Institute of Technology, Chicago, IL, May 4, 1990.

*Multiple Input Adaptive Image Restoration Algorithms*, SPIE Conf. on Visual Communications and Image Processing, Lausanne, Switzerland, Oct. 1990.

*Image Blur Identification and Restoration by an Improved Wiener Filter*, University of Southern California, Los Angeles, CA, Dec. 27, 1990.

Motorola Inc., Chicago Corporate Research and Development Center, Schaumburg, IL, March 1991.

*Pel-Recursive Motion Estimation Algorithms*, Rensselaer Polytechnic Institute, Troy, NY, March 28, 1991.

*Image Processing Research*, Motorola Science Advisory Board Associates Conference, Northwestern University, April 1991.

*Recent Advances in Estimating the Motion in Image Sequences*, Bell Northern Research, Montreal, Canada, May 1991.

Ford Glass Company, Tech Corporate Partners, July 1991.

*Adaptive Multiple-Input Pel-Recursive Motion Estimation*, 7th MDSP Workshop, Lake Placid, NY, Sept. 1991.

*Image Processing Research*, BIRL, Evanston, IL, Oct. 22, 1991.

*Foundations of Image Processing*, class lecture, Biomedical Engineering Department, Northwestern University, Spring 1992.

*Recent Advances on the Recursive Estimation of Motion*, Delft University of Technology, Delft, The Netherlands, Aug. 1992.

*Motion Modeling and Estimation*, University of Illinois, Chicago, March 2, 1993.

*Recursive Motion Estimation*, University of Illinois, Urbana, March 3, 1993.

*Very Low Bit Rate Coding*, Columbia University, July 14, 1993.

*Robust Displacement Field Estimation in Noisy-Blurred Image Sequences*, 8th Workshop on IMDSP, Nice, France, Sept. 1993.



*Adaptive Regularized Restoration Algorithms Applied to HST Images*, Space Telescope Science Institute Workshop, Baltimore, MD, Nov. 1993.

*Image Restoration of Astronomical Images*, University of Granada, Spain, Nov. 1994.

*A MAP Approach to Motion Estimation*, University of Cataluna, Barcelona, Spain, Nov. 1994.

*Digital Restoration of Images: Recent Advances and Future Trends*, tutorial, SPIE Digital Signal Processing: Critical Reviews Conference, Orlando, FL, April 17, 1995.

*Approaches to Image Restoration*, Yonsei University, Seoul, Korea, May 1995.

*Stochastic Approaches to Image and Video Restoration*, Chung-Ang University, Seoul, Korea, May 1995.

*Recent Advances in Video Processing*, Samsung Electronics, Suwon, Korea, May 1995.

*Recovery Techniques for Compressed Video*, SPIE Conf. on Visual Communications and Image Processing, Tapei, Taiwan, May 1995.

*A Hybrid Object-Oriented Approach to Very Low Bit Rate Coding of Video*, Symp. on Multimedia Comm. and Video Coding, Brooklyn, NY, Oct. 11, 1995.

*On Very Low Bit Rate Video Coding*, Motorola Inc., Chicago Corporate Research and Development Center, Schaumburg, IL, Nov. 2, 1995.

*A Very Low-Bit Video Codec with Optimal Trade-Off among DVF, DFD and Segmentation*, Illinois Institute of Technology, Chicago, IL, Feb. 16, 1996.

*Rate-Distortion Optimal Video Encoding*, University of California, Berkeley, Jan. 1997.

*Rate-Distortion Based Video and Boundary Encoding*, University of Erlangen, Germany, Aug. 1997.

*Optimal Boundary Encoding in the Rate-Distortion Sense*, University of Illinois, Urbana-Champaign, Oct. 1997.

*Image and Video Recovery*, 29th Annual Seminar Day, NU Alumni Association and the NU Alumnae Board, NU Evanston Campus, April 18, 1998.

*Multimedia Signal Processing*, Distinguished Speaker, Integrated Media Systems Center, University of Southern California, Nov. 23, 1998.

