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Education

- PhD** Purdue University, W. Lafayette, Indiana
(1996) Electrical & Computer Engineering
Thesis: Adaptive Multiresolution Image & Video Compression and Pre/Post-Processing of Images & Video Streams
Advisors: R.L. Kashyap, J. Allebach, S. Gelfand, and J. Berger
- EEE** University of Southern California
(1993) Professional Engineering Degree, GPA: 4.0/4.0
Emphasis: Image Processing & Computer Vision (Software)
- MSEE** California State University at Long Beach
(1989) Electrical Engineering (*with honors*), GPA: 4.0/4.0
Emphasis: Signal Processing & Filter Design
- BSEE** BSEE California State University at Long Beach
(1987) Electrical Engineering, GPA: 3.9/4.0
With Great Distinction

Experience

- Sharif University of Technology**
(09/00 – now) Department of Computer Engineering
As a faculty member: Teaching graduate and undergraduate courses and supervising graduate student dissertations. As the **Director and Founder of Advanced Information and Communications Technology Center (AICTC)**, supervising research and development projects on advanced ICT technologies & multimedia systems (www.aictc.ir).
- Intel Corporation**
(06/96 - 02/99) Media & Interconnect Technology Lab
As a Senior Software Engineer: Designed state of the art video algorithms (Such as worldwide known Real and Indeo Codecs) for video compression/transmission over Internet and internet based multimedia services.
- AT&T Bell Labs (Lucent)**
(03/93 - 01/96) Technology Planning, Broadband Interactive Multimedia Systems
As a Member of Technical Staff: Investigated Multimedia applications over ISDN-BRI, B-ISDN and Internet. Designed error concealment algorithms for H.261/H.262 applications over ATM. Investigated the use of MPEG-2 for Video Telephony (VT) applications. Investigated the effects of BCH forward error correction in H.261-VT applications. Investigated the effects of errors in VT applications. Evaluated Video Conferencing Technologies. Investigated optimal choice of parameters for H.261, H.262 Video Compression. Designed algorithms for Picture in Picture (PIP) in Multimedia applications. Developed pre/post-processing algorithms for compressed video streams.
- Portland State University**
(12/96 – 01/01) Department of Electrical & Computer Engineering
As an Adjunct Associate Professor: Teaching graduate courses on Digital Signal and Image Processing, Computer Networks, Advanced DSP, Advanced Communication and supervising Ph.D. and Master students.
- Oregon State University**
(12/96 – 01/00) Department of Electrical & Computer Engineering
As an Adjunct Associate Professor: Teaching graduate courses on Digital Signal and Image Processing, Computer Networks, Advanced DSP, Advanced Communication.
- OGI**
(1998 – 01/01) Department of Electrical & Computer Engineering
As an Adjunct Professor: Teaching graduate courses on Digital Image and Video Processing.

Experience (*continued*)

- PortNet Multimedia** An Internet Solution Company
(01/98 – now) As the President, we are developing multimedia, e-business, and e-learning solutions for future interactive applications over the Internet. We also offer web design, web hosting, server co-location, e-commerce solutions, consulting on multimedia applications, software design, and networking.
- Purdue University** Department of Electrical & Computer Engineering
(12/91 - 10/96) *As a Research Assistant:* Developed multiresolution algorithms for image and video compression. Developed robust nonlinear filters for image processing applications.
- Purdue University** Department of Mathematics
(09/93 - 09/96) *As a Teaching Assistant:* Lectured college Linear Algebra and Trigonometry courses. Collaborating with the faculty and staff to improve the quality of instruction for undergraduate mathematics courses.
- ICN Co.** Algorithm Design & Implementation
(08/90 - 08/91) *As a Design Engineer:* Designed an adaptive echo canceller using TMS320C25 DSP. Designed lattice structure filters for real-time image restoration.
- CSULB** Department of Electrical & Computer Engineering, Image Processing Lab.
(09/88 - 12/89) *As a Teaching Assistant:* Supervised the development of an interactive software package for image enhancement, restoration, and compression on personal computers. Designed real time image processing algorithms for ITI-151 IP-system. Graded students' homework and exams for a course in Digital Control. Conducted recitations for courses in Random Processes and Estimation Theory.
- American Telecom** *As a Test Engineer:* Performed test and analysis of digital FIR and IIR filters. Evaluated the performance of communication boards and electronics components.
(06/84 - 06/85)

