

THE UNIVERSITY OF BRITISH COLUMBIA
Curriculum Vitae for Faculty Members

Date: 01 / May / 2018

1. **SURNAME:** WARD **FIRST NAME:** Rabab
MAIDEN NAME: Kreidieh
2. **DEPARTMENT/SCHOOL:** Electrical and Computer Engineering
Office: KAIS 4054
Email address : rababw@ece.ubc.ca
3. **FACULTY:** Applied Science
4. **PRESENT RANK:** Professor Emeritus since July 2015
5. **POST-SECONDARY EDUCATION**

University or Institution	Degree	Subject Area	Dates
University of Cairo, Egypt	B.A.Sc.	Electrical Engineering	1966
University of California, Berkeley	M.Sc.	Electrical Engineering and Computer Science	1969
University of California, Berkeley	Ph.D.	Electrical Engineering and Computer Science	1972

(a) **Special Professional Qualifications**

P.Eng, Association of Professional Engineers and Geoscientists of BC.

6. **EMPLOYMENT RECORD**

(a) **Prior to coming to UBC**

University, Company or Organization	Rank or Title	Dates
University of Zimbabwe	Lecturer then Senior Lecturer	1975 – 1979
Computer Science Dept., Univ. of British Columbia	Sessional Lecturer	1973 – 1975
Institute of International Studies, Berkeley, California	Research Assistant	1970 – 1972
Ministry of Hydro Electric Resources, Beirut, Lebanon	Electrical Engineer	1966 – 1967

(b) **At UBC**

Rank or Title	Dates
Natural Sciences and Engineering Research Coordinator/ Including all matters and programs related to NSERC Office of the VP Reseach & Inernational	July 1, 2008 – July 1, 2014
Director Pro Tem, Institute for Computing, information and Cognitive Systems	July 1, 2009 – Dec 1, 2009
Professor	July 1993 - 2015
Director, Institute for Computing , Information and Cognitive Systems	July 1,1996 - June 30, 2007
Associate Professor	July 1985 -1993
Assistant Professor	July 1981 -1985
Lecturer	July 1980 - June 1981
Sessional Lecturer	Sept 1979 – June 1980

7. AWARDS AND DISTINCTIONS

- President of IEEE Signal Processing Society, 2016-2017.
- Recipient of the Outstanding Mentor/Sponsor Award of Wendy McDonald Awards, 2017.
- Recipient of Centennial Gold Medal, UBC Applied Science, 2016.
- Killam Award for Excellence in Mentoring, UBC, 2013.
- Meritorious Service Award of IEEE Signal Processing Society, 2013.
- CUFA BC "Career Achievement Award", May 2011. (CUFA is the association representing all professors in all B.C. universities). This is the highest of the 3 awards it gives each year.
- Paradigm Shifter Award of the Society for Canadian Women in Science and Technology, Nov 2011.
- Millennium Award, IEEE Vancouver Chapter, Aug 2011.
- WYCA Woman of Distinction Award, 2008.
- Society Award of the IEEE Signal Processing Society, 2008. This is the highest and most prestigious award of this society, emphasizing technical leadership and achievements in the field.
- R.A. McLachlan Award of the Association of Professional Engineers and Geoscientists of British Columbia, 2007. Amongst its nine awards, this is the top and most prestigious, emphasizing education, research, innovation in engineering, and community service.
- Recipient of the UBC Killam Research Prize, 1998.
- Registered Professional Engineer (of the BC Professional Engineers Association).

Fellowships

- Fellow of the Canadian Academy of Engineers, since 2001.
- Fellow of the Royal Society of Canada, since 1999.
- Fellow of the IEEE, since 1998.
- Fellow of the Engineering Institute of Canada, since 1997.

Best Paper Awards:

- Best Paper Award of IS&T International Symposium on Electronic Imaging, "Fast Edge-Directed Single Image Super-resolution" by N. Rouf and R. K. Ward, 2016.
- Our paper "Conversion of H.264 Encoded 2D Video to 3D Format" received the Best Paper Award of the IEEE International Conference on Consumer Electronics, January 2010.
- A Best Student Paper Award went to my student, Shan Du, at the IEEE ICASSP 2005 for a jointly co-authored paper.
- Co-recipient of the prestigious "Excellence in Neural Engineering Award" 2005, from the IEEE-EMBS Neural Engineering Conference and sponsored by the National Science Foundation, Office of Naval Research Global and IEEE-EMBS. This was the highest paper award given at the conference emphasizing innovative projects integrating engineering and neuroscience. The paper title is "A New Design of the Computer Interface Using the Knowledge of the Path of Features," coauthored by A. Bashashati, myself and G. Birch.
- The Best Paper Award in the Inter. Conf. on Information Technology Research and Education, New Jersey, USA, August 2003, "A Robust Method for Fitting the (Sigma, Rho) Model to a Traffic Source."
- The Best Paper Award with my student P. Mousavi at the IEEE Engineering in Medicine and Biology International Conference, July 2000.
- Best Student Paper Award went to my student P. Mousavi for the paper "Feature Analysis and Classification of Homologous Chromosome Lbs Using Fluorescence Microscopy Images" co-authored by myself, and IEEE CCECE Conference 1999.
- Four Best Paper Awards of the BC Advanced Systems Institute Exchange: These were:
 March 2002, (co-authored with Alexandre Paquet)
 March 1998 (co-authored with K. Barzykina and P. Nasiopoulos),
 March 1998 (co-authored with P. Mousavi) and
 March 1997 (co-authored with K. Archer and D. Forsey).
- The Rhodesian Institution of Engineers Award for 1978-1979 for the paper "Operations Research and Applications for Rhodesia".

Scholarships and Early Distinctions Awards:

- Full scholarship from the Lebanese Council for Scientific Research to do graduate work in Electrical Engineering in Berkeley, California (5 years).
- Won the Egyptian government scholarship award to study engineering or medicine (5 years).
- Won the American University of Beirut Scholarship award to study medicine (but declined it because I wanted to study engineering. Women were not allowed at that time to study engineering at the American University of Beirut in 1961).
- “Distinction Award” for being the first in Lebanon in the 1960 Scientific Baccalaureate national Exam . All students in Lebanon had to take this exam or another one if they were not in the science stream.

Awards for Service:

- UBC Engineering Co-op “Faculty of the Year “Award (2010)

9. TEACHING

(a) *Briefly describe areas of special interest and accomplishments*

Taught various courses in the areas of digital signal processing, digital image processing, communication theory, coding, control theory, discrete structural design, optimization, operations research, numerical computations, electromagnetic theory, computer programming, electrical machines, and electronics.

(b) *Graduate Students Supervised*

Student Name	Program	Graduation date	Principal Supervisor	Co-Supervisor(s)
Rey, Claudio	M.A.Sc.	01/86	R. Ward	
	Currently Deputy Director Reference Design & Standards at Intel Corporation, USA.			
Ting, Roger	M.A.Sc.	12/86	R. Ward	
	Financial services, private consultant.			
Revelant, Ivan	M.A.Sc.	04/87	R. Ward	
Nasiopoulos, Panos	M.A.Sc.	08/88	R. Ward	
	Professor, Electrical & Computer Eng, Dept., UBC, and Director of ICICS, UBC.			
Guan, Ling	Ph.D.	01/89	R. Ward	
	Professor at Ryerson University, Toronto, Canada			
Poon, Steven	M.A.Sc.	08/89	R. Ward	
	Senior Systems Engineer, STEMCELL Technologies Inc. Vancouver , Canada			
Chi, Lau Meng	M.Eng.	04/90	R. Ward	V. Leung
	Currently in Hong Kong			
Shi, Pingnan	Ph.D.	04/90	R. Ward	
	Director of System Engineering at JDS Uniphase Corporation and Director at Overcome Depression Ministry, Indiana, USA			
Burge, Ray	M.A.Sc.	08/90	R. Ward	
	Currently consultant at Brown Electronics, Squamish			
Lam, Edward	M.A.Sc.	08/90	R. Ward	
Smayra, Michael	M.A.Sc.	08/92	R. Ward	
Foster, Michael	M.A.Sc.	06/1993	R. Ward	M. Ito

Student Name	Program	Graduation date	Principal Supervisor	Co-Supervisor(s)
	Current position: Client Platform at Telecommunication Systems (formerly Networks In Motion).			
Xie, Qiaobing	Ph.D.	09/1993	R. Ward	C. Laszlo
	Current position: Distinguished technologist at Adara Networks, Chicago, USA			
Shi, Xiaotian	Ph.D.	10/1993	R. Ward	
Gresseth, Reider	M.A.Sc.	11/1993	R. Ward	
Nasiopoulos, Panos	Ph.D.	04/1994	R. Ward	
	Professor at the University of British Columbia and Director of ICICS			
Darwish, Mohammad	M.A.Sc.	08/1994	R. Ward	Seger
	CEO of AdvancedIO., Vancouver			
Aghdasi, Farzin	Ph.D.	01/1995	R. Ward	
	Current position: Director of Innovation at Schneider Electric, California, USA Previously , Professor at Witwatersrand University, Johannesburg, South Africa			
Lau, Albert	M.A.Sc.	07/1995	R. Ward	
Nesbitt, Daniel	M.A.Sc.	08/1995	R. Ward	
	Current position: Principal Architect at MobilQuest Systems Inc.			
Black, John	M.A.Sc.	08/1997	R. Ward	C. Laszlo
	Director - Client Service Management at TELUS			
Archer, Katerina	M.A.Sc.	08/1997	R. Ward	D. Forsey
	Currently at: Gener8 Digital Media, Vancouver			
Poon, Steven	Ph.D.	12/1997	R. Ward	
	Currently at: StemCell technologies Inc. Previously with Bc Cancer Agency Research			
Barzykina, Ekaterina	M.A.Sc.	04/1998	R. Ward	P. Nasiopoulos
	Current position: Manager, Investment Research at CPP Investment Board, Toronto			
Lee, Yuen-Wen	Ph.D.	04/1998	R. Ward	F. Kossentini
	Current position: Technical leader at Cisco Inc., San Francisco, USA			
Koo, Irene	M.A.Sc.	08/1998	P. Nasiopoulos	R. Ward
	Current position: Senior Software Engineer at Microsoft			
Sameti, Mohammed	Ph.D.	11/1998	R. Ward	
	Current position: Senior Project Manager at Motion Metrics, Vancouver, Canada			
Lou, Ying	M.A.Sc.	08/1999	R. Ward	
	Currently at: AMD Canada, Toronto			
Ahmed, Maher	Ph.D.	08/1999	R. Ward	
	Associate Professor at Wilfrid Laurier University, Waterloo, Canada			
Shirani, Shahram	Ph.D.	04/2000	F. Kossentini	R. Ward
	Professor at McMaster University, Hamilton, Canada			

Student Name	Program	Graduation date	Principal Supervisor	Co-Supervisor(s)
Ismail, Ismail	Ph.D.	08/2000	R. Ward	F. Kossentini
	Principal Video Codec Engineer Magnum Semiconductor, Waterloo, Canada			
Murad-agma, Abdul	M.A.Sc.	11/2000	R. Ward	
	Current position: Sr Principal Engineer at Broadcom, Vancouver Previously with UBVideo Inc, Vancouver			
Shi, Hongjian	M.A.Sc.	09/2001	R. Ward	
	Current position: Senior Research Scientist at Danaher, USA Editor of Advances in Mathematics			
Mousavi, Parvin	Ph.D.	09/2001	R. Ward	
	Associate Professor at Queen's University, Kingston, Canada			
Li, Lilijun	M.Eng.	11/2001	R. Ward	
	Currently at: EATON, Guangzhou			
Duncan, Tracey	M.A.Sc.	02/2002	R. Ward	
	Currently: Ops Specialist – WIND			
Hussein, Faten	M.A.Sc.	03/2002	R. Ward	N.Kharma
	Currently at: IBM, Egypt			
Paquet, Alexandre	M.A.Sc.	08/2002	R. Ward	
	Director , Advance Engineering at Bombardier Transportation			
Subh, Amer	M.Eng.	08/2002	R. Ward	
Adams, Michael	Ph.D.	11/2002	R. Ward	
	Associate Professor at University of Victoria, Victoria, Canada			
Xiaoli, Li	M.A.Sc.	12/2002	R. Ward	
	CEO , Baustem Broadband Technologies, Ltd. Previously , co-founder of Roxus Inc , Vancouver			
Arya, Ali	Ph.D.	04/2004	B. Hamidzadeh	R. Ward
	Associate Professor at Carleton University, Ottawa, Canada			
Azimi, Mehran	Ph.D.	04/2004	R. Ward	P. Nasiopoulos
	Microsoft, Redmond, Washington			
Ugur, Kemal	M.A.Sc.	08/2004	P. Nasiopoulos	R. Ward
	Research Leader at Nokia, Finland			
Wang, Thomas	M.A.Sc.	08/2004	R. Ward	
Avanaki, Alireza	Ph.D.	10/2004	B. Hamidzadeh	R. Ward
	Current position: Sr. Software Engineer at Barco, Portland, USA Previously , Assist prof at Amir Kabir University, Tehran			
Fu, Bin	M.A.Sc.	10/2004	M. Beddoes	R. Ward
	Currently: Guangzhou, China			
Khojasteh, Mehrnoush	M.A.Sc.	12/2004	R. Ward	
	Biomedical Imaging Specialist at Stemcell Technologies, Vancouver, Canada			
Farahmand, Fazel	M.A.Sc.	01/2005	Z. Moussavi	R. Ward
	Sr Controls Engineer at Capstone Turbine Corporation			

