

CURRICULUM VITAE

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Christine Kim Eminent Professor of Information Technology
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Education

Ph.D., Electrical Engineering Department, University of California, Los Angeles, 1990.

Dissertation: *Efficient and Reliable Parallel Processing Algorithms and Architectures for Modern Signal Processing*

M.S.E., Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, 1987.

B.S., Electrical Engineering Department, National Taiwan University, Taipei, Taiwan, 1983.

Academic Experiences

- Director of Graduate Studies and Research, and Associate Chair of Electrical and Computer Engineering Department, University of Maryland, College Park, 2006 - 2013. (in charge of MS and Ph.D. programs of ECE (about 500 students), and Master of Telecommunications Program (grow from 60 to about 250 students), a joint program between ECE and Smith School of Business)
- Christine Kim Eminent Professor of Information Technology, 2010 - Present; Professor, Electrical and Computer Engineering Department; Institute for Systems Research; Applied Mathematics and Scientific Computation Program; Bioengineering Program; University of Maryland, College Park, 2000 - 2010; Associate Professor, 1995 - 2000; Assistant Professor, 1990 - 1995.
- Director, Communication and Signal Processing Laboratory (of about twenty faculty members), Electrical and Computer Engineering Department and Institute for Systems Research, University of Maryland, College Park, 2001 - present. (<http://www.cspl.umd.edu/>)
- Advisor: University Area of Strategic Development Advisory Committee, The Hong Kong Polytechnic University, 2001- 2004; Electrical and Computer Engineering Department, Catholic University of America, 2005.
- Visiting Associate Professor, Electrical Engineering Department, Information System Laboratory, Stanford University, 1996-97.
- Lead, Communications and Signal Processing Graduate Curriculum Reform and Modernization, University of Maryland, College Park, 2000-2002.

- Founding Director, Digital Signal Processing Laboratory, University of Maryland, College Park, 1993 - 1998.

Entrepreneurship and Industrial Experiences

- Founder; President and Chief Executive Officer, 97-99; Board of Director, Odyssey Technologies, 1997-2000. (Multimedia software package bundled by IBM Thinkpad used by millions of users. Pioneer of digital video surveillance systems used by many major chain stores and banks (<http://remoteeyes.com/>). Profitable within two years of founding with valuation of \$22 millions in 1999.)
- Co-Founder; Board of Director, Hermes Technologies, Greece, 2001-2004. (Developed first smart antenna chipset for WLAN; bought by Broadcom)
- Chief Scientist, NeoParadigm Laboratories, San Jose, 1996-97 (developed first single chip H.263 video Codec at the time when SONY's start-of-the-art solution still featuring two chips).
- Serve in various capacity as legal expert consultant.

Professional Leadership Experiences

- President, IEEE Signal Processing Society, 2012-2013.
- President-Elect, IEEE Signal Processing Society, 2010 - 2011.
- Co-Founder, Asia-Pacific Signal and Information Processing Association (APSIPA), 2007-2009.
- Vice President - Publication, IEEE Signal Processing Society, 2006 - 2008 (in charge of a portfolio of SPS journals and the management of editor-in-chiefs and their editorial boards).
- Editor-in-Chief, IEEE Signal Processing Magazine, 2003 - 2005 (Introduced new management system and features that significantly improve the scope and content appealing to broader readership, and undertook the leadership to reach the top-ranked Thomson JCI citation impact out of more than 200 journals in the electrical and electronic area).
- Founding Editor-in-Chief, EURASIP Journal on Advances in Signal Processing, 2000- 2002. (provided the vision of special issue oriented journal and led EURASIP JASP to become a highly respected, leading journal for signal processing and communications research in less than two years.)
- Prime architect and proposer of IEEE Journal of Selected Topics on Signal Processing, (based on the proposal developed in 1997), 2005.
- Prime architect and proposer of IEEE Trans. on Information Forensics and Security, 2004.
- *Board of Governor*, IEEE Signal Processing Society, 2004 - present.
- Prime architect and founding member, Asian-Pacific Association of Signal and Information Processing, 2007 -.