Courses & Projects

- Communications
Signal & Speech Processing** Advanced Digital Communications, Advanced Signal Processing, Advanced Communication Networks, Signal and Image Processing with TMS320C25, Internetworking with TCP/IP, CMOS VLSI Design, Error Control Coding, Digital & Analog Filter Design, Digital Estimation Theory, Speech Processing, Stochastic Processes, Linear and Nonlinear Programming.
- Image Processing &
Computer Vision** Multimedia Systems, Digital Video Compression Standards, Analog/Digital Video, Advanced Digital Image Processing, Pattern Recognition, Remote Sensing, Medical Imaging Systems, Advanced Computer Vision, Artificial Intelligence, and Robotics.
- Mathematics and Statistics** Mathematical Statistics, Decision Theory & Bayesian Statistics, Applied Mathematics, Real Analysis, and Statistical Wavelets in Regression.
- Projects** Multimedia Set-Top-Box for VoD Applications, Depth of Anesthesia with EEG Signals, Object-based video coding & Tracking, Multimedia Streaming in Overlay Networks, QoS in AdHoc Networks, Robust Image Watermarking, Gigabit Routing using Network Processors, Elearning Portals, Designed a decision feedback equalizer for channel equalization. Comparative study of TDMA and CDMA. Investigated the effect of BCH and RS error control codes in channel coding. Designed FIR/IIR filters and tone generators on TMS320C25 DSP. Designed a CMOS circuit layout for implementation of pipelined 2D-DCT. Designed block based motion estimation algorithms. Designed a client/server system for multimedia communications over Internet. Designed a speaker independent speech recognition system in software. Designed a ML classifier for classifying different crops using remotely sensed data. Designed adaptive LMS filters for noise cancellation. Used GMRF models and local statistics for texture classification. Used classical/modern spectral estimation techniques for parameter identification. Used Hough transform and hierarchical algorithms for polyhedron object recognition. Designed an image processing system in C (restoration/enhancement/compression). Designed a fully functional vending machine using sequential logic. Designed various compensators in feedback control systems.

Skills

Software	RUP, XP, USDP, UML, C, C++, JAVA, .Net, J2EE, XML, HTML, Assembly.
Operating Systems	Linux, Windows, Mac OS, Solaris and Unix.
CAD Tools	MATLAB, Mentor Graphics, Mathematica, SPICE.
Standards	JBIG, JPEG, H.261, H.263++, MPEG2, MPEG4, MPEG7, ISDN, ATM.

Honors, Awards & Activities

The Best Applied Researcher Award, Sharif University of Technology, 2002-2004
General Chairman, 1st Eurasian Conference on Advances in Information & Communication Technology, October 2002.
IAL Video Codec Design Award for Indeo[®] 5.0, Intel Corp. (1997)
Excellence in Teaching Award, Purdue University (1995-1996)
AT&T Diversity Award (1993-1994)
Reviewer for IEEE Transactions on PAMI (1992-1995)
Reviewer for IEEE Transactions on Image Processing, (1998 – 2001)
E.I.T Certificate, State of California (1989)
MSEE with Highest Honors (1989), BSEE with Great Distinction (1987)
Distinguished Student of Mathematics Award (1984-1985)
Member of NSPE, IEEE, and Golden Key National Honor Society

Inventions

Spatial Error Concealment for Image Processing (with H. Radha), Lucent Technologies (AT&T Bell Labs), US Patent Number 6134352.