Student Name	Program	Graduation date	Principal Supervisor	Co-Supervisor(s)
Wang, Qing	Ph.D.	04/2005	R. Ward	
	Currently at: Sigma Designs Inc, Toronto			
Deng, Hui Qun	Ph.D.	04/2005	R. Ward	
	Dolby, Beijing, China			
Su, Weizhong	M.A.Sc.	08/2005	R. Ward	
	TI engineer, UBC, Fac. of Medicine			
Abdel-Hadi, Marwa	M.Eng.	04/2007	R. Ward	
	Current position: RA , Qatar University			
Gadala, Marwa	M.A.Sc.	05/2007	R. Ward	J. Wang
	Lecturer at King Abdulaziz University			
Mai, Zicong	M.A.Sc.	08/2007	R. Ward	
	Research Engineer at Point Grey Research, Vancouver			
Wasniewski, Flavio		08/2007	Ian Cumming	R. Ward
	MacDonald Dettwiler and Associates, Vancouver			
Bashashati, Ali	Ph.D.	09/2007	R. Ward	G. Birch
	Research Fellow at BC Cancer Agency, Vancouver, Canada			
Fatourech, Mehrdad	Ph.D.	01/2008	R. Ward	G. Birch
	Chief Technology Officer at BroadbandTV Corp, Vancouver			
Mendoza, Lino Coria	Ph.D.	04/2008	R. Ward	P. Nasiopoulos
	Research Engineer at BroadbandTV Corp, Vancouver, Canada Previously , Assoc. Professor ITESO Universidad Jesuita de Guadalajara, Mexico Also he is founder of Dos Tres Media, Vancouver			
Du, Shan	Ph.D.	11/2008	R. Ward	
	Research Scientist at Intellview Technologies, Calgary, Canada			
Majumdar, Angshul	M.A.Sc.	07/2009	R. Ward	
	Assistant Professor at Indraprastha Institute of Technology, India			
Ersahin, Kaan	Ph.D.	11/2009	I. Cumming	R. Ward
	Currently at: ASL Environmental Sciences, Victoria, BC. Prveiously with MDA , Vancver			
Tang, Qiang	Ph.D.	04/2010	R. Ward	P. Nasiopoulos
	Research Engineer at Point Grey Research, Vancouver, Canada			
Paurazad, Mahsa	Ph.D.	06/2010	P. Nasiopoulos	R. Ward
	Research Scientist at TELUS and Systems Consultant at ICICS, UBC, Vancouver, Canada			
Saab, Rayan	Ph.D.	06/2010	R. Ward	O. Yilmaz
	Assistant Professor at University of California, San Diego, USA			
Souhaib, Majzoub	Ph.D.	08/2010	R. Saleh	R. Ward

Student Name	Program	Graduation date	Principal Supervisor	Co-Supervisor(s)
	Assistant Professor at King Saud University, Saudi Arabia			
Sun, Ning	M.A.Sc. (p/t)	12/2011	R. Ward	
	Current position: Computer Software Professional			
Chiu, Tommy Tzu Chan	M.A.Sc. (p/t)	04/2012	R. Ward	
	Stantec consulting ltd., Vancouver			
Atkins, Robin	M. A.Sc. (p/t)	04/2012	R. Ward	
	Dolby California			
Gu, Jia	M.A.Sc.	04/2012	R. Ward	
	Avanade (Accenture and Microsoft)			
Faradji, Farhad	Ph.D.	06/2012	R. Ward	G. Birch
	Assistant professor at KN Toosi University in Iran			
Mai, Zicong	Ph.D.	07/2012	R. Ward	P. Nasiopoulos
	Current position: Research Engineer at Point Grey Research, Vancouver, Canada			
Majumdar, Angshul	Ph.D.	08/2012	R. Ward	
	Assistant Professor at Indraprastha Institute of Technology, India			
Yong, Xin Yi	Ph.D. (p/t)	08/2012	R. Ward	G. Birch
	Metafore Software, Vancouver			
Naseri, Ghazal	B.M.E	09/2012	R. Ward	
	Biomedical Engineer, MEng. Program			
Khojasteh, Mehrnoush	Ph.D.	12/2012	R. Ward	C. MacAulay
	Biomedical Imaging Specialist at Stemcell Technologies, Vancouver, Canada			
Malekesmaeili, Mani	Ph.D.	07/2013	R. Ward	
	Rigid Robotics Inc, Vancouver			
Nezhadarya, Ehsan	Ph.D.	07/2013	R. Ward	
	Research Engineer, Magna Inc., Toronto			
Vahedi, Ehsan	Ph.D.	08/2013	R. Ward	I. Blake
	Research Engineer at BroadbandTV, Vancouver, Canada			
Guha, Tanaya	Ph.D.	09/2013	R. Ward	
	Postdoctoral fellow at University of California, as of October 2013			
Aida Chehrazi	M.Eng.	09/2013	R. Ward	
	Biomedical Engineer, MEng. Program			
Fauvel, Simon	M.A.Sc.	11/2013	R. Ward	
	Now working as a research engineer at Nanyang Technological University			
Rmeily, Patrick	M.A.Sc.	08/2014	R. Ward	
	Pipeline Technical Director, Nitrogen Studios, Vancouver, BC, Canada			
Hiba Shahid	M. A. Sc.	12/2015	R. Ward	
	Software Engineer at NetApp, Vancouver, BC, Canada			

Student Name	Program	Graduation date	Principal Supervisor	Co-Supervisor(s)
Karimi, Davood	Ph.D	07/2016	R. Ward	
	Post Doctoral Fellow, UCLA, California, USA			
Mahrous, Hesham	M.A.Sc.	08/2016	R. Ward	
	Data Scientist, SAMSUNG Research, Vancouver, BC, Canada			
Palangi, Hamid	Ph.D.	April 2017	R. Ward	
	Microsoft, Deep Learning Research Scientist			
Bashashati, Hossein	Ph.D.	April 2017	R. Ward	
Sheikhzadeh, Fahimeh	Ph.D.	April 2018	R. Ward	Martial Guillaud
Rouf, Nasa	Ph.D.	June 2018	R. Ward	
Hussein, Ramy	Ph.D.	ongoing	R. Ward	Z. Jane Wang
Valizadeh, Sima	Ph.D.	June 2017	P. Nasiopoulos	R. Ward
Aejalalai, AbdelMalik	Ph.D.	ongoing	v. Leung	R. Ward
Dana Bazazeh	M.Sc.	ongoing	R. Ward	Z. Jane Wang
Jlanzhe Lin	Ph.D.	ongoing	Z. Jane Wang	R. Ward
Yongwei Wang	Ph.D.	ongoing	Z. Jane Wang	R. Ward

(c) Other HQP supervised

Post Doctoral Fellows:

- Shi, Pingnan, May 1991 - April 1992
- Zhang, Qin, September 1990 - June 1992
- Xie, Qiaobing, September 1993 - August 1995
- Shi, Xiaotian, March 1995 - May 1997
- Docef, Alen, September 1997 - June 1999
- Kharma, Nawwaf, January 1998 - July 1999
- Ma, Liying, August 2002 - January 2003
- Wang, Qing, September 2005 - September 2006
- Ghazel, Mohsen, September 2004 - October 2006
- Fatourechi, Mehrdad, March 2008 – December 31, 2011
- Coria, Lino, June 2009 – Dec. 31, 2010
- Joyce Chiang, October 2012 till December 2014
- Xin Yi Yong, November 2012 till Feb 2013
- Xun Chen, June 2014 till March 2015
- El-Gendi, Mohamed, June 2016 – Present

Research Engineers Employed:

- Dr. Pingnan, Shi, 1992-1995
- Dr. Zhang, Qin, 1992-1995
- Dr. Qiling Qin, Visiting Scholar, 1994-1995
- Dr. Kossentini, Faouzi, July 1995-December 1995
- Darwish, Mohammed, August 1995-August 1996
- Xu, Mei, May 1996-February 1997
- Ng, Andrew, September 1997-February 1998
- Du, Julong, November 1992-December 1998
- Barzykina, Ekaterina, May 1998-August 1999
- Dr. Aghdasi, Farzin, August 2000- February 2001
- Li, Xiaoli, January 1995-February 2002

- Dr. Shadaydeh, Maha, Maha, August 2007- January 2008
- Xiong, Victor, July 2007- February 2008

Undergraduate Student Research Supervision

- Supervised the 4th year required system's laboratory projects of 6 to 18 students each year (until 1997). Since then I have supervised 2-3 students on average each year.
- Suervised several undergraduate research students for many years. The names below are examples

Satyaprakash Pareek	Comparison of video fingerprinting algorithms	May 2010 - Jul 2010
Iris Liu	Implementing a new video fingerprinting algorithm	May 2010 - Aug 2010
James An	Implementing the Shazam audio fingerprinting algorithm	May 2010 - Aug 2010
Steven Risi	Generalization of watermarking algorithm from B&W to color images	May 2010 - Aug 2010
Mohammad M.Najar	Integrating a 2-state self-paced BCI system with an eye-tracker system	Sep 2010 - Dec 2010
Sousan Kochak Yazdi	Automatic monitoring of the heart activity of patients	Jan 2011 - Apr 2011
Hessan Tmar	Complexity Analysis of the Deblocking Loop Filter (DLF) in the H.265 Next Generation Video Compression Standard	Apr 2011 - Aug 2011
Marianne Kobierski	Design and Performance Testing of a Self-Paced Brain Computer Interface (BCI) system (under NSERC USRA program)	May 2011 - Aug 2011
Gokul Raghuraman	Estension of Image and Video Fingerprinting Algorithm from Grayscale to Color Domain (under Global MITACS program)	May 2011 – Jul 2011
Omar Omari (USRA)	Spoken Keywords Detection	May 2012 – Aug 2012
Abhinav Agarwal	Sensor networks for EEG Signals(MITACS)	May 2012 – Jul 2012
Yimeng Zhang	Compression of EEG (MITACS)	Jul 2012 – Sep 2012
Omar Omari	Spoken Keyword Detection	Sep 2012 – Dec 2012
ELEC 496, Frans Kouwenhoven	Real-Time Seizure Detection	Jan 2013 – Apr 2013
ELEC 496, Mostafa Nejatali	Real-Time Seizure Detection	Jan 2013 – Apr 2013

- Supervised 1 or 2 co-op students each year until 2005.

(d) Visiting Lecturer on sabbatical

- Gave a condensed course on "Digital Image Processing" to practicing professional engineers in Zimbabwe. Also gave two public lectures on the subject, July, 1989.
- Invited to give a course seminar and discussions with members of the Water Research Center, University of Western Australia. The title of the seminar was "Estimation of Signals Distorted by Systems of Random Impulse-Response," February 1989.
- Gave a condensed course on "Optimization and Non-linear Control", to practicing professional engineers in Zimbabwe. Also gave two public lectures on image processing, August 1987.
- Invited to update a working model and a computer program (which I developed in 1977-1979) to forecast electricity needs for Zimbabwe. Work was sponsored by the Canadian International Development Agency (CIDA) and by the University of Zimbabwe, April-June 1982.
- Invited to give two condensed courses on "Data Structures" and "Numerical Methods" in Al-Hazen Research Centre, Baghdad, Iraq, October-November 1975.

10. SCHOLARLY AND PROFESSIONAL ACTIVITIES

(a) Briefly describe areas of special interest and accomplishments

Signal processing is the analysis, interpretation, and manipulation of signals that represent physical quantities. These signals include audio, video, speech, image, geophysical, sonar, radar, medical, musical, communication and other signals. My research activities involves the applications of signal processing theory and techniques to solve real life problems. Towards that aim I had on most occasions to expand the theory so it can solve the specific engineering problems at hand .

My previous and on-going projects have resulted in several Best paper awards stated earlier and include:

Processing of Image signals:

Image restoration and enhancement : A major accomplishment here is my work on deblurring random time-varying blur and image restoration such as stellar images.

Measuring the biomass and swimming speed of fish such as salmon : As this was achieved by processing underwater video images taken in fish hatcheries, it alleviated the problem of destroying the fish when measuring their mass.

Medical images:

Mammography (breast X-ray images) : to help radiologists detect cancer as early as possible .

Blood Cells: measuring the number of white or red blood cells from blood samples using microscope images.

Measuring the Length of Every Telomere in Every Chromosome: from biological cells using Fluorescence microscope-based systems. The lengths of telomeres indicate the longevity of humans.

Processing of Video Signals:

Automatic monitoring, measurement and testing of Cable television : to enable cable operator to measure picture quality the viewers are receiving, without having to stop the TV program transmission during testing and measurement.

Digital video compression and encoding for transmission and storage, removing picture blockiness and other compression artifacts, enhancing video pictures so it is more appealing to viewers , image size enlargement and resizing video pictures; and enabling viewers to interact with live TV programs (interactive TV).

Information Management and Security in Internet Media-Sharing Social Networks: to protect multimedia intellectual property rights and enhance security, manage digital media objects and support automated network-service monitoring.

Processing of 1-dimensional Signals:

Brain-Computer Interface Systems: To enable people to carry a simple task such as moving a wheel chair forward or backward by using their brain signals only (i.e. by thinking only).

Automated Face recognition: finding from a vast number of stored face images of people, the picture of the person that most resembles a certain given new face image (the latter image usually differ in face pose, image illumination and other aspects).

A system that *estimates the* level of distress of a baby from his/her cry signal: deaf parents take turn sleeping watching their baby because of their inability to hear the cry; the system measures the amount of distress from baby's cry signals and only awakes the parent(s) when the distress level is above a threshold and not when the baby is cooing.

Estimating the glottal waves and the vocal-tract area functions: These estimates are needed in natural speech synthesis, pathology and recognition and in language training.

Early on, I have worked on Modelling and Estimation of Systems and applied them to build an Econometric Model to forecast the electricity demand in Zimbabwe. My resulting program was adopted by the Zimbabwe Electrical Supply Commission.