- General Chair, IEEE International Conference on Acoustic, Speech, and Signal Processing (ICASSP), Hawaii, 2007.
- Co-General Chair, First APSIPA Annual Summit and Conference, Sapporo, 2009.
- General Chair, IEEE International workshop on Genomic Signal Processing and Statistics, Newport, May 2005.
- Chair, Multimedia Signal Processing Technical Committee, IEEE Signal Processing Society, March, 1999 - Dec. 2001.
- Technical Program Chair, IEEE International Conference on Multimedia and Expo, Baltimore, Aug. 2003.
- Series Editor, EURASIP Book Series on Signal Processing and Communications, Hindawi, 2003 - 2005.
- Senior Advisory Editor, EURASIP Journal on Applied Signal Processing, Hindawi, 2002 - 2005.

Honorary Professorship

- *Advisory Professor*, Northwestern Polytechnical University, Xi'an, 2011.
- *Chair Professor*, National Chiao Tung University, Hsinchu, 2012.

Awards, Honors, and Recognitions

- *A. James Clark School of Engineering Faculty Outstanding Service Award*, - "for outstanding service, dedication, and commitment to the graduate programs", (one per year selected from the entire college), A. James Clark School of Engineering, University of Maryland, 2012.
- *ISI Highly Cited Researcher* - recognized by Thomson Reuters as a Highly Cited Researcher "for an individual among the 250 most-cited researchers in computer science", 2010.
- *Selected to participate National Academies Keck Futures Initiative on Imaging Science*, 2010.
- *IEEE Signal Processing Society 2009 Technical Achievement Award* - "for pioneering and outstanding contributions for the advances of signal processing in multimedia forensics, security, and wireless communications".
- *Panellist, IEEE 125th Anniversary Media Event* - "research featured as one of seven technologies that IEEE believes will have the world changing implications on the way humans interact with machines, the world and each other, in honor of IEEE's 125th anniversary", New York City, March 10, 2009.
- *Fellow of American Association for the Advancement of Science (AAAS)* - "for distinguished contributions to signal processing for wireless communications, multimedia, and information forensics and security", Nov 2008.
- *A. James Clark School of Engineering Faculty Outstanding Research Award*, - "to recognize exceptionally influential research accomplishments for pioneering work on information forensics and security, wireless communications, and bioinformatics", (one per year for the entire college), 2008.

- *Fellow, Academy for Excellence in Teaching and Learning*, University of Maryland, College Park, 2007.
- *Distinguished Scholar-Teacher Award* - "for outstanding scholarly accomplishment, combined with excellence in teaching, personify the image of the professorate", (up to five per year selected from the entire university, officially conferred in an annual university convocation), Office of the Provost, University of Maryland, 2007.
- *Award of Excellence in Cover Design* - the Society for Technical Communication's Technical Art competition, (as Editor-in-Chief of IEEE Signal Processing Magazine leading the effort in the redesign of the Magazine), 2005-2006
- *Poole and Kent Senior Faculty Teaching Award* - "for significant and dedicated contribution to undergraduate and graduate teaching and leadership in modernization/revision of graduate curriculum", (one selected from all of engineering per year), A. James Clark School of Engineering (College of Engineering), University of Maryland, 2005.
- *Distinguished Lecturer*, IEEE Signal Processing Society, 2004.
- *EURASIP Meritorious Service Award* - "for leadership in establishing EURASIP Journal on Applied Signal Processing (JASP) as a leading journal in the field", European Association for Signal, Speech and Image Processing (EURASIP), 2004.
- *IEEE Fellow* - "for contributions to algorithms, architectures, and implementations for signal processing", Nov 2002.
- Listed in *Who's Who in Science and Engineering* and *Who's Who in America*, since 1999.
- *Outstanding Systems Engineering Faculty Award* - "in recognition of outstanding interdisciplinary research and in all other aspects of the ISR programs", Institute for Systems Research, University of Maryland", 1996.
- *National Science Foundation Young Investigator Award* - "for recognition of the Nation's most outstanding and promising young faculty in science and engineering", 1994.
- *George Corcoran Award* - "for outstanding contributions to electrical engineering education", Electrical Engineering Department, University of Maryland, 1994.
- *Research Initiation Award*, Signal Processing Program, National Science Foundation, 1993.
- *Service Award* - "for outstanding and dedicated voluntary service as a Director of the Board of Mei-Hwa Chinese School", Silver Spring, MD, 1995.
- *Hortense Fishbaugh Memorial Scholarship* - "for outstanding academic achievement" (only three awards per year for the entire graduate school), UCLA, 1989-90.
- *Achievement Award*, Taiwanese-American Foundation, 1989.
- *University Fellowship* - "for highest distinguished graduate students" (only one award in Electrical Engineering), UCLA, 1987-90.
- *President Research Partnership* - "for high quality research project and outstanding academic record", University of Michigan, Ann Arbor, 1987.