*A Paradigm for Recovery and Compression Techniques*, Stanford University, Dept. of Electrical Engineering, Feb. 1, 1999.

*Current Issues and Developments in Video Coding and Transmission*, US Army Research Laboratory, Adelphi, MD, April 9, 1999.

*Implementing MPEG7/MPEG7 for Interactive TV Systems*, IBM Research Labs, Yorktown, NY, Interactive TV Workshop, August 17, 1999.

*Rate-Distortion Optimal Shape Encoding*, Cornell University, School of Electrical Engineering, May 2, 2000.

*Recent Advances in Multimedia Signal Processing and Communications*, University of Granada, Spain, June 12, 2002.

*Efficient Video Communication over Lossy Channels*, University of Trento, Trento, Italy, June 2004.

*Recent Advances in Video Communications*, Newcom Network of Excellence, Paris, France, June 25, 2004.

*Recent Advances in Video Communications*, Soongsil University, Seoul, Korea, Nov. 16, 2005.

*Superresolution from Compressed Video*, LG Electronics, Seoul, Korea, Nov. 16, 2005.

*Video Recovery, Audio-Visual Processing, and Shape Encoding*, ETRI, Daejeon, Korea, Nov. 17, 2005.

*Recent Results on Video Communications*, Yonsei University, Seoul, Korea, Nov. 18, 2005.

*Recent Advances on Video Communications*, HP Labs, Palo Alto, CA, May 11, 2008.

*Recent Results on Video Transmission*, Microsoft, China, Beijing, China, July 2008.

*Future Content Networks in USA*, European Future Internet Assembly, Madrid, Spain, Dec. 9-10, 2008.

*Video Transmission for Sensor Networks*, ONR/ARO/NSF Workshop on Distributed Video Sensor Networks, UC Riverside, Riverside, CA, May 11, 2009.

*On Information Theory*, Integrated Modeling Team, Department of Energy, Washington DC, Aug. 27, 2009.

*From Image Recovery to Video Transmission*, Imperial College, London, UK, Nov. 17, 2009.

*Recent Results on Image Recovery*, Cambridge University, Cambridge, UK, Nov. 18, 2009.

*Recent Results on Image Recovery*, Queen Mary, London, UK, Nov. 26, 2009.

*Recent Results on Image Recovery*, King's College, London, UK, Nov. 27, 2009.

*Future Multimedia Applications*, Future Media Internet Task Force, Brussels, Belgium, Feb. 5, 2010.

*Image and Video Recovery*, Hong Kong Polytechnic University, Hong Kong, July 7, 2010.

*Recent Advances on Video Transmission*, Chinese University of Hong Kong, Hong Kong, July 8, 2010.

*Sparse and Redundant Representations in Signal Processing*, Yonsei University, Seoul, Korea, June 23, 2011.

*Recent Advances in Image Recovery*, Chung-Ang University, Seoul, Korea, June 27, 2011.

*Sparse and Redundant Representations in Signal Processing*, Soongsil University, Seoul, Korea, June 28, 2011.

*From Restoration to Super-Resolution*, Samsung Electronics, Seoul, Korea, June 28, 2011.

*Mobile Visual Search*, Telefonica, Barcelona Spain, July 11, 2011.

*Experiences with Technology Transfer in the US*, EMC<sup>2</sup> Industry Day, Berlin, Germany, Nov. 14, 2011.

*Theory and Applications of Sparse and Redundant Representations*, University of Illinois, Urbana-Champaign, Beckman Institute, Urbana, IL, Sept. 26, 2012.

*Bayesian Recovery Techniques*, Institutions, Markets, Technologies (IMT), Lucca, Italy, March 25, 2013.

*Sparse/Low-Rank Recovery Problems in Image Processing and Machine Learning*, Universidad Nacional de Colombia, Bogota, Colombia, Oct. 17, 2014.