(b) Research or equivalent grants (indicate under COMP whether grants were obtained competitively (C) or non-competitively (NC))

Granting Agency	COMP	\$	Years	Principal Investigator	Co-Investigator(s)
NSERC ENGAGE	C	24,000 per year	Nov/2016-Feb/2017	R. Ward	Z. Wang
Qatar National Research Fund	C	250,00 per year	2015- 2018	Amr Mohamad	R. Ward, Z. Wang
NSERC Discovery Grant	C	51,000 per year	2013- 2018	R. Ward	
Qatar National Research Fund	C	300,000 per year	2012 - 2015	Amr Mohamad	R. Ward, V. Leung, P. Nasiopoulos
NSERC ENGAGE	C	22,000	Jun – Nov/2012	R. Ward	
Qatar National Research Fund	C	290,000 per year	2011 - 2013	Amr Mohamad	R. Ward, Mahmoud Annaby
MITACS with BroadBand TV Inc.	C	15,000	Dec/2011-Mar./2011	R. Ward	
MITCAS with BroadBand TV Inc	C	15,000	Jun/2010 – Nov/2010	R. Ward	
MITCAS with Vericorder Technology Inc	C	15,000	Feb/2010 – July/2010	R. Ward	
CFI/BCKDF	C	12.4 million	2009-11	N.Rajapakse	R.Ward and eight others

Granting Agency	COMP	\$	Years	Principal Investigator	Co-Investigator(s)
NSERC Strategic Research Grant	C	631,500	2009-11	P. Nasiopoulos	R.Ward W.Heidrich
NSERC Discovery Grant	C	46,000 per year	2009-13	R.Ward	
NSERC Strategic Research Grant	C	470,000	2009-11	R.Ward	J. Wang H. Zhao
NSERC Strategic Research Grant	C	621,000	2006-09	R. Ward	P. Nasiopoulos and V. Krishnamurthy
CFI, BCKDF & UBC	C	22.14 million	2001-05	R. Ward	124 other faculty members
NSERC Discovery Grant	C	56,000 per year	2004-08	R. Ward	
NSERC Operating Grant	C	34,650 per year	1999-04	R. Ward	
Canadian Cable Labs Fund (Rogers)	C	187,000	1997-99	F. Kossentini	R. Ward
BC Advanced Systems Institute	C	120,000	1997-99	R. Ward	F. Kossentini
MDSI & BC Advanced Systems Institute & NSERC-UIP	C	320,000	1996-98	S. Kallel	F. Kossentini R. Ward
BC Science Council G.R.E.A.T. Award to M. Sameti	C	34,000	1996-98	R. Ward	
BC Advanced Systems Institute	C	20,000	1996	R. Ward	F. Kossentini
Canadian Cable Labs Fund	C	58,000	1996	R. Ward	F. Kossentini
BC Advanced Systems Institute	C	20,000	1996	R. Ward	
James Thompson & Assoc. (Contract)	C	23,000	1996	R. Ward	
Xillix, Inc.	C	14,000	1995	R. Ward	
Sierra Consulting Ltd., - BC Advanced Systems Institute	C	24,000	1994	R. Ward	
BC Science Council G.R.E.A.T. Award to Daniel Nesbitt	C	34,000	1994-96	R. Ward	
Rogers Cable TV Labs Fund Grant	C	137,000	1994	R. Ward	
NSERC Operating Grant	C	27,000 per year	1994-99	R. Ward	
NSERC UIP Grant	C	129,000	1993-95	R. Ward	
Rogers Cable TV Labs Fund Grant	C	137,000	1993	R. Ward	
Rogers Cable TV Labs Fund Grant	C	15,000	1993	R. Ward	
Rogers Cable TV Labs Fund Grant	C	129,000	1992	R. Ward	
BC Advanced Ed. Training & Tech.	C	4,000	1992	R. Ward	
BC Science Council G.R.E.A.T. Award to Steven Poon	C	34,000	1992-94	R. Ward	
NSERC UIP Grant	C	114,000	1992	R. Ward	
BC Science Council	C	86,500	1991	B. Palcic	R. Ward
BC Science Council G.R.E.A.T. Award	C	16,000	1991	R. Ward	

Granting Agency	COMP	\$	Years	Principal Investigator	Co-Investigator(s)
Rogers Cable TV Labs Fund Grant	C	22,500	1991	R. Ward	
NSERC Operating Grant	C	20,000 per year	1991-94	R. Ward	
Rogers Cable TV Labs Fund Grant	C	50,000	1990	R. Ward	
CICSR Equipment Grant	C	12,480	1990	R. Ward	
NSERC Equipment Grant	C	142,568	1989	R. Ward	
NSERC Operating Grant	C	18,500 per year	1989-91	R. Ward	

(c) **Research or equivalent contracts (indicate under COMP whether grants were obtained competitively (C) or non-competitively (NC)).**

Granting Agency	COMP	\$ Per Year	Years	Principal Investigator	Co-Investigator(s)
Ward Lab Inc. (Contract)	C	10,000	1999-00	R. Ward	
Ward Lab Inc. (Contract)	C	134,000	1998-99	R. Ward	
Daikin - Japan (Contract)	C	182,000	1997-99	R. Ward	P. Nasiopoulos
Ward Lab Inc. (Contract)	C	165,600	1997	R. Ward	
Ward Lab Inc. (Contract)	C	145,000	1996	R. Ward	

(d) **Invited Presentations**

I have given seminars and talks in the departments I worked for. Also, I have been invited to give talks by outside bodies. Examples are:

- Keynote speaker: The Fifth International Conference on Electronic Devices, Systems and Applications, RAK, United Arab Emirates, Dec 6-8, 2016
- Invited Speaker: Emerging topics in Signal Processing, IEEE Section in Muscat, Oman, Dec. 2016
- Invited Speaker: Deep Learning and applications, IEEE Buenos Aires Section, Argentina and in IEEE Santiago, Chile, January 2016.
- Keynote Speaker: Emerging Applications in Signal Processing in the "Visual Signal Analysis and Processing" workshop, Abu Dhabi, November 9-10, 2015.
- Invited Speaker: IEEE Chengdu Section, IEEE Beijing Section, Tsinghua University .
- Keynote Speaker: Future of Broadcasting at the Emerging Technology Workshop, the Communication University of China, July 2015.
- Keynote speaker: Skills for women success in Engineering, Women in Engineering Luncheon, ICASSP 2015, Brisbane, Australia, April 2015.
- Invited Speaker, Graduate School Information Night for Undergraduate Students in Engineering and Science, April 2010, Undergraduate Engineering Student Association.
- Keynote speaker, Inspirational Speaker Night, Women in Engineering Society in collaboration with Society of Women in Science and Technology, April 26, 2009.
- Keynote speaker of the California Lebanese Ladies Society's Gala, Los Angeles, May 2004.

- Guest speaker at the Research Mentoring Dinner, organized by the UBC VP Research office and St. John's College, entitled "Research Topics, Students, Publishing and Multi-disciplinarity", November 20, 2002.
- Gave a lecture entitled "In Praise of Engineering" at a Public Science Forum organized by the Canadian Academy for the Advancement of Science at Mulgrave High School, West Vancouver, November 18, 2002.
- Keynote Speaker, UBC Applied Sciences Seminar on Engineering for Women, May 2000.
- Invited talk at the University of Waterloo on " Automatic Monitoring of cable TV Picture Performance ", 1999
- Gave a speech entitled, "Information Revolution and Societal Change" at a Public Science Forum of the Canadian Academy for the Advancement of Science, March 28, 1998, Robson Square Conference Centre, Vancouver.
- Invited Talk on "Video Noise Reduction", April 11, 1997, University of Waterloo.
- Gave a seminar entitled "Emerging Trends in Multimedia" at the UBC Applied Science Speaker Series, UBC, Feb. 1997
- Gave a one-hour interview to Lebanese television, September 1996, on women and engineering. Earlier in 1968, gave a similar interview to Egyptian television
- One of three panelists on challenges facing women grad students in engineering (March 1996).
- Speaker for UBC, CICSIR Distinguished Lecturer Series, Home Base Seminar, Feb. 21, 1995.
- Presented our work to the President of Sanyo, California, US, who visited our lab for discussions about relevant work, July 16, 1994.
- Invited by Rogers Inc. to present my work on cable TV to selected engineers in the National Cable Television Association, San Francisco, June 6-9, 1993. As a result, I was invited to address the technical committee of the National Cable TV Association, June 30-July 1, 1993, Washington, D.C.
- Invited by Techtronics (Portland, Oregon), as a distinguished guest, met with the vice-president of engineering and senior engineers, gave a two-hour seminar attended by over 100 of their engineers, and conducted many discussions with their engineers about common work, January 1993.
- I address on a regular basis the Faculty of Applied Science Conference for Women's senior secondary school students. The aim of this one day long conference is to encourage high school girls to consider engineering as a career. Many of our present female students in engineering have said that they joined the engineering school only after they heard my speeches and had discussions with me.
- Guest lecturer, Shad Valley Program, June 1991 & July 1994 hosted the whole group, August 1999
- I gave various newspaper and radio interviews about engineering and women, e.g. in 1990-91, I appeared twice on CBC TV News, the first time was regarding the Montreal massacre and the second time was about the attitude of engineering students towards women and minorities.
- I have given public talks on a continuous basis and for many years to various Women's groups and various high school female students about Women in Engineering, e.g. last year I addressed the Vancouver Female Careers Day in Killarney School, and was one of the three panel speakers for the York House students' presentation organized by the UBC School and College Liaison Office.
- One of three panelists, "A Day in Science", organized by UBC School and College Liaison Office for high school women students, May 1990.
- Main speaker, UBC Applied Science Women in Engineering Conference, April 1990, April 1991, April 1992, April 1993.
- Speaker at the annual meeting of the cable TV lab, April 1990, May 1992, April 1993, April 1994, April 1995, May 1996, and May 1997.
- "Electricity Demand for Zimbabwe", February 1982. Organized by the UBC Simulation and Modelling Seminar.
- "Women in the Scientific Community: Techniques for Survival and Success" February 25, 1982, Organized by the AMS Women's Committee.
- "Women, Science and Technology", November 1981, the Society of Canadian Women in Science and Technology.
- "Women in Engineering", the University Women Graduates Assoc., May 1979.
- "Energy" in the "Development for Independence" programme by the Development Studies Committee of the University of Rhodesia, February 1979.
- "Operations Research Applications for Rhodesia", the Rhodesian Institution of Engineers, January 1978.

(e) Other Presentations to Industry

- Presented and demonstrated a prototype on video noise reduction, enhancement, and resizing to Equator Inc. and Hewlett-Packard in August 2005; and to Enuclia Semiconductor in October, 2005.
- Presented and demonstrated our prototype on video picture enlargement to Rogers Cable TV and to Equator Inc., 2003.
- Presented and demonstrated our prototype on video compression improvement at the Western Cable TV show, December, 2000.
- Presented and demonstrated our prototype on video noise reduction at the Western Cable TV show, December 1997, 1998, and 1999.
- Presented and demonstrated our prototype on video noise reduction at the U.S. Cable Labs Winter meeting, San Diego, CA, February 1997.
- Presented and demonstrated our prototype on video noise reduction in Cablenet, LA, CA, December 1996.
- Presented our work to a group of Hewlett Packard (Santa Rosa, Calif.) engineers who visited us and had discussions about our work, June 1992, January 1995.
- Presented our work to the Vice President and members of TCI (largest US cable company), Denver, Colorado, August, 1991.

Conference Participation (Organizer, Keynote Speaker, etc.)

Conference or Event	Role(s)	Location	Date(s)
IEEE Canadian Conference on Electrical and Computer Engineering	Co-Chair	Vancouver	May 15-18, 2015
IEEE International Conference on Acoustics, Signal and Speech Processing (<i>This is the flagship conference of the IEEE SPS over 2500 attendees</i>)	General Co-Chair	Vancouver, Canada	May 2013
Brain Computer Interface Workshop and Hands-On Seminar	Co-chair	Vancouver, Canada	Sep 12, 2012
IEEE International Workshop on Multimedia Signal Processing	Chair	Banff, Canada	Sep 2012
IEEE International Conference on Image Processing	Advisor	Cairo, Egypt	Nov 2012
Middle East Conference on Biomedical Engineering	Advisory Committee Member	Sharjah, UAE	Feb 2011
BIRS workshop on Multimedia, Mathematics, and Machine Learning "By Invitation Only"	Chair	Banff, Canada	Jul 2009
2 nd International Conference on Advances in Computer Vision and Information Technology (ACVIT-09)	Advisory Committee Member	Aurangabad, India	Dec 2009
International Conference on Computer Vision, Graphics and Image Processing	International Technical Program Committee Member	India	2008
BIRS workshop on Mentoring for Engineering Academia "By Invitation Only"	Co-chair	Banff, Canada	Jul 2007
IEEE SIPS	Program Committee Member	Banff, Canada	Oct 2006
2 nd International Computer Engineering Conference (ICENCO 2006)	Technical Committee Member	Cairo, Egypt	Dec 2006
IEEE International Symposium on Signal Processing and Information Technology (ISSPIT)	Chair	Vancouver, Canada	Aug 2006

International Conference on Image Analysis and Recognition	Technical Committee Member	Toronto, Canada	Aug 2005
“By Invitation Only” BIRS workshop on Multimedia and Mathematics	Chair	Banff, Canada	Jul 2005
International Conference on Image Analysis and Recognition	Advisory Committee Member	Porto, Portugal	Sep 2004
IEEE ISCAS (over 1300 attendees)	Vice Chair	Vancouver, Canada	May 2004
IEEE Women Forum	Main Speaker	Vancouver, Canada	12 Mar, 2004
UBC Applied Sciences Workshop for high school students to promote engineering as a career	Main Speaker	Vancouver	May 1991, May 1994, May 1998, May 2001
International Digital Signal Processing Conference	Technical Committee Member		2002
IEEE International Conference on Image Processing (Over 1000 attendees)	General Chair	Vancouver, Canada	09 Sep, 2000 – 13 Sep, 2000
IEEE International Symposium on Multimedia Information Processing	Advisory Committee Member		2000
IEEE CCECE Conference	Technical Committee Member		1999
IEEE South West Symposium on Image Analysis & Interpretation	Technical Committee Member		May 1995 – Mar 1996
UBC Applied Sciences seminar on engineering for high school teachers to promote engineering as a career to their students	Speaker	Vancouver, Canada	Oct 1993