- *Prof. Feng Memorial Scholarship* - "for outstanding undergraduate students in College of Engineering" (three per year), National Taiwan University, 1982.
- *Book Coupon Award* - "for top 5% students", National Taiwan University, 1979-80.

Best Paper and Invention Awards

- *2011 Jimmy Lin Award for Invention*, in recognition of the invention "Active Sensing for Dynamic Spectrum Access", Electrical and Computer Engineering Department, University of Maryland.
- *Invention of the Year Award* - for the invention, "Active Sensing for Dynamic Spectrum Access", Office of Technology Commercialization, University of Maryland, 2010.
- IEEE Signal Processing Society 2008 Young Author Best Paper Award (H. Vicky Zhao), Advisor and Co-author.
- *Horizon Awards - Honorable Mention*, "for technology development of Multimedia Fingerprinting Forensics for Traitors Tracing", Computerworld Magazine, 2006.
- *IEEE Signal Processing Society 2005 Best Paper Award* (Multimedia Signal Processing Area).
- *Invention of the Year Award* - for the invention, "Coding Techniques for Maximum Achievable Diversity in Space, Time and Frequency for Broadband Wireless Communications", Office of Technology Commercialization, University of Maryland, 2004.
- *EURASIP 2004 Best Paper Award* - "for the best paper published in EURASIP Journal on Applied Signal Processing", 2004.
- *Best Paper Award* - 50th IEEE International Vehicular Technology Conference (VTC), Amsterdam, 1999 (selected from among 700 papers).
- *IEEE Signal Processing Society's 1993 Senior Award (Best Paper Award)* (VLSI Signal Processing Area).

Keynotes and Distinguished Lectures

- "Information Anti-Forensics", Keynote, APSIPA Annual Summit and Conference (ASC), Xi'an, Oct 20, 2011.
- "Information Anti-Forensics", Keynote, 7th International Symposium on Image and Signal Processing and Analysis (ISPA), Dubrovnik, Sep 5, 2011.
- "Cognitive Radio Games", Keynote, 2011 Workshop on Advances in Wireless Communications, Nanjing/Chengdu, July 4/July 7, 2011.
- "Cognitive Radio Games", Keynote, 2011 Virginia Tech Symposium on Wireless Communications, Blacksburg, June 2, 2011.
- "Reverse Engineering of Multimedia Devices: An Information Forensic Paradigm", Keynote, International Symposium on Speech and Multimedia Processing, in honoring Prof. Sadaoki Furui's retirement, Tokyo, March 8, 2011.

- "Multimedia Social Networking: A New Paradigm for Signal and Image Processing", Plenary, IEEE International Conference on Image Processing, Hong Kong, Sep 29, 2010.
- "Reverse Engineering of Electronic Devices: An Information Forensic Paradigm", Keynote, IEEE International Conference on Industrial Electronics and Applications, Xi'an, May 26, 2009
- "Genomic/Proteomic Signal Processing for Cancer Classification and Prediction", Keynote, IEEE 125th Anniversary Media Event, New York City, March 10, 2009.
- "Genomic/Proteomic Signal Processing for Cancer Classification and Prediction", Keynote, International Symposium on Intelligent Signal Processing and Communication Systems (IS-PACS), Bangkok, Feb 9, 2009.
- "Towards New Communication Paradigm via Cooperation", Keynote, IEEE International Conference on Communications (ICC) Workshop on Cooperative Communications and Networking: Theory, Practice & Applications, Beijing, May 23, 2008.
- "Multimedia Forensics: Where Sherlock Holmes Meets Signal Processing", Plenary, IEEE International Conference on Multimedia (ICME), Toronto, July 9, 2006.
- "Multimedia Forensics for Traitors Tracing", Keynote, IEEE Multimedia Signal Processing (MMSP) Workshop, Shanghai, Nov 2, 2005.
- "Green Wireless Communications: A Time-Reversal Paradigm", Distinguished Lecture Series, North Carolina State University, March 15, 2013.
- "Green Wireless Communications: A Time-Reversal Paradigm", Advisory Professorship Honor Lecture, Northwestern Polytechnical University, Oct 19, 2011.
- "Green Wireless Communications: A Time-Reversal Paradigm", Distinguished Lecture, National Chiao Tung University/IEEE SPS Taipei Chapter, Oct 14, 2011.
- "Reverse Engineering of Electronic Devices: An Information Forensic Paradigm", Shun Hing Distinguished Lecture Series, Chinese University of Hong Kong, Sep 22, 2010.
- "Towards New Communication Paradigm via Cooperation", Distinguished Lecture, Department of Electrical Engineering, National Taiwan University, April 20, 2009.
- "Information Forensics: What Sherlock Holmes would do", Distinguished Scholar-Teacher Award Lecture Presentation, University of Maryland, College Park, Nov 16, 2007.
- "Cooperative Communications and Networking", Distinguished Lectures Series in Telecommunications, National Chiao Tung University, Taiwan, Jan 13-14, 2007.
- "Can Signal Processing Predict Cancer at the Genomic/Proteomic Levels?", Distinguished Lecture Series, Electrical and Computer Engineering Department, Rutgers University, Oct 7, 2005.
- "Towards Full Diversity in Space, Time, and Frequency for Wireless Communications", Distinguished Lecture, Department of System Science, Kyoto University, Kyoto, June 23, 2005.