*Recent Results on Computational Imaging*, Computational Research Day, Northwestern University, Evanston, IL, April 14, 2015.

### **Selected Conference Presentations**

*A General Formulation of Adaptive Iterative Image Restoration Algorithms*, Conf. Inf. Sciences and Systems, Princeton, NJ, March 1986.

*VLSI Implementation of an Iterative Restoration Algorithm*, Int. Conf. Sys. Man, and Cybern., Atlanta, GA, October 1986.

*Adaptive Iterative Color Image Restoration Algorithms*, Conf. Inf. Sciences and Systems, The Johns Hopkins University, Baltimore, MD, March 1987.

*Multiple Input Adaptive Iterative Image Restoration Algorithms*, Int. Conf. Acoust., Speech, Signal Processing, Dallas, TX, April 1987.

*Fast Iterative Image Restoration Algorithms*, 25th Annual Allerton Conf. on Commun., Control and Computing, Monticello, IL, Sept. 1987.

*Regularized Differentiation for Edge Detection*, 25th Annual Allerton Conf. on Commun., Control and Computing, Monticello, IL, Sept. 1987.

*A Unified Approach to Iterative Image Restoration*, SPIE Symp. on Visual Communications and Image Processing, Cambridge, MA, October, 1987.

*A Unified Approach to Iterative Signal Restoration*, Int. Conf. Acoust., Speech, Signal Processing, New York, NY, April 1988.

*Regularized Edge Detection*, Int. Conf. Acoust., Speech, Signal Processing, New York, NY, April 1988.

*Iterative Color Image Restoration Algorithms*, Int. Conf. Acoust., Speech, Signal Processing, New York, NY, April 1988.

*Constrained Iterative Identification and Restoration of Images*, EUSIPCO, Grenoble, France, Sept. 1988.

*Adaptive Restoration of Regionally Blurred Noisy Images*, Conf. Inf. Sciences and Systems, The Johns Hopkins University, Baltimore, MD, March 1989.

*Maximum Likelihood Image Identification and Restoration Based on the EM Algorithm*, Conf. Inf. Sciences and Systems, The Johns Hopkins University, Baltimore, MD, March 1989.

*Parallel Processing Architectures for Iterative Image Restoration*, Int. Conf. Acoust., Speech, Signal Processing, Glasgow, Scotland, May 1989.

- A Multiple Frame Pel-Recursive Wiener-Based Displacement Estimation Algorithm*, SPIE Conf. on Visual Communications and Image Processing, Philadelphia, PA, Nov. 1989.
- Spatio-Temporal Filtering of Noisy Image Sequences*, SPIE Conf. on Visual Communications and Image Processing, Philadelphia, PA, Nov. 1989.
- Image Restoration Using the Hopfield Network with Nonzero Autoconnections*, Int. Conf. Acoust., Speech, Signal Processing, Albuquerque, NM, April 1990.
- Edge Detection Using a Neural Network*, Int. Conf. Acoust., Speech, Signal Processing, Albuquerque, NM, April 1990.
- A Model Based Pel-Recursive Motion Estimation Algorithm*, Int. Conf. Acoust., Speech, Signal Processing, Albuquerque, NM, April 1990.
- Motion Estimation in Digital Angiographic Images Using Skeletons*, Optical Engineering Midwest, Sept. 1990.
- Distributed Detection Methods for Displacement Estimation*, SPIE Conf. on Visual Communications and Image Processing, Lausanne, Switzerland, Oct. 1990.
- Optical Methods for Iterative Image Restoration*, SPIE Conf. on Visual Communications and Image Processing, Lausanne, Switzerland, Oct. 1990.
- Motion Compensated Priority DCT Coding for Image Sequences*, SPIE Conf. on Visual Communications and Image Processing, Boston, MA, Nov. 1991.
- Adaptive Image Sequence Noise Filtering Methods*, SPIE Conf. on Visual Communications and Image Processing, Boston, MA, Nov. 1991.
- An Image Restoration Algorithm Based on the Bispectrum*, SPIE Conf. on Visual Communications and Image Processing, Boston, MA, Nov. 1991.
- Adaptive Multiple-Input Constrained Pel-Recursive Displacement Estimation*, Int. Conf. Acoust., Speech, Signal Processing, San Francisco, CA, March, 1992.
- Motion Compensated Recursive Filtering of Noisy Displacement Fields*, EUSIPCO, Brussels, Belgium, Aug. 1992.
- Frequency Domain Adaptive Iterative Image Restoration and Evaluation of the Regularization Parameter*, SPIE Conf. on Visual Communications and Image Processing, Boston, MA, Nov. 1992.
- Recursive Displacement Estimation for Use in Multiple Object Tracking*, IEEE Military Comm. Conf., Boston, MA, Oct. 1993.
- Regularized Iterative Image Restoration Based on an Iterative Updated Convex Smoothing Functional*, SPIE Conf. on Visual Communications and Image Processing, Boston, MA, Nov. 1993.
- Restoration of Low Bit Rate Compressed Images Using Mean Field Annealing*, Int. Conf. Acoust., Speech, Signal Processing, Adelaide, Australia, April 1994.
- A General Formulation of the Weighted Smoothing Functional for Regularized Image Restoration*, Int. Conf. on Image Processing, Austin, TX, Nov. 1994.