11. SERVICE TO THE UNIVERSITY

(a) *Memberships in committees, including offices held and dates*

Organizational Unit	Committee Name	Dates	
		Start	End
EECE Dept.	Curriculum Planning Committee	1986	
EECE Dept.	Optical Scanning Equipment Advisory Committee	Nov / 1986	Jul / 1987
EECE	Curriculum Planning Committee	1992	1996
UBC	President's Advisory Committee to select Head for the Civil Engineering Department	1992	UBC
UBC	President's Advisory Committee to select Head for the Mechanical Engineering Department	1993	UBC
UBC	President's Advisory Committee to select Head for the CS Department.	1995	UBC
UBC	President's Advisory Committee to select the Dean of the Faculty of Applied Science	1996	1997
UBC	President's Advisory Committee to select Head for the Advanced Technical Management program	1996	1997
UBC	Killam Fellowship Awards Selection Committee	1996	1997
UBC	Advisory Board of UBC Continuing Education Certificate in Software Engineering	1996	Present
EECE	ECE department committee to decide on salary and merit	1994	2000

	increases for the ECE faculty members		
UBC	Faculty Awards Committee	1996	1997
UBC	President's Advisory Committee to select Head for the EECE	1997	
UBC	Wide Strategic Initiative-Focus Group	1997	UBC
UBC	Campus Connectivity Project Steering Committee for BC Tel Partnership (of the Advisory Committee on Information Technology)	1997	
UBC	President's Advisory Committee to select dean for the Faculty of Applied Science	1997	1998
EECE Dept.	Resource Committee	1998	
UBC	Alternate Route to Computing Committee	1998	
UBC	New MIC Committee	1998	1999
UBC	CICSR-CFI Committee	1998	2000
UBC	Dean of Applied Science and Dean of Medicine Committee for Biomedical Engineering	1999	
UBC	Committee Chair to Appoint Professor in the Biomedical Engineering Field	2000	
UBC	Vice President Academic Committee to further collaboration between the CS and EECE	2001	2002
UBC	President Committee to design and establish the Kuwait Institute of Business & Technology	2001	2004
UBC	President's Advisory Committee to select Head for the EECE Dept.	2002	2003
UBC	President's Committee for the Reappointment of the Dean of Applied Science	2003	
UBC	Vice President Research Committee to review UBC Industry Liaison Office	2005	
EECE Dept	Chairman or member of committees for individual faculty members promotion or tenure (around 2 professors yearly)	2003	2015
UBC.	President's Advisory Committee to select the Dean for the Faculty of Applied Science	Feb 2008	Jun 2008
UBC	CFI-LEF Adjudication Committee	2008	2015
UBC	CFI-NOF Adjudication Committee	2008	2015
UBC	Martha Piper Fund Scholarship Adjudication Committee	Apr 2008	2015
UBC	Coordinator of the NSERC CREATE Program	Apr 2008	2015
UBC	Responsible fo all NSERC programs .eg. Discovery, Accelerate, CREATE, RTI, Strategic, CRD etc.	April 2008	2015
UBC	Responsible for the NSERC General Research Fund	April 2008	2014
UBC	UBC committee to select NSERC DAS candidates ,chair	Jul 2008	2014
UBC	APSC CFI-LOF Advisory Committee on Applications Chair	Aug 2008	2015
UBC	CFI-LOF Adjudication Committee	2009	
UBC	Peter Wall Institute Adjudication and Advisory Committee	Jul 2009	2015
UBC	Stecie Selection Committee	May 2010	May 2010
EECE Dept.	FOGS Adjudicating Committee (to rank all UBC student scholarship applicants in the NSERC areas)	Oct 2010	Nov 2010
UBC	UBC Selection Committee of NSERC Steacie candidates, chair	Apr 2012	Apr 2012
UBC	Chair of the Banting PDF Selection Committee	Aug 2012	Sep 2012

ECE	Member of the Promotion Committee of Dr. Dunford	2011	2013
ECE	Member of the promotion Committee of Dr. Mirabasi	2012	2013
ECE	Member of the Committee to rank ECE faculty for April 2012 consideration for Merit and PSA salary awards	2012	
ECE	3 mIntes Thesis adjudication Committee		Feb 2013
ICICS/ECE/IEEE	Workshop on Future Communications and Muutomeia System		Mar 2013
UBC	Responsible for the Banting Postdoctoral fellowships	July 2011	2015

(b) Other service, including dates

Organizational Unit	Title/Nature of Duties	Dates	
		Start	End
UBC	Coordinator for the 4th year Engineering Technical Report course	1982	1985
EECE	Organizer of the department weekly seminar	1984	1987
IEEE UBC Chapter	Student Counselor	1985	1987
EECE	CoursesTime Tabling for EECE Dept.	1986	1987
EECE	Undergraduate Student Advisor (3rd year)	1988	1996
UBC	Responsible for the Imaging Lab development	1989	Present
MITACS	Reviewer of accelerate PDF program	2011	present

I served as internal Examiner at UBC: I have served on at least 400 (Masters, PhD qualifying, PhD dept. and PhD final) exams of students supervised by other faculty members in my department. The names are too many to include here. (In the past 12 months I served on 8 such exams) I have also chaired many University Ph.D exams.

- Committee member or University examiner for over 25 UBC graduate students outside Electrical and Computer Engineering Department. The students were in Civil Eng., Mechanical Eng., Bioresource Eng., Computer Science, Mathematics, Commerce and Zoology.

12. SERVICE TO THE COMMUNITY

(a) Memberships in scholarly societies, including offices held and dates

Scholarly Society	Role	Dates	
		Start	End
Canadian Society for Electrical and Computer Engineering	Vice-President for Western Canada	1990	1995
IEEE	Admission & Advancement Committee to decide on members' promotion to the rank of senior members	Feb / 1992	Mar / 2000
IEEE Signal Processing Society	Vice President /Conferences	Jan / 2003	Dec / 2005
IEEE Signal Processing Society	Board of Governors	Jan / 2003	Dec / 2005
IEEE Signal Processing Society	Executive Committee	Jan / 2003	Dec / 2005
IEEE Signal Processing Society	Conference Board	Jan / 2006	Dec/2007
BCIT	External review committee of the new	2006	2007

	Bachelor of Engineering in Electrical Engineering		
Academy of Science In the Developing World (Rome, Italy)	to select the Trieste Science Prize winner	2008	2009
IEEE Signal Processing Society	IEEE Signal Processing Society Committee to select IEEE Fellows	Jan 1, 2008	Dec 31, 2010
IEEE Signal Processing Society	Board of Governors (re-elected)	Jan 1/ 2008	Dec 31, 2010
Royal Society of Canada	Committee to select fellows of the Society (engineering field)	Dec 2012	2015
IEEE Canada	Awards and Recognition Committee	Jan 1, 2013	2014
IEEE Signal Processing Society	President-Elect	Jan 1, 2014	Dec 31, 2015
IEEE Signal Processing Society	President	Jan 1, 2016	Present
IEEE TAB AdHoc Committee on Africa and Education	Chair	Jan 1, 2016	Present
IEEE TAB Strategic Planning Committee	Member	Jan 1, 2017	Present

(b) Memberships in other societies, including offices held and dates

Other Society	Role	Dates	
		Start	End
University Women Graduate Association	Member	1980	1980
Society for Canadian Women in Science and Technology	Member	1979	Present
Academic Women's Association, UBC	Executive Board	1982	1983
International Scientific Advisory Board of the BC Advanced Systems Institute	Member	1996	2004
ISAB sub-committee of the above body (BC ASI)	Member	1996	2004
Canadian Academy for the Advancement of Science	Member of the Advisory Board	1997	2007
BCIT	External review committee of the new Bachelor of Engineering in Electrical Engineering	2006	2007

(c) Memberships in scholarly committees, including offices held and dates

Scholarly Committee	Role	Dates	
		Start	End
Best student papers awards ,VCIP conference of the International Society for Optical Engineering	Chair	1997	1998
NSF (USA) IGERT program Adjudication Committee	Member	2001	
NSF (USA) National Science Foundation committee to review the Integrated Media Systems Center, University of Southern California	Member	2002	

(d) Memberships in other committees, including offices held and dates

Other Committees	Role	Dates	
		Start	End
Advisory Board of the Pacific Institute of Mathematical Sciences	Member	1988	2009
NSERC Grant Selection Committee, Communications, Computers and Components Engineering	Member	1997	2000
Committee to review the ECE department of University of Victoria	One of 3 members	1998	1998
NRC Advisory Committee on Information Technology	Member	1999	2002
Royal Society of Canada Awards committee on Women Students	Member	2003	2007

(e) Editorships (list journal and dates)

- Assoc. Editor, Jour. of Electronic Imaging (SPIE), 2001-2006.
- Member of the Editorial Board of the IEEE Signal Processing Magazine, Jan 2006-2009

(f) Reviewer (journal, agency, etc. including dates)

- NSERC Discovery Grants reviewer (Reviewed 1-4 applications yearly)
- Biomedical Signal Processing & Control
- Journal of Real-Time Processing
- Computer Vision and Image Understanding
- Journal of Neural Engineering
- IEEE Trans. on Multimedia
- IEEE Trans. on Automotive Control
- IEEE Trans. on Communication
- IEEE Trans. on Image Processing
- IEEE Trans. on Pattern Analysis & Machine Intelligence
- IEEE Trans. on Signal Processing (previously ASSP)
- IEEE Trans. on Systems, Man and Cybernetics
- Jour. of the Can. Soc. of Comp. & Electrical Engineers
- Jour. of Visual Communication & Image Representation
- Jour. of the Optical Society of America A Applied Optics
- Optimal Control: Applications and Methods
- IEE Proceedings on Vision, Image and Signal Processing
- IEE Electronics Letters
- The Computer Journal
- Computational Intelligence and Neuroscience
- Investigative Ophthalmology and Visual Science
- Elsevier Digital Signal Processing Journ.

- EURASIP Jour. On Advances in Signal Processing
- Banff International Research Station workshops 3 to 5 proposal yearly
- Book proposal reviewer: have reviewed few books, (in 2010 reviewed Multilinear Subspace Learning: Dimensionality Reduction of Tensors, names of authors cannot be included for confidentiality)
- Several Conferences (too many to state here)

(g) External Ph.D. thesis examiner

- External examiner of Kemal Ugur, Tampere University of Technology, Finland , July 2009
- External Examiner for Mr. Diego Sorrentino, Univ of Victoria , July 2009
- External examiner of Dr. Jun Cheng .Ph.D. dissertation, Nanyang Technological University, Singapore, 2007.
- External examiner of Dr. Naga Mudigonda - Ph.D. dissertation, University of Calgary, Nov., 2001.

Member of the Committee to review the ECE Dept at Univ. of Victoria , 1998.

- External examiner of Dr. Mahmoud El-Sakka, University of Waterloo, April 1997.
- External examiner of Dr. Jianping Li - Ph.D. dissertation, University of Victoria, Sep. 1996.
- External examiner of Dr. Peter Jones - Ph.D. dissertation, Queen's University, Feb. 1993.
- External examiner of Dr. Aziz Qureshi - Ph.D. dissertation, Queen's University, Dec. 1991.
- External examiner of Dr. Salah G. Foda - Ph.D. dissertation, University of Victoria, July 1988.

(h) Consultant

- MDA , Vancouver , 2013-2014
- AdvancedIO Systems Inc., 2007-2009
- WebTech Wireless, telematics, 1999-2005
- R.F.I.D., Passport photograph compression, November 1996-1999.
- Hewlett-Packard (Santa Rosa, Calif.), Non-intrusive measurements of cable TV parameters.
- Vision Systems Inc. Building a computer vision system for grading lumber, 1989.
- The Whitsun Foundation of Rhodesia, building a computer model for Agrarian Reform, 1978.
- Arab Projects and Development on their project with the Iraqi Ministry of Planning "Five Year Plan for transportation development", June-August 1974.
- Computer Modelling of Operations Decisions for the Okanagan Lakes System, January-June 1973.

(i) Other service to the community

- Member of the RCMP Advisory Committee on deterring violence, 2005 – 2009.
- Speaker at the RCMP Conference on Community and Security, January 2002.
- Speaker at the Vancouver Peace rally, November 2001.
- Speaker at the BC Labour Federation, November 2001.
- Speaker at the rally for Canada's unity on the steps of the Vancouver Art Gallery, October 1995.
- Organized a community dinner for the Committee for Racial Justice, attended by approximately 90 people belonging to over a dozen different governmental, religious and ethnic groups. During the dinner I gave a 30-minute (televised) speech about "stereotyping some ethnic religious groups," March 1995.
- Member of the Vancouver Jewish-Arab group to promote mutual understanding, 2003-2004.
- As a graduate student in Berkeley, I participated in establishing a group of Arab and Israeli students to dialogue on "bridges to peace" in the Middle East. In 1992, I actively encouraged the establishment of the Palestinian-Jewish Women for Peace in Vancouver.
- Gave a talk about "Islam and Women," one hour of which was televised and broadcasted on Vancouver Community Channel. The talk was attended by approximately 150 people at the Unitarian Church, March 1991.

- Gave a 20-minute speech at International Women's Day on the steps of the Vancouver Art Gallery, 1991.
- Gave a public speech outside the Student Union Building at UBC after the Montreal Massacre of women engineers, 1989.
- Gave seminars in various studios, and taught Middle East Dancing from 1982-1989. Contributed articles to "Sahda," BC's Middle East dance association newsletter, and to "Arabesque," an international magazine for Middle East dancing, published in New York. I also organized a 2-day workshop in Vancouver given by Ibrahim Farah of New York. Mr. Farah is internationally renowned as a master of Middle East dance. It was attended by 69 local dancers, and the evening dinners and shows were 100% booked, June 1988.