- "Tracing Traitors: Collusion Resistant Fingerprinting for Multimedia Forensics", F. Wendell Miller and Information Infrastructure Institute Distinguished Lecture Series, Electrical and Computer Engineering Department, Iowa State University, Apr 22, 2005.
- "Tracing Traitors: Collusion Resistant Multimedia Fingerprinting", Distinguished Lecture Series, The Edward S. Rogers Sr. Department of Electrical & Computer Engineering, University of Toronto, Oct 7, 2004.
- "Tracing Traitors: Collusion Resistant Multimedia Fingerprinting", Distinguished Lecture, IT University of Copenhagen, and IEEE Denmark Chapter, Aug 31, 2004.
- "Innovating IT - from Research to High-Tech Start-Up", Distinguished Lecture, IT University of Copenhagen, and IEEE Denmark Chapter, Sep 1, 2004.
- "Toward Full Diversity in Space, Time, and Frequency", Distinguished Lecture, University of Duisburg-Essen, Germany, Sep 22, 2003.
- "Tracing Traitors: Collusion Resistant Multimedia Fingerprinting", Distinguished Lecture Series, Ryerson University, Canada, Oct 10, 2003.
- "Tracing Traitors: Collusion Resistant Multimedia Fingerprinting", Distinguished Lecture, National Taiwan University, Taiwan, Oct 21, 2003.
- "Tracing Traitors: Collusion Resistant Multimedia Fingerprinting", Distinguished Lecture, National Chao Tung University, Taiwan, Oct 22, 2003.
- "Tracing Traitors: Collusion Resistant Multimedia Fingerprinting", Distinguished Lecture, Academia Sinica, Taiwan, Oct 29, 2003.
- "Tracing Traitors: Collusion Resistant Multimedia Fingerprinting", IEEE Distinguished Lecture, Georgia Institute of Technology, March 24, 2004.
- "Tracing Traitors: Collusion Resistant Multimedia Fingerprinting", Distinguished Lecture, IEEE Dallas Chapter, March 26, 2004.
- "Tracing Traitors: Collusion Resistant Multimedia Fingerprinting", Distinguished Lecture, IEEE Rochester Chapter, July 28, 2004.
- "Tracing Traitors: Collusion Resistant Multimedia Fingerprinting", Distinguished Lecture, IEEE Syracuse Chapter, July 29, 2004.
- "Tracing Traitors: Collusion Resistant Multimedia Fingerprinting", IEEE Distinguished Lecture, UCLA, Aug 12, 2004.
- "Broadband Multimedia Communications and Signal Processing", Distinguished Lecture, IEEE Montreal Chapter, Canada, Sep 22, 2004.
- "Toward Full Diversity in Space, Time, and Frequency", Distinguished Lecture, IEEE Toronto Section, Oct 8, 2004.
- "Tracing Traitors: Collusion Resistant Fingerprinting for Multimedia Forensics", Distinguished Lecture, IEEE Pittsburgh Chapter, Nov 3, 2004.