- (invited) *A Video Coding Algorithm Based on Recovery Techniques Using Mean Field Annealing*, 1995 SPIE Conf. on Visual Communications and Image Processing, Taipei, Taiwan, May 1995.
- Occlusion and Nonstationary Displacement Field Estimation in Quantum-Limited Image Sequences*, 1995 SPIE Conf. on Visual Communications and Image Processing, Taipei, Taiwan, May 1995.
- (invited) *Prior Models and Methods of Choosing the Unknown Parameters in the Bayesian and Regularization Approaches to Image Restoration*, 1995 IEEE Workshop on Nonlinear Signal and Image Processing, Neos Marmaras, Greece, June 1995.
- (invited) *Exploitation of Spatio-Temporal Inter-Correlation Among Motion, Segmentation, and Intensity Fields for Very Low Bit Rate Coding of Video*, Symp. on Multimedia Comm. and Video Coding, Brooklyn, NY, Oct. 1995.
- (invited) *Reconstruction of a High-Resolution Image by Simultaneous Registration, Restoration, and Interpolation of Low-Resolution Images*, 1995 IEEE International Conf. on Image Processing, Washington, DC, Oct. 1995.
- (invited) *A Hybrid Object-Oriented Very Low Bit Rate Video Codec*, 9th Workshop on IMDSP, Belize City, Belize, March 1996.
- An Iterative Algorithm for Improving the Resolution of Video Sequences*, 1996 SPIE Conf. on Visual Communications and Image Processing, Orlando, FL, March 1996.
- Detection and Encoding of Model Failures in Very Low Bit-Rate Video Coding*, 1996 SPIE Conf. on Visual Communications and Image Processing, Orlando, FL, March 1996.
- A Hybrid Object-Based Video Codec*, 1996 Int. Conf. Acoust., Speech, Signal Processing, Atlanta, GA, May 1996.
- An Optimal Segmentation Encoding Scheme in the Rate Distortion Sense*, 1996 Int. Conf. Circuits and Systems, Atlanta, GA, May 1996.
- (invited) *Resolution Enhancement of Color Video*, European Conf. on Signal Processing, Trieste, Italy, Sept. 1996.
- (invited) *A Very Low Bit Rate Video Codec With Optimal Tradeoff Among DVF, DFD and Segmentation*, European Conf. on Signal Processing, Trieste, Italy, Sept. 1996.
- (invited) *Recursive MAP Displacement Field Estimation and its Applications*, 1996 IEEE International Conf. on Image Processing, Lausanne, Switzerland, Sept. 1996.
- (invited) *An Optimal Quad-Tree-Based Motion Estimator*, SPIE Conf. on Digital Compression Technologies and Systems for Video Communications, Berlin, Germany, Oct. 1996.
- An Iterative Regularized Error Concealment Algorithm*, SPIE Conf. on Digital Compression Technologies and Systems for Video Communications, Berlin, Germany, Oct. 1996.
- Multiple Candidate Hierarchical Block Matching with Inherent Smoothness Properties*, SPIE Conf. on Digital Compression Technologies and Systems for Video Communications, Berlin, Germany, Oct. 1996.