13. OTHER RELEVANT INFORMATION

- I was one of the founders of the Society for Canadian Women in Science & Technology. Some of the great achievements of this society were the introduction of programs to help high school girls in mathematics and provide hands-on experience in technology and science.
- I was the first woman professor to be appointed to the Engineering Faculty at UBC
- I was the first woman professor to be appointed to the Engineering Faculty in Rhodesia, Zimbabwe
- I was the first woman to become a member of the Lebanese Professional Engineering Society.
- The model I developed for forecasting electricity demand for Zimbabwe was adopted by the Zimbabwe Electricity Supply Commission, 1982 and used for several years.
- The Ph.D. thesis of Dr. Mehrdad Fatourechhi who finished his Ph.D. under my supervision was nominated by UBC for the NSERC best doctoral thesis award in 2008.
- Our paper on the design of a brain computer interface with a low false positive rate was selected for inclusion in the "Highlights of 2008" of the Journal of Neural Engineering. The selection was based on the number of citations and full text downloads the article has received, as well as the receipt of outstanding praise from the journal's referees.
- Our paper on surveying artifact processing algorithms in brain computer interface systems was selected amongst the Top 25 Hottest Articles in "Clinical Neurophysiology" three times (in 2007 and 2008).
- Our paper on surveying signal processing algorithms in brain computer interface systems was selected for inclusion in the "Highlights of 2007" of the Journal of Neural Engineering.
- The Ph.D. thesis of Dr. Michael Adams who finished his Ph.D. under my supervision was nominated by UBC for the NSERC best doctoral thesis award in 2005.
- The Ph.D. thesis of Dr. Parvin Mousavi who finished her Ph.D. under my supervision was recommended for nomination to the Canada Assoc. for Graduate Studies best doctoral thesis award (2002).
- The Ph.D. thesis of Dr. Steven Poon who finished his Ph.D. under my supervision was recommended for nomination to the Governor General's Gold Medal (1998).
- The Ph.D. thesis of Dr. X. Shi who finished his Ph.D. under my supervision was nominated for the Governor General's Gold Medal (1994).
- The Ph.D. thesis of Dr. Q. Xie who finished his Ph.D. under my & Dr. Laszlo's supervision was nominated for the NSERC top thesis award (1994).
- The Ph.D. thesis of Dr. F. Aghdasi who finished his Ph.D. under my supervision was nominated for the NSERC top thesis award (1995).
- Hewlett-Packard holds an exclusive license of my invention (see Patent #6). This is for the non-intrusive testing of cable TV performance.
- My work with Prof. Petrell on a video imagery system for the aquacultural industry (such as salmon farming) was commercialized by a Canadian company, JB Thompson & Assoc (1998). The instrument measures in a non-interfering and non destructive fashion the size, biomass and swimming speed of fish in cages and tanks.
- My work on improving and reducing the noise in television and video signals attracted leading international companies to visit our lab to see our prototype. Although many university and industry research groups were working on the same problem, the performance of our prototype exceeded all others, including Sony, Panasonic and Intelvideo. Not only was the quality superior but the cost range was reduced.
- Vice Presidents and engineers from companies, e.g. Scientific Atlanta, Level I, Sanyo, Sony, Cannon, Daikin, RainMaker, Midnet, MDSI, Sierra Consulting Ltd., Rogers Cable TV, Shaw Cable TV, JB Thompson & Assoc. Ltd., Hewlett Packard, TCI, Equator, Mosaid, Pioneer and General Instruments visited our labs (1995-2005).

- My research work has been featured in various magazines, Journals and newsletters. For example, our work on facial image compression was featured in the *ASI Journal* (April 1995), and written about in the *Vancouver Province* newspaper (April 1995).
Our work on video compression was written about in *Future Vision* (Spring 1996).
Our work on improving TV picture quality was featured in *UBC PATSCAN News* (Fall 1993), *Future Vision* (Autumn 1993), *UBC FOCUS* (Spring 1994 and Fall 1991), *Cablecaster* (2001) and *Tele-com* (Aug. 1996). The latter is a US popular electronics magazine.
Articles about our research on baby crying signals were published in *UBC Reports*, *Chatelaine*, *The Vancouver Sun* and *Family Practice* which practicing medical doctors subscribe to.
I gave two radio interviews to the CBC programs, *Quirks and Quarks* and *Early Edition* (1996).
- Many articles featuring my achievements have been published e.g., in the *Vancouver Sun*, February 2007, *Innovation Magazine*, February 2007, *Focus Newsletter*, 2006 and 2007, *UBC Reports*, April 1996. I was also featured in a 30-minute TV program by Al-Jazeera, 2003, another 30-minute program on the Canadian CTV Channel, 1999, and another 30-minute TV program on the Canadian Shaw Multicultural Channel, 2005.
- One of our patents (licensed by Hewlett Packard (1996)) allowed cable TV operators (for the first time) to measure picture quality of TV pictures without interrupting program transmission.
- Our collaboration during the 2008 – 2011 with a Vancouver multimedia company BBTV resulted in algorithms that protect the rights of multimedia owners (e.g. audio, songs, images and video assets) from illegal copying and content piracy. BBTV is now developing this technology for commercializing.
- I was the the chief scientist of Ward Laboratories Inc., a spin-off company bearing my name (1993-2006). The company signed an agreement with my university to license patents and know-how related to cable television picture quality monitoring, measurement and noise reduction developed by me and my associates at UBC
- My work with Steven Poon, has resulted in a Fluorescence microscope-based system which can, for the first time, measure the length of every telomere in every chromosome. This work is now used in research centres worldwide, including the BC Cancer Research Agency, Spain, John Hopkins, Holland, Germany, Hong Kong.
- My work with Dr. Kossentini on video compression has resulted in an algorithm for motion vector estimation which has been officially adopted in the ITU-T H-263+ Standard TMN8 model for video encoding.
- I was a member of a 15 scientists committee to advise Qatar Foundation headed by Her Heighness Sheika Mozah on how to establish and promote scientific research in Qatar (2006-2008).
- I was a member of the UBC Committee to plan the Kuwait Institute for Business and Technology (2001-2004).
- I was a member of a UBC three-people delegation (VP Research & International, Dean of Applied Science and I) that visited Saudi Arabia in April/May, 2010 to strengthen research and collaboration between Saudi Universities and UBC.

THE UNIVERSITY OF BRITISH COLUMBIA
Publications Record

SURNAME: WARD

FIRST NAME:

Rabab

Initials: _____

MAIDEN NAME:

Kreidieh

Date: Jun 24, 2013

1. REFEREED PUBLICATIONS**(a) Journals**

1. Yongbo Liang, Zhcheng Chen, Rabab Ward, and Mohamed Elgendi, "Managing hypertension with ECG and PPG signals: An evaluation using the MIMIC Database," Submitted to Sensors, August 2018.
2. G. Martinez, N. Howard, D. Abbott, K. Lim, R. Ward, and M. Elgendi, "Can Photoplethysmography Replace Arterial Blood Pressure in the Assessment of Blood Pressure?," Submitted to Digital Medicine, August 2018.
3. A. Awad, A. Mohamed, A. Jaoua, and R. Ward, "Edge-based Compression and Classification for Smart Healthcare Systems: Concept, Implementation and Evaluation," Accepted for publication in Expert Systems With Applications, July 2018.
4. Y. Liang, M. Elgendi, Z. Chen, R. Ward, "An optimal filter for short photoplethysmogram signals," Nature Scientific Data (5), 180076, 2018.
5. C. Guo, A. Nasser Aljalai, C. Feng, L. Zhao, V. C. M. Leung, and R. K. Ward, "Compute-and-Forward for Uplink Non-Orthogonal Multiple Access", IEEE Wireless Communications Letters, accepted for publication, May 2018.
6. M. Elgendi, Y. Liang, R. Fletcher, N. Howard, N. H. Lovell, D. Abbott, K. Lim, R. Ward, "Review of Blood Pressure Estimation Using the Pulse Oximeter and Other Physiological Signals," Nature Digital Medicine, accepted with minor revisions on the 2nd of April 2018.
7. R. Hussein, M. Elgendi, Z. Jane Wang, R. Ward, "Robust detection of epileptic seizures based on L1-penalized robust regression of EEG signals," Expert Systems with Applications, vol. 104, pp. 153-167, ISSN 0957-4174, 2018.
8. R. Hussein, H. Palangi, R. Ward, and Z. J. Wang, "Epileptic Seizure Detection: A Deep Learning Approach", Submitted to IEEE Transactions on Biomedical Engineering, Feb. 2018.
9. M. Elgendi, Y. Liang, and R. Ward, "Toward Generating More Diagnostic Features from Photoplethysmogram Waveforms," Diseases, vol. 6, no. 20, March 2018.
10. M. Elgendi, A. Al-Ali, A. Mohamed, and R. Ward, "Improving Remote Health Monitoring: A low-complexity ECG Compression Approach," Diagnostics, vol. 8, no. 1, 10, 2018.
11. F. Sheikhzadeh, R. Ward, D. van Niekerk, M. Guillaud, "Automatic labeling of molecular biomarkers of immunohistochemistry images using fully convolutional networks", PLoS ONE, vol. 13, no. 1, doi.org/10.1371/journal.pone.0190783, January 2018.
12. Y. Liu, X. Chen, Z. Wang, Z. Jane Wang, R. K. Ward, X. Wang, "Deep learning for pixel-level image fusion: Recent advances and future prospects," Information Fusion, vol. 42, no. 1, pp. 158-173, 2017.
13. V. Singhal, A. Majumdar and R. K. Ward, "Semi-supervised Deep Blind Compressed Sensing for Analysis and Reconstruction of Biomedical Signals from Compressive Measurements," in IEEE Access, vol. 1, no. 99, pp. 1-9, Dec 2017.
14. S. Valizadeh, P. Nasiopoulos and R. Ward, "Perceptual Rate Distortion Optimization of 3D-HEVC using PSNR-HVS," Springer Multimedia Tools and Applications, vol. 1, pp. 1-24, Dec 2017.
15. M. Elgendi, A. Mohamed, and R. Ward, "Efficient ECG Compression and QRS Detection for E-Health Applications", Scientific Report, Nature, vol. 7, no. 459, doi:10.1038/s41598-017-00540-x, March 2017.
16. S. Valizadeh, P. Nasiopoulos and R. Ward, "Improving Compression Efficiency of HEVC Using Perceptual Coding," IEEE Transactions on Consumer Electronics, Submitted, 2017.

17. H. Bashashati, R. Ward, "Ensemble of Neural Network Conditional Random Fields for Self-Paced Brain Computer Interfaces", *Advances in Science, Technology and Engineering Systems Journal*, vol. 2, no. 3, pp. 996-1005, 2017.
18. D. Karimi, and R. Ward, R., "Sparse-view image reconstruction in cone-beam computed tomography with variance-reduced stochastic gradient descent and locally-adaptive proximal operation", *Journal of Medical and Biological Engineering, Engineering*, vol. 37, no. 3, pp. 420-440, March 2017.
19. A. Awad, C. F. Chiasserini, A. Mohamed, Ali Jaoua, and R. Ward, ""In-network Data Processing and Classification for Improving Delivery of Wireless Seizure Monitoring Systems", *IEEE Intelligent Systems*, Accepted, 2017.
20. Y. Liu, X. Chen, R. K. Ward, and Z. J. Wang, "Image Fusion With Convolutional Sparse Representation", *IEEE Signal Processing Letters*, vol. 23, no. 12, pp. 1882-1886, Dec. 2016.
21. A. Gogna, A. Majumdar and R. K. Ward, "Semi-supervised Stacked Label Consistent Autoencoder for Reconstruction and Analysis of Biomedical Signals", *IEEE Transactions on Biomedical Engineering*, vol. 64, no. 9, pp. 2196-2205. Nov. 2016.
22. Karimi, D. and R. Ward, "Patch-based models and algorithms for image processing- a review of the basic principles and methods, and their application in computed tomography". *International Journal of Computer Assisted Radiology and Surgery*, Volume 11, Issue 10, pp 1765–1777, October 2016.
23. Palangi, H., R. Ward, and L. Deng, "Distributed Compressive Sensing: A Deep Learning Approach", in *IEEE Transactions on Signal Processing*, vol. 64, no. 17, pp. 4504-4518, Sept. 2016.
24. Palangi, H., R. Ward, and L. Deng, "Convolutional Deep Stacking Networks for Distributed Compressive Sensing", *Elsevier Signal Processing*, vol. 131, pp. 181-189, ISSN. 1165-1684, February 2017.
25. Karimi, D. and R. Ward, "Patch-based models and algorithms for image processing- a review of the basic principles and methods, and their application in computed tomography". *International Journal of Computer Assisted Radiology and Surgery*, Volume 11, Issue 10, pp 1765–1777, October 2016.
26. Karimi, D., and R. Ward, "Sinogram denoising via simultaneous sparse representation in learned dictionaries. *Physics in Medicine and Biology*, vol. 61, no. 9, pp. 3536, April 2016.
27. Karimi, D. and R. Ward, "Reducing streak artifacts in computed tomography via sparse representation in coupled dictionaries," *Medical Physics*, Vol. 43(3), pp. 1473-1486, 2016.
28. Karimi, D., and R. Ward. "A hybrid stochastic-deterministic gradient descent algorithm for image reconstruction in cone-beam computed tomography", *Biomedical Physics and Engineering Express*, Vol 2(1), pp. 015008, 2016.
29. Mahrous, H., and R. Ward, R., "Block Sparse Compressed Sensing of EEG Signals by exploiting Linear and Non-linear Dependencies", *Sensors*, Vol. 16(2), pp. 201-216, 2016.
30. Karimi, D., and R. Ward, R., "A Sinogram Denoising Algorithm for Low-Dose Computed Tomography", *BMC Medical Imaging*, Vol. 16(11), pp. 1-14, 2016.
31. Karimi, D., and R. Ward, R., "A Denoising Algorithm for Projection Measurements in Cone-Beam Computed Tomography", *Computers in Biology and Medicine*, Vol. 69, pp. 71-82, 2016.
32. Palangi, H., L. Deng, Y. Shen, J. Gao, X. He, J. Chen, X. Song, and R. Ward, "Deep Sentence Embedding Using the Long Short-Term Memory Networks", *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, Volume: 24, Issue: 4, pp. 694-707, April 2016.
33. Karimi, D., and R. Ward, R., "On the computational implementation of forward and back-projection operations for cone-beam computed tomography", *Medical & Biological Engineering & Computing*, accepted, Vol. 2015, pp. 1-12, 2015.
34. Bashashati, H., and R. Ward, R., "User-Customized Brain Computer Interfaces Using Bayesian Optimization", *Journal of Neural Engineering*, Vol. 13(2) pp. 026001, 2015.
35. Liu, A., X. Chen, J. Chiang, J. Wang, M.J. McKeown, and R.K. Ward, "Removing Muscle Artifacts from EEG Data: Multichannel or Single-Channel Techniques?", *IEEE Sensors Journal*, accepted, November 2015.
36. Bashashati, H., Ward, R.K., Birch, G.E., and Bashashati A., "Comparing Different Classifiers in Sensory Motor Brain Computer Interfaces," *Plos One*, Vol. 10(6), pp. e0129435.