Device and method for centralized processing of picture-in-picture images (with R. Coutinho, J. Dale, H. Radha), Lucent Technologies, US Patent Number 5,808,659.

Publications

- Conference Papers**
- [1]. H. R. Rabiee and R. L. Kashyap, A New Robust Nonlinear Filter for Noise Smoothing and Edge Enhancement, IEEE 36th Midwest Symposium on Circuits and Systems, Detroit, Michigan, Aug. 16-18, 1993.
 - [2]. H. R. Rabiee and R. L. Kashyap, Robust Nonlinear Filters for Noise Smoothing and Edge Enhancement, IEEE 8th International Workshop on Image and Multidimensional Signal Processing, France, Sept. 1993.
 - [3]. H. R. Rabiee and R. L. Kashyap, GMLOS: A New Robust Nonlinear Filter for Image Processing Applications, IEEE Twenty-Seventh Asilomar Conference, Pacific Grove, CA, Nov. 1-3, 1993.
 - [4]. H. R. Rabiee and R. L. Kashyap, GMLOS and A Comparative Study of Nonlinear Filters, IEEE ICASSP'94, Adelaide, Australia, April 19-23, 1994.
 - [5]. H. R. Rabiee, R.L. Kashyap, and H. Radha, Multiresolution Image Compression with BSP Trees and Multi-Level Block Truncation Coding, IEEE 2nd International Conf. on Image Processing, Washington D.C., Oct. 1995.
 - [6]. S. R. Safavian, H.R. Rabiee, and M. Fardanesh, Adaptive Multiresolution Image Coding with Projection Pursuit Neural Networks, presented in IEEE 29th Asilomar Conference, Pacific Grove, CA, Nov. 1995.
 - [7]. H. R. Rabiee, R.L. Kashyap, and S.R. Safavian, Multiresolution segmentation Based Image Coding With Hierarchical Data Structures, IEEE ICASSP'96, Atlanta, GA, May 1996.
 - [8]. H. R. Rabiee, R.L. Kashyap, and S.R. Safavian, Adaptive multiresolution image coding with matching and basis pursuits, IEEE 3rd International Conf. on Image Processing, ICIP'96, Lausanne, Switzerland, September 16-19, 1996.

Publications (*continued*)