- Optical Flow Estimation for Multichannel Video Sequences*, 1997 SPIE Conf. on Visual Communications and Image Processing, San Jose, CA, Feb. 1997.
- (invited) *Estimating and Transmitting Regularization Parameters for Reducing Blocking Artifacts*, 13th Int. Conf. on Digital Signal Proc., Santorini, Greece, July 2-4, 1997.
- Iterative Regularized Image Restoration Using Local Constraints*, 1997 IEEE Workshop on Non-linear Signal and Image Processing, Mackinac Island, MI, Sept. 8-10, 1997.
- Joint Optimal Object Shape Estimation and Encoding*, SPIE Conf. on Visual Communications and Image Processing, San Jose, CA, Jan. 28-30, 1998.
- SNR Scalable Video Coder Using Progressive Transmission of DCT Coefficients*, SPIE Conf. on Visual Communications and Image Processing, San Jose, CA, Jan. 28-30, 1998.
- Disparity Estimation with Modeling of Occlusion and Object Orientation*, SPIE Conf. on Visual Communications and Image Processing, San Jose, CA, Jan. 28-30, 1998.
- Hierarchical Bayesian Image Restoration from Partially Known Blurs*, 1998 Int. Conf. Acoust., Speech, Signal Processing, Seattle, WA, May 12-15, 1998.
- Total Least-Squares Disparity-Assisted Stereo Optical Flow Estimation*, IEEE Image and Multidimensional Digital Signal Processing Workshop, Alpbach, Austria, July 12-16, 1998.
- (invited) *Error Resilience and Concealment in Video Coding*, EUSIPCO-98, Rhodes, Greece, Sept. 8-11, 1998.
- Iterative Determination of Local Bound Constraints in Iterative Image Restoration*, 1998 IEEE International Conf. on Image Processing, Chicago, IL, Oct. 5-7, 1998.
- (invited) *Joint Optimal Boundary Encoding and DPCM Model Selection*, Asilomar Conf. on Signals, Systems, and Computers, Pacific Grove, CA, Nov. 1-4, 1998.
- Inter-Mode Vertex-Based Optimal Shape Coding*, 1999 Int. Conf. Acoust., Speech, Signal Processing, Phoenix, AZ, March 15-19, 1999.
- Context Based Optimal Shape Coding*, 1999 IEEE Workshop on Multimedia Signal Processing, Copenhagen, Denmark, Sept. 13-15, 1999.
- An Optimal Single Pass SNR Scalable Video Coder*, 1999 IEEE International Conf. on Image Processing, Kobe, Japan, Oct. 24-28, 1999.
- (invited) *Sequential Construction of 3D-Based Scene Description*, 1999 IEEE International Conf. on Image Processing, Kobe, Japan, Oct. 24-28, 1999.
- A Rate-Distortion Optimal Scalable Vertex Based Shape Coding Algorithm*, 2000 Int. Conf. Acoust., Speech, Signal Processing, Istanbul, Turkey, June 5-9, 2000.
- A Hidden Markov Model Based Visual Speech Synthesizer*, 2000 Int. Conf. Acoust., Speech, Signal Processing, Istanbul, Turkey, June 5-9, 2000.
- Simultaneous Motion Estimation and Resolution Enhancement of Compressed Low Resolution Video*, 2000 IEEE International Conf. on Image Processing, Vancouver, Canada, Sept. 11-13, 2000.
- Shape Approximation Through Recursive Scalable Layer Generation*, 2000 IEEE International Conf. on Image Processing, Vancouver, Canada, Sept. 11-13, 2000.