37. Sheikhzadeh, F., Ward, R. K., Carraro, A., Chen, Z., van Niekerk, D., Miller, D., Ehlen, T., MacAulay, C., Follen, M., Lane, P., and Guillaud, M. "Quantification of confocal fluorescence microscopy for the detection of cervical intraepithelial neoplasia." *BioMed Eng OnLine* (2015) 14:96.
38. Fu, H., Xu, D., Zhang, B., Lin, S., and Ward, R. K. "Object-based Multiple Foreground Video Co-segmentation via Multi-state Selection Graph," *IEEE Trans on Image Processing*, Vol. 24, issue 11, pp. 3415-3424, June 2015.
39. Majumdar, A., and Ward, R. K., "Energy Efficient EEG Sensing and Transmission for Wireless Body Area Networks: A Blind Compressed Sensing Approach", *Biomedical Signal Processing and Control*, Vol. 20, pp. 1-9, 2015.
40. Guha, T., Nezhadarya, E., and Ward, R. K., "Sparse Representation-based Image Quality Assessment", *Signal Processing: Image Communication*, Vol. 29 (10), pp. 1138–1148, 2014.
41. Majumdar, A., and Ward, R. K., " Exploiting Sparsity and Rank Deficiency for MR Image Reconstruction from Multiple Partial K-Space Scans", *Canadian Journal of Electrical and Computer Engineering*, Vol. 37(4), pp. 228-235, 2014.
42. Nezhadarya, E. and Ward, R. K., "Multiscale Derivative Transform and Its Application to Image Watermarking", *Digital Signal Processing*, Vol. 33, pp. 148-155, 2014.
43. Guha, T., and Ward, R.K., "Image Similarity Using Sparse Representation and Compression Distance", *IEEE Transactions on Multimedia*, Vol. 16 (4), pp. 980-987, 2014.
44. Chen, X., Liu, A., Peng, H., and Ward, R. "A Preliminary Study of Muscular Artifact Cancellation in Single-Channel EEG", *Sensors*, 14(10), pp. 18370-18389, 2014.
45. Majumdar, A., Anupriya, G., and Ward, R. K., "A Low-Rank Matrix Recovery Approach for Energy Efficient EEG Acquisition for a Wireless Body Area Network", *Sensors*, Vol. 14(9), pp. 15729-15748, 2014.
46. Majumdar, A., and Ward, R. K., "Non-convex row-sparse multiple measurement vector analysis prior formulation for EEG signal reconstruction", *Biomedical Signal Processing and Control*, Vol. 13, pp. 142-147, 2014.
47. Vahedi, E., Ward R. K., and Blake, I. F., "Performance analysis of RFID protocols: CDMA vs. the standard EPC Gen2," *IEEE Transactions on Automation Sciences and Engineering*, Vol. PP(9), pp. 1-12, January 2014.
48. Malekesmaeili, M., and Ward, R. K. "A Local Fingerprinting Approach for Audio Copy Detection", *Signal Processing*, Vol. 98, pp. 308-321, May 2014.
49. Majumdar, A., K. Chaudhury, and Ward, R. K., Calibrationless Parallel magnetic resonance imaging: a joint sparsity model. *Sensors (Special issue on Magnetic Resonance Sensors)*, 13(12), 16714-16735, 2013.
50. Nezhadarya, E., and Ward, R. K., " Semi-blind Quality Estimation of Compressed Videos Using Digital Watermarking", *Digital Signal Processing*, Vol. 23(5), pp. 1483-1495, September 2013.
51. Mai, Z., Mansour, H., Nasiopoulos, P., and Ward, R. K., "Visually favorable tone-mapping with high-compression performance in bit-depth scalable video coding," *IEEE Trans. Multimedia*, Vol. 15(7), pp. 1503-1518, November 2013.
52. Chen, X., Chen, X., Ward, R. K., and Wang, Z. J., "A Joint Multimodal Group Analysis Framework for Modeling Corticomuscular Activity", *IEEE Trans. Multimedia*, Vol. 15(5), pp. 1049-1059, August 2013.
53. Malekesmaeili, M., Fatourechi, M., and Ward, R. K. "Fast Approximate Nearest Neighbor Search Algorithm in Hamming Space", *IEEE Trans. Pattern Analysis and Machine Intelligence*, Vol. 34(12), pp. 2481-2488, December 2012.
54. Chiang J. and Ward, R.K. "Energy-Efficient Data Reduction Techniques for Wireless Seizure Detection Systems", *Sensors (Special Issue on Sensors for Globalized Healthy Living and Wellbeing)*, Vol. 14(2), pp. 2036-2051, January 2014.
55. Fauvel, S. and Ward, R.K. "An Energy Efficient Compressed Sensing Framework for the Compression of Electroencephalogram Signals", *Sensors (Special Issue on Sensors for Globalized Healthy Living and Wellbeing)*, Vol. 14(1), pp. 1474-1496, January 2014.
56. Majumdar, A., Ward, R. K. and Aboulnasr, T., "Non-Convex Algorithm for Sparse and Low-Rank Recovery: Application to Dynamic MRI Reconstruction", *Magnetic Resonance Imaging*, vol. 31 (3), pp. 448 – 455, Mar 2013.

57. Majumdar, A., Ward, R. K., "Rank Awareness in Group-Sparse Recovery of Multi-Echo MR Images." Sensors (Special Issue on Medical and Biomedical Imaging), vol. 13, no. 3, pp. 3902-3921, Mar 2013.
58. Majumdar, A., Ward, R. K., and Aboulnasr, T., "Algorithms to Approximately Solve NP Hard Row-Sparse MMV Recovery Problem: Application to Compressive Color Imaging", IEEE Journal on Emerging and Selected Topics in Circuits and Systems, (Special issue on Circuits, Systems and Algorithms for Compressive Sensing) Vol. 2 (3), pp. 362-369. Jan 2013.
59. Majumdar, A., Ward, R. K., and Aboulnasr, T., "Compressed Sensing Based Near Real-Time Online Dynamic MRI Reconstruction", IEEE Trans. Medical Imaging, Vol. 31 (2), pp. 2253 – 2266, Dec 2012.
60. Majumdar, A., and Ward, R. K., "Causal dynamic MRI reconstruction via nuclear norm minimization", Magnetic Resonance Imaging, Vol. 30(10), 1483-94, pp. Dec 2012.
61. Majumdar, A., and Ward, R. K., "Iterative Estimation of MRI Sensitivity Maps and Image Based on Sense Reconstruction Method (iSENSE)", Concepts in Magnetic Resonance Part A, Vol. 40 (6), pp. 269-280, Nov 2012.
62. Majumdar, A., and Ward, R. K., "Calibration-less Multi-coil MR Image Reconstruction" Elsevier Magnetic Resonance Imaging, vol. 30(7), pp. 1032-45, Sep 2012.
63. Mai, Z., Doutre, C., Nasiopoulos, P., and Ward, R. K., "Rendering 3D High Dynamic Range Images: Subjective Evaluation of Tone-Mapping Methods and Preferred 3D Image Attributes," Journal of Selected Topics in Signal Processing, vol.6, no.5, pp. 597-610, Sep 2012.
64. Majumdar, A., and Ward, R. K., "On the choice of Compressed Sensing Priors and Sparsifying Transforms for MR Image Reconstruction: An experimental study", Signal Processing: Image Communication, vol. 27 (9), pp. 1035–1048, Aug 2012.
65. Yong, X., Fatourehchi, M., Ward, R. K., and Birch, G., "Automatic Artifact Removal in a Self-paced Hybrid Brain-Computer Interface System," Journal of Neuroengineering and Rehabilitation, vol. 9, no. 50, pp. 1-20, Aug 2012.
66. Guha, T., and Ward, R. K., "Learning Sparse Representations for Human Action Recognition", IEEE Trans. Pattern Analysis and Machine Intelligence, vol. 34, issue 8, pp. 1576-1588, Aug 2012.
67. Majumdar, A., and Ward R., K., "Nuclear Norm Regularized SENSE Reconstruction", Elsevier Magnetic Resonance Imaging, vol. 30, issue 2, pp. 213 – 221, Feb 2012.
68. Majumdar, A., and Ward, R. K., "Exploiting Rank Deficiency and Transform Domain Sparsity for MR Image Reconstruction" Elsevier Magnetic Resonance Imaging, Jan 30(1), pp. 9 -18, Jan 2012.
69. Yong, X., Fatourehchi, M., Ward, R. K. and Birch, G. E., "The Design of A Point-and-Click System by Integrating A Self-Paced BCI with An Eye-Tracker," IEEE JETCAS Special Issue on Brain Machine Interface, vol. 1, no. 4, pp. 590-602, Dec 2011.
70. Nezhadarya, E., Wang, J. Z., and Ward, R. K., "Robust Image Watermarking Based on Multiscale Gradient Direction Quantization", IEEE Trans. Information Forensics and Security, vol 6, no 4, pp. 1200-1213, Dec 2011.
71. Vahedi, E., Ward, R. K, Shah-Mansouri, V., Wong, W.S. and Blake, I. F., "On securing RFIDs against blocking attacks," IEEE MMTTC Letter (invited paper), vol. 2, no. 6, pp. 16-18, Dec 2011.
72. Majumdar, A., and Ward, R. K., "Joint Reconstruction of Multi-echo MR Images Using Correlated Sparsity", Elsevier Magnetic Resonance Imaging, vol. 29, issue 7, Sep 2011.
73. Vahedi, E., Shah-Mansouri, V., Wong, V. W. S., Blake, I. F., and Ward, R. K., "Probabilistic Analysis of Blocking Attack in RFID Systems", IEEE Trans. Information Forensics and Security, vol. 6, no. 3, pp. 803-817, Sep 2011.
74. Nezhadarya E., and Ward, R. K., "A New Approach to Robust Gradient Estimation in Color Images", IEEE Trans. Image Processing, vol. 20, no. 8, pp. 2211-2220, Aug. 2011.
75. Vahedi, E., Wong, V. W. S., Blake, I. F and Ward, R. K., "Probabilistic Analysis and Correction of Chen's Tag Estimate Method", IEEE Trans. Automation Science and Engineering, vol. 8, no. 3, pp. 659-663, Jul 2011.
76. Faradji, F., Ward, R. K., and Birch, G. E., "Towards Development of a 2-State Brain-Computer Interface Based on Mental Tasks," Journal of Neural Engineering, vol. 8, no. 4, 046014 (9pp), Jun 2011.

77. Mai, Z., Mansour, H., Mantiuk, R., Nasiopoulos, P., Ward, R. K., and Heidrich W., "Optimizing a Tone Curve for Backward-Compatible High Dynamic Range Image/Video Compression," IEEE Trans. Image Processing, vol. 20, no. 6, pp. 1558-1571, Jun 2011.
78. Majumdar, A., and Ward, R. K., "Some empirical advances in matrix completion", Signal Processing, vol. 91, issue 5, pp. 1334-1338, May 2011.
79. Majumdar, A., and Ward, R. K., "Accelerating Multi-echo T2 Weighted MR Imaging: Analysis Prior Group Sparse Optimization", Journal Of Magnetic Resonance Vol. 210 (1), pp. 90-97, May 2011.
80. Majumdar, A., and Ward, R. K., "Increasing energy efficiency in sensor networks: Blue noise sampling and non-convex matrix completion", International Journal of Sensor Networks, vol 9 (3/4), pp. 158-169, May 2011.
81. Majumdar, A., and Ward, R. K., "An Algorithm for Sparse MRI Reconstruction by Schatten p-norm Minimization", Elsevier Magnetic Resonance Imaging, vol. 29(3), pp. 408 - 417, Apr 2011.
82. Malekesmaeili, M., Fatourechi, M., and Ward, R. K. "A Robust and Fast Video Copy Detection System using Content Based Fingerprinting", IEEE Trans. Information Forensics and Security, vol 6, no. 1, pp. 213 – 226, Mar 2011.
83. Majumdar, A. and Ward, R. K., "Compressed Sensing of Color Images", Signal Processing, vol. 90 (12), 3122-3127, Dec 2010.
84. Majumdar, A., and Ward, R. K., "Robust Classifiers for Data Reduced via Random Projections", IEEE Trans. Systems, Man and Cybernetics Part:B, Vol. 40, No. 5, pp. 1359 – 1371, Oct 2010.
85. Majumdar, A. and Ward R. K., "Fast Group Sparse Classifier", IEEE Canadian Journal for Electrical and Computer Engineering, vol. 34, issue 4, pp. 136-144, Oct 2010.
86. Majumdar, A., and Ward, R. K., "Improved Group Sparse Classifier", Pattern Recognition Letters, Vol. 31 (13), pp. 1959-1964, Oct 2010.
87. Du, S., and Ward, R.K., "Adaptive Region-Based Image Enhancement Method for Robust Face Recognition under Variable Illumination Conditions", IEEE Trans. Circuits and Systems for Video Technology, Vol. 20 , No. 9, pp 1165 - 1175, Sept 2010.
88. Majzoub, S., Saleh, R., Wilton, S. J. E and Ward, R. K., "Energy Optimization for Many-Core Platforms: Communication and PVT Aware Voltage-Island Formation and Voltage Selection Algorithm", IEEE Trans. Computer Aided Design, vol. 29, issue 5, pp. 816-829, May 2010.
89. Pourazad, M. T., Nasiopoulos, P., and Ward, R. K., "Generating the Depth Map from the Motion Information of H.264-Encoded 2D Video Sequence", EURASIP Journal on Image and Video Processing, vol. 2010, Article ID 108584, 13 pages, March 2010. doi:10.1155/2010/108584.
90. Ersahin, K., Cumming, I. G., and Ward., R. K., "Segmentation and Classification of Polarimetric SAR Data Using Spectral Graph Partitioning", IEEE Trans. Geoscience and Remote Sensing, Volume: 48, Issue: 1, Part: 1, pp. 164 – 174, Jan 2010.
91. Du, S., and Ward, R.K., "Improved Face Representation by Non-Uniform Multi-Level Selection of Gabor Convolution Features", IEEE Trans. Systems, Man and Cybernetics, Part B, Vol 39, Issue 6, pp. 1408 – 1419, Dec 2009.
92. Majumdar, A., and Ward, R. K., "Non-convex Compressed Sensing from Noisy Measurements", The Open Signal Processing Journal, Vol. 2, pp. 40-44, Oct 2009.
93. Majumdar, A. and Ward, R. K., "Group Sparse Classifier", MASAUM Journal of Basic and Applied Sciences, Vol. 1, No. 3, pp. 483-492, Oct 2009.
94. Faradji, F., Ward, R.K., and Birch, G. E., "Plausibility Assessment of a 2-State Self-Paced Mental Task-Based BCI Using the No-Control Performance Analysis", Journal of Neuroscience Methods, Vol.180, No.2, pp. 330 – 339, June 2009.
95. Pourazad, M. T., Nasiopoulos, P., and Ward, R. K., "An H.264-based Scheme for 2D to 3D Video Conversion", IEEE Trans. Consumer Electronics, Vol. 55, No. 2, pp 742-748, May 2009.
96. Sameti, M., Ward, R. K., Morgan-Parkes, J., and Palcic, B., "Image feature extraction in the last screening mammograms prior to detection of breast cancer", IEEE Journal of Selected Topics in Signal Processing, Vol. 3, No.1, pp. 46-52, Feb 2009.