- "Tracing Traitors: Collusion Resistant Fingerprinting for Multimedia Forensics", Distinguished Lecture, IEEE Chicago Chapter, Dec 2, 2004.
- "Tracing Traitors: Collusion Resistant Fingerprinting for Multimedia Forensics", Distinguished Lecture, IEEE Minneapolis Chapter and University of Minnesota, Apr 21, 2005.
- "Multimedia Forensics for Traitors Tracing", Distinguished Lecture, IEEE Japan Chapter, Tokyo Institute of Technology, Tokyo, June 20, 2005.
- "Can Signal Processing Predict Cancer?", Distinguished Lecture, IEEE Japan Chapter, Kyoto University, Kyoto, June 22, 2005.
- "Can Signal Processing Predict Cancer?", Distinguished Lecture, IEEE Taipei Chapter, National Taiwan University, June 27, 2005.
- "Can Signal Processing Predict Cancer?", Distinguished Lecture, IEEE Taipei Chapter, National Tsing Hua University, June 28, 2005.
- "Can Signal Processing Predict Cancer?", Distinguished Lecture, IEEE Taipei Chapter, Academia Sinica, June 29, 2005.
- "Multimedia Forensics for Traitors Tracing", Distinguished Lecture, IEEE Baltimore Chapter, Sep 28, 2005.
- "Cognitive Radio Games", Distinguished Lecture, IEEE Zagreb Chapter, Sep 9, 2011.

Professional Services

- Reviewer, National Chair Professorship, Education Ministry, Taiwan, 2012.
- European Research Council Advanced Grant Panel, European Commission, 2011.
- International Review Panel Member for National Research Network in Science and Engineering, Austrian National Science Foundation, 2008.
- International Review Panel Member, National Center of Excellence in Science and Engineering Technology, National Academy of Finland, 2005.
- Guest Editor, special issue on social learning and networking, IEEE Signal Processing Magazine, 2012.
- Guest Editor, special issue on signal and information processing for social networks, IEEE Journal of Selected Topics on Signal Processing, 2010.
- IEEE Technical Activities Board (TAB) Periodical Committee, 2009.
- IEEE Trans. on Mobile Computing Steering Committee, 2007-08.
- IEEE Trans. on Multimedia Steering Committee, 2007-08.
- Guest Editor, special issue on cooperative communications and networking, IEEE Journal of Selected Areas in Communications, Feb 2007.
- Guest Editor, Special Issue on Multimedia over IP, IEEE Trans. on Multimedia, March 2001.

- Guest Editor, Special Issue on Multimedia Communications Over Networks, IEEE Signal Processing Magazine, July 2000.
- Guest Editor, Special Issue on Signal Processing for Wireless Communications, IEEE Journal of Selected Areas in Communications, Oct. 1998 and Dec. 1998.
- Guest Editor, Special Issue on Multimedia Signal Processing and Technology, Proceedings of The IEEE, May and June, 1998.
- Editor, Journal of VLSI Signal Processing Systems, 1996 - present.
- Associate Editor, IEEE Journal of Selected Topics on Signal Processing, 2010-2012.
- Associate Editor, IEEE Signal Processing Magazine, 2011-2013.
- Associate Editor, IEEE Transactions on Signal Processing, May 1994 - April, 1997.
- Series Editor, The Marcel Dekker Book Series on Signal Processing and Communications, Marcel Dekker Publisher, New York City, 1997 - 2002.
- Publication Board, IEEE Signal Processing Society, 2003 - present.
- Conference Board, IEEE Signal Processing Society, 2003 - present.
- General Co-Chair, First IEEE Asia-Pacific Conference on Multimedia and Exposition, Sydney, Dec. 2000.
- Technical Co-Chair, IEEE International Workshop on Multimedia Signal Processing, Copenhagen, Denmark, Sep. 1999.
- Panelist, DARPA Low-Power Computing Program, 1998.
- Panelist on "Multimedia - Current Status and Future Directions", IEEE Int'l Conference on Multimedia and Expo, Aug. 2000, New York City.
- Invited Guest, Microsoft Research Faculty Summit, Redmond, July 2003; Aug 2004.

Research Grants and Contracts

1. Non-Intrusive Media Forensics Framework, Principal Investigator, Air Force Office of Scientific Research , Total Funding: \$300,000, 2008-2010.
2. Feedback Control of Respiration Induced Tumor Motion with a Treatment Couch, Co-Principal Investigator, NIH, \$1,851,000, 2008-2013.
3. Modeling and Analysis of Cognitive Radio Systems, Principal Investigator, Sprint, \$30,000, 2008.
4. Wireless Networking (Optimal Distributed Dynamic Spectrum Access: A Game Theoretical Framework), Co-Principal Investigator, Laboratory of Telecommunications Science, \$3,352,149, 2007 - present.
5. Signal Processing for Concealed Weapons Detection, Principal Investigator, MIPS/Pharad, \$78,000, 2006-07.