- Transmission Energy Minimization in Wireless Video Streaming Applications*, Int. Symposium on Telecommunications, Tehran, Iran, Sept. 1-3, 2001.
- A Rate-Distortion Optimal Video Pre-Processing Algorithm*, 2001 IEEE International Conf. on Image Processing, Thessaloniki, Greece, Oct. 8-10, 2001.
- Application of the Motion Vector Constraint to the Regularized Enhancement of Compressed Video*, 2001 IEEE International Conf. on Image Processing, Thessaloniki, Greece, Oct. 8-10, 2001.
- Bayesian High-Resolution Reconstruction of Low-Resolution Compressed Video*, 2001 IEEE International Conf. on Image Processing, vol. 2, pp. 25-28, Thessaloniki, Greece, Oct. 8-10, 2001.
- Rate-Distortion Optimal Skeleton-Based Shape Coding*, 2001 IEEE International Conf. on Image Processing, Thessaloniki, Greece, Oct. 8-10, 2001.
- A Frame-based Rate-distortion Optimal Coding System Using a Lower Bound Depth-first-search Strategy*, Nordic Signal Processing Symposium (NORSIG-2002), Hurtigruten, Norway, Oct. 2002.
- "A recursive shape error concealment algorithm*, IEEE International Conf. on Image Processing, Rochester, NY, Sept. 22-25, 2002.
- Disparity variation in stereo-panoramic video*, IEEE International Conf. on Image Processing, Rochester, NY, Sept. 22-25, 2002.
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## CONSULTING

Tech Consultant, US Robotics, Tech Corporate Partners Program

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Lake County Astronomical Society, Lake Forest, Illinois

Space Telescope Science Institute, Baltimore, Maryland

Siemens Gammasonics, Chicago, Illinois, Erlangen, Germany

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487. B. Wang, X. Wang, A. K. Katsaggelos, and T. B. Parrish, "Automatic Segmentation of Chronic Stroke Employing 3D Mean-Shift and Symmetry of the Human Brain", *Organization for Human Brain Mapping (OHBM)*, Honolulu, HI, June 14-18, 2015.
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489. W. Saafin, S. Villena, M. Vega, R. Molina, and A. K. Katsaggelos, "PMMW Image Super resolution from Compressed Sensing Observations," *Proc. European Signal Processing Conference (EUSIPCO)*, Nice (France), Sept. 2015.
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492. Q. Dai, S. Yoo, A. Kappeler, and A. K. Katsaggelos, "Dictionary-Based Multiple Frame Video Super-Resolution," *Proc. IEEE International Conference on Image Processing (ICIP)*, top 5% paper, Quebec (Canada), Sept. 2015.
493. (invited) L. Spinoulas, O. Cossairt, and A. K. Katsaggelos, "Sampling Optimization for On-Chip Compressive Video," *Proc. IEEE International Conference on Image Processing (ICIP)*, Special Session on Computational Imaging, Quebec (Canada), Sept. 2015.
494. O. Cossairt, X. Huang, N. Matsuda, J. Tumblin, A. K. Katsaggelos, D. Kronkite, G. Bearman, H. Stratis, M. Broadway, M. Walton, "Surface Shape Studies of the Art of Paul Gauguin," *Digital Heritage Granada Conference*, Granada, Spain, Sept. 2015.

## AWARDS/RECOGNITION/PUBLICITY

Third Prize at the International IEEE EMBS Conference for the Brain Computer Interface Challenge at Neural Engineering, Montpellier, France, April 22, 2015, for the paper "A Novel P300-Speller Error Detection Approach in Brain-Computer Interface, co-authored by A. Bahrami Rad, M. Zabih, S. Kiranyaz, and M. Gabbouj.