Selected Conference Papers

- [9]. H. R. Rabiee, R.L. Kashyap, and H. Radha, Error concealment of encoded still image and video streams with multidirectional recursive nonlinear filters, IEEE 3rd International Conf. On Image Processing, ICIP'96, Lausanne, Switzerland, September 16-19, 1996.
- [10]. S. R. Safavian, H.R. Rabiee, M. Fardanesh, and R.L. Kashyap, Low Bit Rate Image Coding with Orthogonal Projection Pursuit Neural Networks, IEEE ICNN'97, Houston, TX, June 1997.
- [11]. M. Saeed, H.R. Rabiee, W.C. Karl, and T. Nguyen, Bayesian Restoration of Noisy Images with the EM Algorithm, IEEE 4th International Conf. on Image Processing, ICIP'97, Santa Barbara, CA, Oct. 26-29, 1997.
- [12]. H. R. Rabiee, R. L. Kashyap, S. R. Safavian, and M. Saeed, Low Bit Rate Image Coding with Shift Orthogonal Wavelet Bases, IEEE 4th International Conf. on Image Processing, ICIP'97, Santa Barbara, CA, Oct. 26-29, 1997.
- [13]. H. R. Rabiee and R. L. Kashyap, Image De-Blocking with Wavelet-Based Multiresolution Analysis and OS Filters, IEEE 4th International Conf. on Image Processing, ICIP'97, Santa Barbara, CA, Oct. 26-29, 1997.
- [14]. H. R. Rabiee, S.R. Safavian, T. Gardos, and A. Mirani, Low Bit-Rate Subband Image Coding with Matching Pursuit, SPIE Visual Communication and Image Processing'98, Volume 3309, San Jose, CA, January 1998.
- [15]. M. Saeed, W. Karl, T. Nguyen, and H. Rabiee, A New Multiresolution Algorithm for Image Segmentation, IEEE ICASSP'98, Seattle, WA, May 1998.
- [16]. H. R. Rabiee, R. L. Kashyap, S. R. Safavian, Adaptive Image Representation with Segmented Orthogonal Matching Pursuit, IEEE ICIP'98, Chicago, IL, Oct. 4-7, 1998.
- [17]. H. R. Rabiee, S. R. Safavian, R. L. Kashyap, M. Saeed, Scalable Subband Image Coding with Segmented Orthogonal Matching Pursuit, IEEE ICIP'98, Chicago, IL, Oct. 4-7, 1998.
- [18]. M. Saeed, H.R. Rabiee, Efficient Image Database Retrieval Using Wavelet Packets and Principal Component Analysis, SPIE Conference, Denver, CO, July 18-22, 1999.
- [19]. M. Ahmadi, M. Sayyadian, H. Rabiee, Coalition Formation for Task Allocation via Genetic Algorithms, First Eurasian Conference on Advances in Information and Communication Technology, Oct. 29-31, 2002, Tehran, Iran.
- [20]. M. Shafiei, H. Rabiee, A New On-Line Signature Verification Algorithm Using Variable Length Segmentation and Hidden Markov Models, ICDAR'03, IEEE Computer Society & IAPR, Edinburgh, Scotland, Aug. 3-6, 2003.
- [21]. M. Amiri, H. Rabiee, F. Behazin, M. Khansari, A New Wavelet Domain Block Matching Algorithm for Real-Time Object Tracking, IEEE ICIP'03, Barcelona, Spain, Sept. 14-17, 2003.
- [22]. M. Amiri, H. Rabiee, F. Behazin, An Algorithm for Object Detection in Wavelet Domain, MVIP, Tehran, Iran, 2003.
- [23]. H. Zamani, H. Rabiee, FMR Watermarking: A New Multi-resolution Semi-Fragile Method for Authentication Applications, IEEE SSP 2003, Washington, USA, 2003.

Publications (*continued*)