97. Coria, L.E., Pickering, M., Nasiopoulos, P., and Ward, R.K., "A Video Watermarking Scheme Based on the Dual-Tree Complex Wavelet Transform", IEEE Trans. Information Forensics and Security, Vol.3, No.3, pp.466-474, Sep 2008.
98. Mai, A., Nasiopoulos, P., Ward, R.K., and Infante, S., "Real-Time DVB-MHP to Blu-ray System Information Transcoding", IEEE Trans. on Consumer Electronics, Vol.54, No.2, pp.639-647, May 2008.
99. Fatourehchi, M., Birch, G.E., Ward, R.K., "Performance of a Self-paced Brain Computer Interface on Data Contaminated with Eye Blinks and on Data Recorded in Subsequent Sessions", J Computational Intelligence & Neuroscience , Vol.2008, 13 pages, May 2008.
100. Tang, Q., Nasiopoulos, P., and Ward, R.K., "Compensation of Re-quantization and Interpolation Errors in MPEG-2 to H.264 Transcoding", IEEE Trans. on Circuit and System on Video Technology, Vol.18, No.3, pp.314-325, March 2008.
101. Fatourehchi, M., Birch, G.E., Ward, R.K., "A Self-paced Brain Interface System with Low False Positive Rate", Journal of Neural Engineering, Vol.5, pp.9-23, March 2008.
102. Coria, L. E., Nasiopoulos, P., Ward, R. K., and Pickering, M., "An Access Control Video Watermarking Method that is Robust to Geometric Distortions," Journal of Information Assurance and Security, Vol.2, No.4, pp.266-274, Dec 2007.
103. Bashashati, A., Ward, R.K., and Birch, G.E., "Towards Development of a 3-State Self-Paced Brain Interface Based on Hand Extension Movements", J Computational Intelligence & Neuroscience, Vol. 2007, pp.1-8, Oct 2007.
104. Xiao, Y., Ma, L., and Ward, R. K., "Fast RLS Fourier Analyzers Capable of Accommodating Frequency Mismatch", Signal Processing, Vol. 87, No.9, pp.2197-2212, Sep 2007.
105. Fatourehchi, M., Birch, G.E., and Ward, R.K., "A Self-paced Brain Interface System that Uses Movement Related Potentials and Changes in the Power of Brain Rhythms," Journal of Computational Neuroscience, Vol.23, No.1, Aug 2007.
106. Bashashati, A., Nouredin, B., Ward, R.K., Lawrence, P., and Birch, G.E., "Effects of Eye Blinks on the Performance of Neil Squire Society's Self-paced Brain Interface", Clinical Neurophysiology, Vol.118, No.7, pp.1639-1647, July 2007.
107. Bashashati, A., Fatourehchi, M., Ward, R.K., and Birch, G.E., "A Survey of Signal Processing Algorithms in Brain Interfaces," Journal of Neural Engineering, Vol. 4, No. 2, pp. R35-57, June 2007.
108. Wang, Q. and Ward, R.K., "Fast Image/Video Contrast Enhancement Based on Weighted Thresholded Histogram Equalization", IEEE Trans. on Consumer Electronics, Vol.53, No.2, May 2007, pp.757-764.
109. Fatourehchi, M., Birch, G.E., and Ward, R.K., "Application of a Hybrid Wavelet Feature Selection Method in the Design of a Self-Paced Brain Interface System", Jour. of NeuroEngineering and Rehabilitation, Vol.4, No.1, April 2007.
110. Wang, Q. and Ward, R.K., "A New Orientation-Adaptive Interpolation Method," IEEE Trans. On Image Processing, Vol. 16, No. 4, April 2007, pp 889 -900.
111. Bashashati, A., Mason, S.G., Borisoff, J., Ward, R.K., and Birch, G.E., "A Comparative Study on Generating Training-Data for Self-Paced Brain Interfaces," IEEE Trans. Neural Systems and Rehabilitation, Vol.15, No.1, March 2007, pp.59-66.
112. Fatourehchi, M., Bashashati, A., Ward, R.K., and Birch, G.E., "EOG and EMG Artifacts in Brain Interface Systems: A Survey", Clinical Neurophysiology, Vol.118, No.3, March 2007, pp.480-494 (Invited paper).
113. Fatourehchi M., Bashashati, A., Birch, G.E., and Ward, R.K. "Automatic User Customization for Improving the Performance of an Asynchronous Brain Interface System," Jour. of Medical, Biological Engineering and Computing, Vol.44, No.12, Dec 2006, pp.1093-1104.
114. Du, S. and Ward, R.K., "Face Recognition under Pose Variations," Jour. of the Franklin Institute, Vol. 343, No.6, 2006, pp.596-613 .
115. Azimi, M., Nasiopoulos, P., and Ward, R.K., "Data Transmission Schemes for DVD-like Interactive TV," IEEE Trans. on Multimedia, Vol. 8, No. 4, August 2006, pp. 856-865.
116. Bashashati, A, Fatourehchi, M, Ward, RK, and Birch, G, "User Customization of the Feature Generator of an Asynchronous Brain Interface," Annals of Biomedical Engineering, Vol.34, No.6, June 2006, pp. 1051-1060.

117. Bashashati, A., Mason, S.G., Ward, R.K., and Birch, G.E., "An Improved Asynchronous Brain Interface: Making Use of the Temporal History of the LF-ASD Feature Vectors," Journal of Neural Engineering, Vol. 3, No. 2, June 2006, pp. 87-94 (Invited paper).
118. Deng, H., Ward, R.K., Beddoes, M.P., and Hodgson, M., "A New Method for Obtaining Accurate Estimates of Vocal-Tract Filters and Glottal Waves from Vowel Sounds," IEEE Trans. on Audio, Speech, and Language Processing, Vol. 14, No. 2, March 2006, pp. 445-455.
119. Bashashati, A., Nouredin, B., Ward, R.K., Lawrence, P.D., and Birch, G.E., "An Experimental Study to Investigate the Effects of a Motion Tracking Electromagnetic Sensor during EEG Data Acquisition," IEEE Trans. on Biomedical Engineering, Vol. 53, No. 3, March 2006, pp. 559-563.
120. Khojasteh, M., Lam, W.L., Ward, R.K., and MacAulay C., "A Stepwise Framework for the Normalization of Array CGH Data," BMC Bioinformatics, Vol.6, No.274, November 18, 2005.
121. Azimi, M., Nasiopoulos, P., and Ward, R.K., "Off-line and On-line Identification of Hidden Semi-Markov Models," IEEE Trans. On Signal Processing, Vol. 53, No. 8, August 2005, pp. 2658-2663.
122. Zou, J., Tie, X., Ward, R.K., and Qi, D., "Some Novel Image Scrambling Methods Based on Affine Modular Matrix Transformation," Jour. of Information and Computational Science, Vol. 2, No. 1, March 2005, pp. 223-227.
123. Xiao, Y., Ward, R.K., Ma, L., and Ikuta, A., "A New LMS-Based Fourier Analyzer in the Presence of Frequency Mismatch and Applications," IEEE Trans. on Circuits and Systems Part I: Analog and Digital Signal Processing, Vol. 52, No. 1, January 2005, pp. 230-245.
124. Xiao, Y., Ikuta, A., Ma, L., and Ward, R.K., "Statistical Properties of the LMS Fourier Analyzer in the Presence of Frequency Mismatch," IEEE Trans. on Circuits and Systems, Part I, Vol. 51, No. 12, December 2004, pp. 2504-2515.
125. Shi, H., Kharna, N., and Ward, R.K., "Novel Set-Theoretic Definitions of Common Fuzzy Hedges Theory and Application," Jour. of Intelligent and Fuzzy Systems, Vol. 15, No. 2, December 2004, pp. 105-114.
126. Deng, H., Ward, R.K., Beddoes, M., and Hodgson, M., "Estimating the Vocal-tract Area Function and the Derivative of the Glottal Wave from a Speech Signal," GESTS Society, GESTS Intl. Trans. on Speech Science. Engineering, Vol. 1, No. 1, December 2004, pp. 49-59.
127. Ahmed, M., Ward, R.K., and Kharna, N., "Solving Mathematical Problems Using Knowledge-Based Systems," Mathematics and Computers in Simulation, Special issue on Applications of Computer Algebra in Science, Engineering, Simulation and Special Software, Vol. 67, September 2004, pp. 149-161.
128. Adams, M.D. and Ward, R.K., "Symmetric-Extension-Compatible Reversible Integer-to-Integer Wavelet Transforms," IEEE Trans. on Signal Processing, Vol. 51, No. 10, October 2003, pp. 2624-2636.
129. Paquet, A., Ward, R.K. and I. Pitas, "Wavelet Packets-based Digital Watermarking for Image Verification and Authentication," Signal Processing, Special Issue on Security of Data Hiding Technologies, Vol. 83, Issue 10, October 2003, pp. 2117-2132.
130. Luo, Y. and Ward, R.K., "Removing the Blocking Artifacts of Block Based DCT Compressed Images" IEEE Trans. on Image Processing, Vol. 12, No. 7, July 2003, pp. 838-842.
131. Xiao, Y., Ward, R.K., and Ikuta, A., "Performance Analysis of the Sign Algorithm for a Constrained Adaptive IIR Notch Filter," IEEE Trans. on Signal Processing, Vol. 51, No. 7, July 2003, pp. 1846-1858.
132. Adams, M.D., Kossentini, F., and Ward, R.K., "Generalized S Transform," IEEE Trans. on Signal Processing, Vol. 50, No. 11, November 2002, pp. 2831-2842.
133. Nasiopoulos, P., and Ward, R.K., "Effective Multi-Program Broadcasting of Pre-Recorded Video Using VBR MPEG-2 Coding," IEEE Trans. on Broadcasting, Vol. 48, No. 3, September 2002, pp. 207-214.
134. Zahir, S., and Ward, R.K., "A New Edge Preserving Binary Images Resizing Technique," Jour. of Circuits, Systems and Computers, Vol. 11, No. 3, June 2002, pp. 247-257.
135. Mousavi, P., Ward, R.K., Fels, S., Sameti, M., and Lansdorp, P., "Feature Analysis and Centromere Segmentation of Human Chromosome Images Using an Iterative Fuzzy Algorithm" IEEE Trans. on Biomedical Engineering, Vol. 49, No. 4, April 2002, pp. 363-371.
136. Ahmed, M. and Ward, R.K., "Thinning Symbols to their Central Lines," IEEE Trans. on Pattern Analysis and Machine Intelligence, Vol. 24, No. 12, 2002, pp. 1672-1678.