6. Signal Processing for Concealed Weapons Detection, Principal Investigator, Pharad, \$40,000, 2006.
7. Design UWB-MIMO Wireless Communications Systems, Principal Investigator, MIPS/Mobitrum, \$156,000, 2006-07.
8. Super-Resolution Signal Processing for Lidar, Principal Investigator, Optical Air Data Systems, \$91,000, 2005-06.
9. Joint Institute of Knowledge Discovery, Co-Principal Investigator of ECE component, NSA, \$300,000, 2005-06.
10. Data Hiding in Maps: A Modern Way to Protecting Geospatial Information, Co-Principal Investigator (with M. Wu) AFOSR/ROME, \$75,000, 2005-06.
11. Equipment for Multimedia Signal Processing Laboratory, Co-Developer, SONY equipment grant, \$135,000, 2005.
12. High-Speed Wireless Ultra-Wideband Communications, Principal Investigator (with W. Su), MIPS/Maryland Semiconductor, \$154,000, 2004-05.
13. Signal Processing for Ultrasonic Nondestructive Inspection of Tanks, Principal Investigator (with Z.J. Wang), MIPS/Intank, \$300,000, 2003-2005.
14. A Collusion-Resistant Multimedia Fingerprinting Framework For Information Forensics, Co-Principal Investigator (with M. Wu, and others), AFOSR/Rome, \$220,000, 2003-2004.
15. Scalable Multilayer Control of Joint Battlespace Networks, Co-Principal Investigator , MURI/AFOSR, \$4,300,000, 2002-2007.
16. REU Site: Research Internships in Telecommunications Engineering, \$1,196,652, Principal Investigator (with S. Marcus), National Science Foundation, 2002-2007.
17. Low-Power and High-Performance Design for High-Speed Communication Systems, DARPA/BAE, Principal Investigator, \$180,000, 2002-2003.
18. Software grant to support 408G Multimedia Signal Processing Capstone Design Course, \$70,000, Co-Principal Investigator (with M. Wu), Microsoft Research, 2002-2003.
19. A Multidisciplinary Integrated Capstone Design Curriculum for Electrical and Computer Engineering, \$100,000, Co-Principal Investigator (with PI, N. Goldsman, and others), National Science Foundation, 2002-2003.
20. Geolocation using Smart Antenna, Principal Investigator, Fujitsu Laboratories, \$15,000, 2002-2003.
21. Location Aware Computing using Smart Antennas, Principal Investigator, Fujitsu Laboratories, \$30,000, Aug 2001 - June 2002.
22. Distributed Immune Systems for Wireless Networks Information Assurance, Investigator (with PI, J. Baras, and others), URI/ARO, \$5,000,000, 2001-2009.
23. Collaborative Technology Alliance on Advanced Sensors, Co-Principal Investigator on Microsensors (with PI, R. Chellappa, and S. Bhattacharyya), \$1,500,000, 2001-2006.