- [24]. M. Rashti, H. Rabiee, Amir Foroutan, M. Lavasani, Performance Evaluation of IXP 1200 Network Processor for Network Security Applications, ISCC, Tehran, Iran, 2003.
- [25]. M. Rashti, H. Rabiee, Amir Foroutan, M. Lavasani, A Multi-Dimensional Packet Classifier for NP-Based Firewalls, IEEE SAINT, Tokyo, Japan, 2004.
- [26]. M. Rashti, H. Rabiee, A.M. Shafiee, Amir Foroutan, Multi-Dimensional NP-Based Packet Filtering, ICN'04, France, March 2004.
- [27]. N. Moghaddam, H. R. Rabiee, M. Yariapanah, A New Technique for Feature Index Reduction of Textured Images Based on Genetic Algorithm, 10th Annual Conference of Computer Society of Iran, Feb. 2005.
- [28]. M. Khansari, H. R. Rabiee, M. Asadi, M. Ghanbari, M. Nosrati, M. Amiri, A New Shape Tracking Algorithm Based on Joint Features in Wavelet and Pixel Domains, 10th Annual Conference of Computer Society of Iran, Feb. 2005.
- [29]. M. Yaghoobi-Vaighan, H. R. Rabiee, M. Ghanbari, M. B. Shamsollahi, A New Image Texture Extraction Algorithm Based On Matching Pursuit Gabor Wavelets, IEEE ICASSP 2005, Philadelphia, USA.
- [30]. M. Goudarzi, H. R. Rabiee, M. Ghanbari, Efficient Compression of ECG Signals Based on Two Dimensional Wavelet Transform and SPIHT Coding Algorithm, The 2005 International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences, METMBS '05, June 2005, Las Vegas, USA.
- [31]. M. Khansari, H. R. Rabiee, M. Asadi, M. Ghanbari, M. Nosrati, M. Amiri, An Adaptive Semi-Automatic Video Object Extraction Algorithm Based On Joint Transform and Spatial Domains Features, IEEE Fourth International Workshop on Content-Based Multimedia Indexing, CBMI 2005, June 2005, Larvia.
- [32]. M. Khansari, H. R. Rabiee, M. Asadi, M. Ghanbari, M. Nosrati, M. Amiri, A Quantization Noise Robust Shape Prediction Algorithm, IEEE/IEE 2005 European Signal Processing Conference, Sept. 4-8, 2005, Turkey.
- [33] M. MoazamiGoudarzi and H. R. Rabiee, "Efficient Compression of ECG Signals Based on Two Dimensional Wavelet Transform and DCT Decimation," IEEE 12th International Workshop on Systems, Signals & Image Processing, IWSSIP-2005, Chalkida, Greece, Sep. 2005.
- [34] M. Amiri and H. R. Rabiee, "A new object detection algorithm based on adaptive lifting scheme," IEEE 12th International Workshop on Systems, Signals & Image Processing, IWSSIP-2005, Chalkida, Greece, Sep. 2005.
- [35]. B. Akbari, H. R. Rabiee, M. Ghanbari, An Optimum Rate Allocation Scheme for Video Multicasting Using Overlay Network, International Symposium on Telecommunications, IST 2005, Sept. 10-12, 2005, Shiraz, Iran.
- [36]. P.Gifany, H. R. Rabiee, M. H. Gholpayeghani, M. Ghanbari, Extraction of Anaesthesia Depth using Self Similarity and Fluctuation Analysis on the Wavelet Coefficients of EEG, 3rd IEE International Seminar on Medical Applications of Signal Processing, Savoy Place, London, UK, Nov. 3-4, 2005.
- [37]. B. Akbari, H. R. Rabiee, M. Ghanbari, DPOCS: A Dynamic Proxy Architecture for Video Streaming Based on Overlay Network, IEEE International Conference on Networks, MICC-ICON 2005, Malaysia, Nov. 16-18, 2005.
- [38]. B. Akbari, H. R. Rabiee, M. Ghanbari, A Rate-Efficient Peer-to-Peer Architecture for Video Multicasting over the Internet, IEEE International Symposium on Multimedia, ISM2005, Dec. 12-14, Irvine, CA.
- Selected Journal Papers** [39]. H. R. Rabiee and R. L. Kashyap, GMLOS: A New Robust Nonlinear Filter Based on The Theory of Generalized Maximum Likelihood and Order Statistics, IEEE Trans. on Image Processing, 1999.
- [40]. S.R. Safavian, H.R. Rabiee, and M. Fardanesh, Projection and Pursuit Image Compression, IEEE Signal Processing Letters, May 1998.

Selected Technical Reports

- [41]. H. R. Rabiee, A Guide to Practical Image Processing with PC, Lab. Manual, Image Processing Lab, Californian State University at Long Beach, 1988.
- [42]. H. R. Rabiee, Adaptive Echo Cancellation with TMS320C25 DSP, Tech. Report, ICN Co., Pasadena, CA, 1991 (Proprietary).
- [43]. H. R. Rabiee and H. Radha, Pre and Post-Processing Algorithms for Video Compression Applications, Tech. Memo., AT&T Bell Labs, Indianapolis, Nov. 1993.
- [44]. H. R. Rabiee and H. Radha, Cell Loss Recovery Using Recursive Nonlinear Filters, Tech. Memo., AT&T Bell Labs, Indianapolis, Dec. 1994 (Proprietary).
- [45]. H. R. Rabiee and H. Radha, Desktop Video Teleconferencing Over ISDN and Internet, Tech. Memo., AT&T Bell Labs, Indianapolis, Dec. 1995.
- [46]. F. Martins and H. Rabiee, Study of Video Codecs Based on Distortion Measures, Tech. Report, Video & Audio Technology Lab, Intel Corp., Jan. 1998.
- [47]. H. Rabiee, A New Multiresolution Video Codec With Advanced Features, Tech. Report, Video & Audio Technology Lab, Intel Corp., Feb. 1998.
- [48]. H. Rabiee, Sauleh Etamidi, and M. Seydi, Software & Hardware Architecture for SMJ National Network, Tech. Report, AICTC, Sharif University, October 2001.
- [49]. H. Rabiee, N. Abdollahi, E-Learning Strategies for PayameNoor University, Tech. Report, AICTC, Sharif University, November 2003.
- [50]. H. Rabiee, N. Abdollahi, A new Organization Structure for PayameNoor University to Support its New Vision in The E-Learning Era, Tech. Report, AICTC, Sharif University, November 2003.