Best paper award by European Signal Processing Conference (EUSIPCO), Marrakech, Morocco, September 9-13, 2013, for the paper "Variational Bayesian Compressive Blind Image Deconvolution," co-authored by B. Amizic, L. Spinoulas, and R. Molina.

IEEE Signal Processing Society Technical Achievement Award (2010)

Distinguished Visiting Fellowship, The Royal Academy of Engineering, Imperial College, London, November 2009.

Best paper award by the 6th International Symposium on Image and Signal Processing and Analysis (ISPA) September 16-18, 2009, Salzburg, Austria, for the paper "Bayesian Super-Resolution Image Reconstruction using an l1 prior," co-authored with S. Villena, M. Vega, and R. Molina.

Fellow of SPIE (2009)

IEEE Signal Processing Society Distinguished Lecturer (2007-2008)

Best paper award by the IEEE Int. Conference on Image Processing (ICIP 2007), San Antonio, TX, Sept. 16-19, 2007, for the paper "Total Variation Image Restoration and Parameter Estimation Using Variational Posterior Distribution Approxiamtion," co-authored with D. Babacan and R. Molina.

Best paper award by the IEEE International Conference on Multimedia and Expo (ICME 2006), Toronto, Canada, July 9-12, 2006, for the paper "Locally Embedded Linear Subspaces for Efficient Video Indexing and Retrieval," co-authored with Zhu Li and Li Gao

IEEE Signal Processing Society 2001 Meritorious Service Award

IEEE Signal Processing Society 2001 Best Paper Award for the paper co-authored with Guido Schuster "An Optimal Polygonal Boundary Encoding Scheme in the Rate-Distortion Sense", IEEE Trans. on Image Processing, Jan. 1998.

IEEE Third Millennium Medal (2000)

Fellow of IEEE (1998)

Senior Member of IEEE (1992-1997)

Greek State Honorary Scholarship (1974, 1975, 1978)

Ameritech Fellow (1989-1990)

Member of the Sigma Xi Honorary Scientific Society, the New York Academy of Sciences, the Illinois Academy of Sciences

Work on the Filtering of Digital Angiograms was featured in *Northwestern Daily*, Jan. 23, 1990.

Work on the Restoration of Hubble Space Telescope Images was featured in the *Chicago Tribune*, Dec. 15, 1991.

Work on the Restoration of Hubble Space Telescope Images was featured in *Constructs*, April 1992.

Work on the Restoration of Hubble Space Telescope Images was featured in *McCormick Dimension*, Fall 1992.

Work on the Filtering of Digital Angiograms was featured in *Partners' Update*, Fall 1992.

Work on the Restoration of Disney Animation was featured in *McCormick Dimension*, Fall 1994.

Images restored in our Lab were accepted for the first time as evidence in the court by Dr. W. R. Oliver, Office of the Armed Forces Medical Examiner, Washington, D.C., Fall 1995.

A profile was presented in the *NU Observer*, 3/9/98.

The Northwestern-Motorola Center on Telecommunications and its Director were featured in the *Chicago Tribune* (9/14/98), *The Daily Northwestern* (9/23/98), and the *Observer* (9/24/98).

Interview given on *Chicago Tonight*, March 20, 2003.

Work on Audio-Visual Speech Processing was featured in the *Chicago Tribune*, May 29, 2004.

Work on the colorization of early photographs of the painting *Bathers by a River* by Matisse was covered by major online and print media outlets, including MIT Technology Review, Arts Section New York Times (the media interactive), MSNBC's Cosmic Blog, Northwestern's FrontPage, McCormick News, TA NEA (Greek Newspaper), PhysOrg (Summer-Fall 2010), Northwestern Daily, McCormick Magazine, Kathimerini (Greek Newspaper).

Results from Cortes, J. M., A. Lopez, R. Molina, and A. K. Katsaggelos, "Variational Bayesian localization of EEG sources with generalized Gaussian priors", *The European Physical Journal Plus*, vol. 127, issue 11, pp. 140-152, November, 2012, appeared on the cover of the Journal.