24. Collaborative Technology Alliance on Networking and Communications, Co-Principal Investigator (with PI, J. Baras, and others), Telcordia/Army Research Laboratories, \$5,000,000, 2001-2006.
25. Remotely Powered Arrays of Active Strain-Gauge Wall Sensors, Co-Principal Investigator (with PI, R. Newcomb; Co-PI: K. Zaki), National Science Foundation, \$100,000, 2001-2002.
26. High Performance Computing for Signal Processing, National Science Foundation Young Investigator Award, \$500,000 (including industrial matching fund \$187,500), 1994-2003.
27. Design and Implementation of Wavelet-Based Video Communication VLSI System, Principal Investigator (with Co-PI, S. Bhattacharyya), Trident Systems, \$122,361, 1998-1999.
28. Integrated Multimedia Communications, Principal Investigator, MIPS/Micro Star, \$105,000, 1998-1999.
29. Algorithm-Based Architectural Low-Power Design Methodology for High Performance Signal Processing, Principal Investigator, ONR, \$314,726, 1996-1999.
30. Adaptive Antenna Arrays for Wireless Communications, in Advanced Telecommunications and Information Distribution Program, Army Federated Laboratory, Subject Principal Investigator (with E. Geraniotis and A. Ephremides), about \$30,000/year, 1996-1998.
31. Adaptive Signal Processing for Radar, Principal Investigator, Westinghouse, \$20,000, 1995-1996.
32. Research in Signal/Image Processing, Principal Investigator, Micro Star, \$5,000, 1995.
33. Multimedia Video-On-Demand Computing and Communications, Principal Investigator, MIPS, Micro Star, \$210,000, 1995-97.
34. High-Performance System Prototyping and Testing, Co-Principal Investigator (with K. Nakajima et al), National Science Foundation, CISE Equipment Grant, \$180,000 (including matching fund \$60,000 from university), 1995-1996.
35. Pseudo-Inverse Research, Principal Investigator (with A. Tits), Westinghouse, \$20,000, 1994-1995.
36. Adaptive Array Processing and Equalization for Wireless Communications, National Science Foundation, Engineering Research Center (ISR), \$32,500, 94-95; \$32,000, 1995-1996.
37. Novel Approaches for Modern Signal Processing: Algorithms, Architectures, and Applications, Principal Investigator, DoD Augmentation Award for Science and Engineering Research Training (AASERT)/Office of Naval Research, \$94,480, 1993-1996.
38. Optimization of Multi-Dimensional NMR Data Analysis for Protein Structure Determination, Principal Investigator, National Institute of Health, \$300,077, 1993 - 1996.
39. VLSI Architectures and Algorithms for High Performance Signal Processing, Principal Investigator, Office of Naval Research, \$225,000, 1993 - 1996.
40. Novel Approaches for Numerical Signal Processing: Algorithms and Architectures, Principal Investigator, National Science Foundation Research Initiation Award, \$100,000, 1993 - 1996.

41. Coherent Co-Channel Direction Finding Techniques, Principal Investigator, MIPS/Watkins Johnson, \$48,882, 1993 - 1994.
42. High Performance VLSI Systems for Video Communications, Principal Investigator, MIPS/Micro Star, \$257,056, 1992 - 1995.
43. Real-Time Signal Processing and Understanding, Co-Project Lead (with J. Baras et al), National Science Foundation, Engineering Research Center (ISR), 1990-1994, 7/30/91 - 6/30/92, \$ 215,312; 7/1/92 - 6/30/93, \$ 214,720; 7/1/93 - 6/30/94, \$202,440. My share was about 25% for each year.
44. System Architecture Design for Document Image Processing, Principal Investigator, Westinghouse, \$25,000, 1992 - 1993.
45. Research on VLSI Implementation of High-Speed DCT Architecture, Principal Investigator, Allied-Signal, \$13,200, 1992 -1993.
46. Coherent Co-Channel Direction Finding Techniques, Principal Investigator, Watkins-Johnson, \$16,489, Sep. 1992 - 1993.
47. Signal Processing for Videophone, Principal Investigator, Micro Star, \$2,000, April 1992.
48. Real-Time Algorithms and Architectures for Adaptive Sensory Arrays, Principal Investigator, Minta Martin Award, College of Engineering, University of Maryland, June 1991 - Dec. 1992, \$ 22,000.

Doctoral and Postdoctoral Research Advising

1. Ching-Te Grace Chiu, "VLSI Algorithms and Architectures for Transform Codings with Applications to Real-Time Video Communications", University of Maryland, 1992. (*National Tsing Hua University, Taiwan/Bell Labs, Murray Hill*)
2. Manolis Frantzeskakis, "An Architectural Framework for VLSI Time-Recursive Computation with Applications", (co-supervised) University of Maryland, 1993. (*Broadcom/Founder&CEO, Hermes Technology*)
3. An-Yeu Andy Wu, "Algorithm-Based Low-Power Digital Signal Processing System Designs", University of Maryland, 1995. (*National Taiwan University, Taiwan/Bell Labs, Murray Hill*)
4. Hongyi Wang, "Signal Processing Techniques for Increasing Channel Capacity in Wireless Communications", University of Maryland, 1996. (*Bell Labs, Lucent Technologies, Whippany*)
5. Ye Geoffrey Li, Postdoctoral research, 1994 - 1996. (*Georgia Institute of Technology*)
6. Ut-Va Koc, "Low Complexity and High Throughput Fully DCT-Based Motion Compensated Video Coders", University of Maryland, 1996. (*Bell Labs, Lucent Technologies, Murray Hill*)
7. Ying-Chang Liang, postdoctoral research, 1996. (*Nanyang Technological University/Institute for Infocomm Research, Singapore*)
8. Huai Li, "Model-Based Image Processing Techniques for Breast Cancer Detection in Digital Mammography", University of Maryland, 1997. (*National Institute of Health*)