Manuscripts in Preparation

- [51]. B. Akbari, H. R. Rabiee and M. Ghanbari, An Optimal Rate Allocation Overlay Network for Layered Video Multicasting, Journal paper, submitted October 2005.
- [52]. M. Khansari, H. R. Rabiee, and M. Ghanbari, An Adaptive Semi-Automatic Video Object Extration Algorithm Based On Joint Transform And Spatial Domains Features, Journal Paper, 2005.
- [53]. M. Khansari, H. R. Rabiee, and M. Ghanbari, Adaptive Object Tracking In Crowded Video Scenes Based On The Undecimated Wavelet Features And Textue Analysis, Journal Paper, 2005.
- [54]. M. Khansari, H. R. Rabiee, and M. Ghanbari, A Noise Robust Feature Tracking Algorithm for Video Processing Applications, Journal Paper, 2005.
- [55]. P. Gifany, H.R. Rabiee and M. Ghanbari, A Novel Multiresolution Algorithm for Estimation of Depth of Anastasia from EEG signals, Journal paper, 2005 (Under Revision).

Books

- [1]. Hamid R. Rabiee, E-Government, vol. 1, Aug. 2004, ISBN964-92382-4-7.
- [2]. Hamid R. Rabiee, E-Government, vol. 2, July. 2005, (to be published).
- [3]. M. Khansari and Hamid R. Rabiee, An Introduction to Free and Open Source Softwares, November 2005 , ISBN:964-96535-0-3.
- [4]. Hamid R. Rabiee, and I. Ebrahimzadeh, Distance and Open Learning, March 2006, (to be published).
- [5]. Hamid R. Rabiee, M. Khansari, and. M. Ghanbari, Digital Video Processing and Networking, March 2006 (to be published – Text Book).

Executive Activities

Director & Founder of Advanced Information and Communication Technology Center of Sharif University of Technology (April 2001 – Now)

Founder and former Director of Sharif Advanced Technologies Incubator, (April 2003 – Jan. 2005)

Director of Image and Video Processing Lab, Iran Telecommunication Research Center (July 2002 – July 2003)

Director of National Payam-e-Noor Virtual University Project (Feb. 2002 - Now)

Senior Advisor of Information Technology, Majlis, (Sept. 2005 – Now)

Member of Technology and Research Committee of Ministry of Science, Research and Technology (Feb. 2002 – Sep. 2003)

Senior Advisor of Information Technology, National Library of Iran, National Center for Statistics, Ministry of Finance, President's Office (2001 – 2003)

General Chair of The First Eurasian Conference on Advances in Information and Communication Technology, October 29-31, Shiraz.

General Chair of The Ninth Iranian Computer Society Conference, February 17-20, Tehran.

Scientific Chair of the Second E-Learning Conference, January 2005, Tehran.

Collaborators

Prof. H. Radha, Department of ECE, Michigan State University.

Prof. Eric Neuhold, Vienna University of Technology, Austria.

Prof. A Min Tjoa, CE Department Head, Technical University of Vienna, Austria.

Dr. M. Saeed, MIT-Harvard, PhD-MD Program.

Sauleh Etemady, Microsoft Research and PhD Student, Department of ECE, Michigan State University.