## PATENTS

1. Method and apparatus for regenerating a dense motion vector field, number 5,574,663, Nov. 12, 1996 (Ozcelik, Brailean, Katsaggelos)
2. Method and apparatus for detecting occlusion, number 5,612,745, March 18, 1997 (Ozcelik, Brailean, Katsaggelos)
3. Method and system for improved motion compensation, number 5,646,867, July 8, 1997 (Ozcelik, Brailean, Katsaggelos, Levine)
4. Method and system for estimating motion within a video sequence, number 5,717,463, Feb. 10, 1998 (Brailean, Ozcelik, Katsaggelos)
5. Method and apparatus for spatially adaptive filtering for video encoding, number 5,764,307, June 9, 1998 (Ozcelik, Brailean, Katsaggelos, Erdogan, Auyeung)
6. Method, device and microprocessor for selectively compressing video frames of a motion compensated prediction-based video codec, number 5,764,921, June 9, 1998 (Banham, Brailean, Levine, Katsaggelos, Schuster)
7. Method and device for optimal bit allocation between different sources of information in digital video compression, number 5,778,192, July 7, 1998 (Schuster, Katsaggelos, Banham, Brailean)
8. Method and Apparatus for Reduction of Visual Content, number 6,963,378, Nov. 8, 2005 (Li, Gandhi, Katsaggelos)
9. Methods and Structure for Scalability Type Selection in Digital Video, number 6,996,172, Feb. 7, 2006 (Ishtiaq, Katsaggelos)
10. Method and System for Scalable Bitstream Extraction, number 8,170,094, May 1, 2012 (Trandel, Katsaggelos, Babacan, Hsiang, Ishtiaq)
11. Method for Video Segment Matching, filed Nov. 18, 2004 (Gandhi, Katsaggelos, Li)
12. Method and Device for Extracting and Utilizing Additional Scene and Image Formation Data for Digital Image and Video Processing, filed March 17, 2005 (Tull, Katsaggelos)
13. Method and Apparatus for Characterizing a Video Segment and Determining if a First Video Segment Matches a Second Video Segment, filed June 9, 2005 (Li, Gandhi, Katsaggelos)
14. System and Method of Optimized Bit Extraction for Scalable Video Coding, filed Oct. 7, 2009. (Ishtiaq, Hsiang, Katsaggelos, Maani, Uslubas)
15. Digital Image Compression by Residual Decimation, filed June 7, 2010 (Uslubas, Katsaggelos, Ishtiaq, Hsiang, Maani)
16. Digital Image Compression by Resolution-Adaptive Macroblock Coding, filed June 7, 2010 (Uslubas, Katsaggelos, Ishtiaq, Hsiang, Maani)

17. System and Method for Frame Interpolation for a Compressed Video Bitstream, filed Aug. 12, 2010 (M. Luessi, A. K. Katsaggelos, D. Veselinovic, K. Lengwehasatit, J. Kosmach)
18. Interleaved Indexing for Fast Approximate Nearest Neighbor Keypoint Feature Retrieval for Visual Search, filed 2012 (Z. Li, X. Xin, A. K. Katsaggelos)
19. Laplacian SURF as Compact Descriptor for Visual Search, filed 2012 (X. Xin, Z. Li, A. K. Katsaggelos)
20. Randomized Point Set Geometry Verification for Robust Image Identification, filed 2012 (X. Xin, Z. Li, A. K. Katsaggelos)
21. Scalable Feature Transmission for Mobile Image Search, filed 2012 (X. Xin, Z. Li, A. K. Katsaggelos)
22. Topological Coding and Verification with Graph Spectral Analysis, filed 2012 (Z. Li, X. Xin, A. K. Katsaggelos)
23. Visual Inspection System for Automated Detection of Particulate Matter in Flexible Medical Containers, US2015213616-A1, filed 2014 (A. Kappeler and A. K. Katsaggelos)