9. Balaji Sampath, "Subspace Approaches for Blind Equalization and Identification", University of Maryland, 1997. (*A founder of Association for India's Development, he devotes his life for unfortunate people in poor villages of India and was a winner of MIT's Global Indus Technovator Award in 2006.*)
10. Farrokh Rashid-Farrokhi, "Combined Power Control and Space-Time Diversity in Cellular Communications", University of Maryland, 1997. (*Co-founder, Quantenna Communications/Bell Labs, Murray Hill*)
11. Jie Chen, "Low Power Architecture and VLSI Design of Video Coding Systems", University of Maryland, 1998. (*University of Alberta, Canada/Brown University*)
12. Arun Raghupathy, "Low Power and High Speed Algorithms and VLSI Architectures for Error Control Coding and Adaptive Video Scaling", University of Maryland, 1998. (*Co-Founder, CommLabs/Qualcomm*)
13. Javad Razavilar, "Signal Processing and Performance Analysis for Optimal Resource Allocation in Wireless Networks", University of Maryland, 1998. (*Founder and CEO, TeleOp-Com/Qualcomm*)
14. Haitao Zheng, "Robust Communication Framework for Multimedia Data by Exploring Unequal Error Protection", University of Maryland, 1999. (*University of California, Santa Barbara/Bell Labs, Homdel*)
15. P. John Hsu, "Algorithms for Low Bit Rate Visual Communication Systems", University of Maryland, 1999. (*Microsoft*)
16. Jie Song, "Optimal Rate Allocation and Security Schemes for Image and Video Transmission over Wireless Channels", University of Maryland, 2000. (*Agere Systems, Holmdel*)
17. Xiaowen Wang, "Robust Channel Estimation for Multicarrier Modulation Systems", University of Maryland, 2000. (*Apple/Bell Labs, Murray Hill*)
18. Alejandra Mercado, "Adaptive Quality of Service for Integrated Multimedia over Wireless Networks", University of Maryland, 2001. (*University of Maryland*)
19. Wade Trappe, "Multi-User Security: A Signal Processing and Networking Perspective", University of Maryland, 2002. (*Rutgers University*)
20. Nitin Chandrachoodan, "Performance Analysis and Hierarchical Timing for DSP System Synthesis", (co-supervised) University of Maryland, 2002. (*Indian Institute of Technology, Madras*)
21. Zoltan Safar, "Efficient Coding and Decoding Methods for Multi-Antenna Wireless Communication Systems", University of Maryland, 2003. (*University of Maryland/Nokia*)
22. Charles Barnett, "Efficient, Reliable, and Secure Source Authentication Schemes for Realtime Multicast", University of Maryland, 2003. (*VP - Engineering, Hughes Networks Systems*)
23. Masoud Olfat, "Spatial Processing, Power Control, and Channel Allocation for OFDM over Wireless Communications", University of Maryland, 2003. (*Sprint Nextel*)

24. Zhu Han, "An Optimization Theoretical Framework for Resource Allocation over Wireless Communications", University of Maryland, 2003. (*University of Houston*)
25. Mehdi Alasti, Postdoctoral research, 2003. (*Sprint Nextel*)
26. Yan Lindsay Sun, "Multiuser Security for Multicast Communications", University of Maryland, 2004. (*University of Rhode Island*)
27. Z. Jane Wang, Postdoctoral research, 2002 - 2004. (*University of British Columbia, Canada*)
28. Larry Younkins, "On the Performance of Multi-Antenna Techniques for Spatially and Temporally Correlated Wireless Channels", University of Maryland, 2004. (*Applied Physics Laboratory, Johns Hopkins University*)
29. Hong Vicky Zhao, "Multimedia Fingerprinting for Multiuser Forensics and Security", University of Maryland, 2004. (*University of Alberta, Canada*)
30. Weifeng Su, Postdoctoral research, 2002 - 2005. (*State University of New York, Buffalo*)
31. Wipawee Pam Siriwongpairat, "Cross-Layer Design for Multi-Antenna Ultra-Wideband Systems", University of Maryland, 2005. (*Meteor Communications*)
32. Charles Pandana, "Resource and Environment Aware Sensor Communications and Networking: Framework, Optimization, and Applications", University of Maryland, 2005. (*Marvell*)
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