137. Ismaeil, I., Docef, A., Kossentini, F., and Ward, R.K. "A Computation-Distortion Optimized Framework in Efficient DCT-Based Video Coding," IEEE Trans. on Multimedia, Vol. 3, No. 3, September 2001, pp. 298-310.
138. Kharma, N. and Ward, R.K., "A Novel Invariant Mapping Applied to Handwritten Arabic Character Recognition," Pattern Recognition, Vol. 34, 2001, pp. 2115-2120.
139. Ahmed, M., and Ward, R.K., "An Expert System for General Symbol Recognition," Pattern Recognition, Vol. 33, No. 12, 2000, pp. 1975-1988.
140. Shirani, S., Kossentini, F., and Ward, R.K., "Reconstruction of Baseline JPEG Coded Images in Error Prone Environments," IEEE Trans. on Image Processing, Vol. 9, No. 7, July 2000, pp. 1292-1299.
141. Shirani, S., Kossentini, F., and Ward, R.K. "A Concealment Method for Video Communications in an Error Prone Environment," IEEE Jour. on Selected Areas in Communications, Special Issue on Error-Resilient Image and Video Transmission, Vol. 18, No. 6, June 2000, pp. 1122-1128.
142. Pronina, K., Ward, R.K., and Nasiopoulos, P. "Improving MPEG Performance with Frame Partitioning," Jour. of the Society of Motion Picture and Television Engineers, Vol. 109, No. 6, June 2000, pp. 469-475.
143. Kharma, N. and Ward, R.K. "Character Recognition Systems for the Non-Expert," IEEE Canadian Review Journal, No. 33, Fall 1999, pp.5-8.
144. Poon, S., Martens, U., Ward, R.K., and Lansdorp, P., "Telomere Length Measurements Using Digital Fluorescence Microscopy," Cytometry, Vol. 36, March 1999, pp. 267-278.
145. Mousavi, P., Ward, R.K., and Lansdorp, P., "Feature Analysis and Classification of Chromosome 16 Homologous Using Fluorescence Microscopy Images," IEEE Can. Jour. of Electr. & Comp. Eng. Vol. 24, No. 3, July 1999, pp. 95-99, INVITED PAPER.
146. Cheng, D. and Ward, R.K., "Recognition of Handwritten Numerals Using a Parallel Structure Based on Fourier Descriptors of Numeral Contours," IEEE Can. Jour. of Electr. & Comp. Eng., Special Issue on Document Image Analysis, Vol. 24, No. 2, April 1999, pp. 73-84.
147. Lee, Y., Kossentini, F., and Ward, R.K., "Efficient MPEG-2 Encoding of Interlaced Video," Canadian Jour. of Electrical and Computer Engineering, Special Issue on Visual Computing and Communications, Vol. 23, No. 1-2, June 1998, pp. 61-67.
148. Ahmed, M. and Ward, R.K., "A Fast One Pass Knowledge Based System for Thinning," SPIE/IS&T Jour. of Electronic Imaging, Special Section on Computational Intelligence in Image Processing, Vol. 7, No. 1, January 1998, pp. 111-116.
149. Martens, U.M., Zijlmans, J.M., Poon, S., Dragowska, V., Yui, J. Chavez, E.A., Ward, R.K., and Lansdorp, P.M., "Short Telomeres On The P-Arm Of Human Chromosome 17," Nature Genetics, Vol. 18, January 1998, pp. 75-80.
150. Lansdorp, P.M., Dragowska, V., Rufer, N., Brummendorf, T., Chavez, L., Poon, S., Duncan, T., Ward, R.K., and Martens, U., "Telomere Length Dynamics in Cells of Hematopoietic System," Exp. Hematol, 1998, pp. 26-738.
151. Kossentini, F., Lee, Y., Smith, M., and Ward, R.K., "Predictive RD-Constrained Motion Estimation for Very Low Bit Rate Video Coding," Special Issue of the IEEE Trans. on Selected Areas of Communication, Vol. 15, No. 9, December 1997, pp. 1752-1763.
152. Zijlmans, J.M., Martens, U.M., Poon, S., Raap, A.K., Tanke, H.J., Ward, R.K., and Lansdorp, P.M., "Telomeres in the Mouse Have Large Inter-chromosomal Variations in the Number of T₂AG₃ Repeats," Proc. of National Academy of Science, Vol. 94, July 1997, pp. 7423-7428.
153. Lee, Y., Kossentini, F., Ward, R.K., and Smith, M., "Towards MPEG 4: An Improved H.263-Based Video Coder," Image Communication, Special Issue on MPEG 4, Vol. 10, July 1997, pp. 143-158. Also submitted to the MPEG 4 group on video.
154. Petrell, R., Shi, X., Ward, R.K., and Savage, M., "Measuring Fish Size in Cages and Tanks," Aquacultural Engineering, Vol. 16, No. 2, March 1997, pp. 63-84.
155. Aghdasi, F. and Ward, R.K., "Reduction of Boundary Artifacts in Image Restoration," IEEE Trans. on Image Processing, Vol. 5, No. 4, April 1996, pp. 611-618.
156. Xie, Q., Ward, R.K., and Laszlo, C., "A Hidden Markov Model Method for Estimating Normal Infants Distress Levels from their Cry Sounds," IEEE Trans. on Speech and Audio Processing, Vol. 4, No. 4, July 1996, pp. 253-265.

157. Nasiopoulos, P., Bouras, D., Ward, R.K., and Mathiopoulos, T., "HDTV Picture Quality Performance under Noisy Conditions -- Analysis and Measures for Improvement," Signal Processing Image Communication, Vol. 8, 1996, pp.79-98.
158. Nasiopoulos, P. and Ward, R.K., "A Hybrid Coding Method for Digital HDTV," IEEE Trans. on Consumer Electronics, Vol. 41, No.4, Nov. 1995, pp. 1080 -1088.
159. Nasiopoulos, P., Yedlin, M., and Ward, R.K., "A High Performance Fixed-Length Compression Method Using the Kharnunen-Loeve Transform," IEEE Trans. on Consumer Electronics, Vol. 41, No. 4, November 1995, pp. 1189-1196.
160. Nasiopoulos, P., Ward, R.K., and Morse, D., "Adaptive Compression Coding," IEEE Trans. on Comm., Vol. 39, No. 8, Aug. 1991, pp. 1245-1254. This paper was selected to reappear in Image Data Compression: Block Truncation Coding ed. B.V. Dasarathy, IEEE Computer Society Press, pp. 164-173.
161. Nasiopoulos, P. and Ward, R.K., "A High Quality Fixed-Length Compression Scheme for Color Images," IEEE Trans. on Communication, Vol. 43, No. 11, November 1995, pp. 2672-2677.
162. Zhang, Q., Ward, R.K., and Du, J., "Impulse Noise Correction in TV Transmission," IEEE Trans. on Consumer Electronics, Vol. 41, No. 3, August 1995, pp. 731-737.
163. Zhang, Q. and Ward, R.K., "Automatic Assessment of Signal-to-Thermal Noise Ratio of Television Images," IEEE Trans. on Consumer Electronics, Vol. 41, No. 1, Feb. 1995, pp. 108-117.
164. Shi, P. and Ward, R.K., "Reducing the Composite Triple Beats Impairment in Cable Television Pictures," IEEE Trans. on Consumer Electronics, Vol. 41, No. 1, Feb. 1995, pp. 210-220.
165. Shi, X. and Ward, R.K., "Non-Iterative Image Reconstruction from Photon-limited Data using Self-Cross Correlation," Jour. of Opt. Soc. of America, A, Vol. 12, No. 1, Jan. 1995, pp.47-57.
166. Foster, M., Petrell, R., Ito, R., and Ward, R.K., "Detection and Counting of Uneaten Food Pellets in a Sea Cage Using Image Analysis," Agricultural Engineering, Vol. 14, No. 3, June 1995, pp. 251-269.
167. Nasiopoulos, P. and Ward, R.K., "A Noise Resistant Synchronization Scheme for Digital HDTV Images," IEEE Trans. on Broadcasting, Vol. 40, No. 4, Dec. 1994, pp. 228-237.
168. Aghdasi, F., Ward, R.K., and Palcic, B., "Restoration of Mammographic Images in the Presence of Signal-dependent Noise," refereed chapter in "State of the Art in Mammographic Image Processing," eds. K.W. Bowyer and S. Astly, ISBN 981-02-1509-6, World Scientific Publishing Co., Sept. 1994, pp. 42-63.
169. Shi, X. and Ward, R.K., "Reconstruction of Photon-limited Stellar Images by Generalized Projections Using the Cross Spectrum," Jour. of the Optical Soc. of America, A, Vol. 11, No. 5, May 1994, pp. 1589-1598.
170. Xie, Q., Laszlo, C., and Ward, R.K., "Vector Quantization for Non-Parametric Classifier Design," IEEE Trans. on Pattern Analysis and Machine Intelligence, Vol. 15, No. 12, Dec. 1993, pp. 1326-1330.
171. Shi, P. and Ward, R.K., "Automatic Recognition of Intermodulation Beat Products in Cable T.V.," IEEE Trans. on Broadcasting, Vol. 39, No. 1, Sept. 1993, pp. 318-326.
172. Ward, R.K., "Restoration of Differently Blurred Versions of an Image with Measurement Errors in the Point Spread Functions," IEEE Trans. On Image Processing, Vol. 2. No. 3, July 1993, pp. 369-381.
173. Poon, S., Ward, R.K., and Palcic, B. "Automated Image Detection and Segmentation in Blood Smears," Yearbook of Medical Informatics, 1993, pp. 271-279.
174. Guan, L. and Ward, R.K., "Restoration of Randomly Blurred Images by the Maximum A Posteriori Criterion," IEEE Trans. on Image Processing, Vol. No. 2, April 1992, pp. 256-262.
175. Shi, P. and Ward, R.K., "OSNet: A Neural Network Implementation of Order Statistic Filters," IEEE Trans. on Neural Networks, Vol. 4, No. 2, March 1992, pp. 234-241.
176. Poon, S., Ward, R.K., and Palcic, B., "Automated Image Detection and Segmentation in Blood Cells," Cytometry, Vol. 13, #7, 1992, pp. 766-774. This paper has been selected to appear in "IMIA Yearbook of Medical Informatics," pp. 271-279, containing the best of medical informatic articles of 40 related societies.
177. Poon, S., Ward, R.K., and Palcic, B., "Feature Extraction from Three-Dimensional Images in Quantitative Microscopy," Micron and Microscopica Acta, Vol. 23, No. 4, 1992, pp. 481-489.
178. Shi, X. and Ward, R.K., "Restoration of Images Degraded by Atmospheric Turbulence and Detection Noise," Jour. of the Optical Society of America, A, Vol. 9, No. 3, March 1992, pp. 364-370.

179. Ward, R.K. and Zhang, Q., "Automatic Identification of Impairments Caused By Intermodulation Distortion In Cable Television Pictures," IEEE Trans. on Broadcasting, Vol. 38, No. 1, March 1992, pp. 60-68.
180. Guan, L. and Ward, R.K., "Restoration of Stochastically Blurred Images by the Geometric Mean Filter," Optical Engineering, Vol. 29, No. 4, April 1990, pp. 289-295, invited paper RR-119.
181. Guan, L. and Ward, R.K., "Deblurring Random Time-Varying Blur," Jour. of the Optical Society of America, A, Vol. 6, No. 11, November 1989, pp. 1727-1737.
182. Rey, C. and Ward, R.K., "A Parametrized Family of Nonlinear Image Smoothing Filters," IEEE Trans. on Acous., Speech & Signal Processing, Vol. ASSP 34, No. 9, September 1989, pp. 1458-1462.
183. Guan, L. and Ward, R.K., "Restoration of Randomly Blurred Images by the Wiener Filter," IEEE Trans. on Acous., Speech & Signal Processing, Vol. No. 7, April, 1989, pp. 589-592.
184. Ward, R.K. and Saleh, B.E., "Deblurring Random Blur," IEEE Trans. On Acous., Speech & Signal Processing, Vol. ASSP-35, No. 10, October, 1987, pp. 1484-1498. This paper was reprinted in "Selected Papers in Digital Image Restoration," ed. M.I. Sezan, SPIE Milestone Series, Vol. MS-47, 1992, a print book of outstanding optical engineering papers selected from the world literature on this subject.
185. Ward, R.K. and Saleh, B.E., "Image Restoration Under Random Time-Varying Blur," Applied Optics, Vol. 26, No. 20, October 1987, pp. 4407-4412.
186. Rey, C. and Ward, R.K., "On Determining the On-Line Minimax Linear Fit to a Discrete Point Set in the Plane," Information Processing Letters, January 1987, pp. 97-101.
187. Ward, R.K. and Saleh, B.E., "Restoration of Images Distorted by Systems of Random Time-Varying Impulse Response," Jour. of the Optical Society of America, A, Vol. 3, June 1986, pp. 800-807.
188. Ward, R.K., "Parity Check Codes for Logical Processors," The Computer Journal, Vol. 29, No. 1, 1986, pp. 12-16.
189. Ward, R.K. and Saleh, B.E., "Restoration of Images Distorted by Systems of Random Impulse Response," Jour. of the Optical Society of America, A, Vol. 2, No. 8, August 1985, pp. 1254-1259.
190. Ward, R.K. and Tabandeh, M., "Error Correction and Detection, a Geometric Approach," The Computer Journal, Vol. 27, No. 3, August 1984, pp. 246-253.
191. Ward, R.K., "Comparison and Diagnosis of Errors for Six Estimation Methods," Intl. Jour. of Systems Science, Vol. 15, No. 7, July 1984, pp. 745-759.
192. Ward, R.K., "A Development of a Socio-Economic Information System: A Land Reform Model for Zimbabwe," IEEE Trans. on Systems, Man and Cybernetics, Vol. 14, No. 2, March/April 1984, pp. 299-302.
193. Ward, R.K., "An On-Line Adaptation for Discrete Linear Estimation," IEEE Trans. on Automatic Control, Vol. AC-29, No. 1, January 1984, pp. 67-71.
194. Ward, R.K., "On Reliability of Prediction in Linear Models," IEEE Trans. on Automatic Control, Dec. 1981, Vol. AC-26, No. 6, pp. 1297-1299.
195. Ward, R.K., "An Econometric Model to Forecast Electricity Demand for Rhodesia/Zimbabwe," The Trans. of the South African Inst. of Electrical Engineers, January 1980, Vol. 71, part 1, pp. 2-10.
196. Ward, R.K., "Operations Research and Applications for Rhodesia," Jour. Of the Rhodesian Inst. of Engineers, March 1979, Vol. 17, No. 2, pp. 189-196. This paper won the 1979 Institution Award.
197. Ward, R.K., "Notes on the Instrumental Variables Method," IEEE Trans. On Automatic Control, June 1977, Vol. AC-22, No. 3, pp. 482-484.

(b) Conference Proceedings

1. Jianzhe Lin, Rabab Ward, Z. Jane Wang, "Deep transfer learning for Hyperspectral Image classification", Proc. of MMSP 2018, 2018.
2. A. N. Aljalai, S. Shukla, C. Feng, V. Leung, and R. Ward, "On the Performance of Using DFT-s-OFDM in Uplink Massive MIMO for Improving Energy Efficiency", submitted to IEEE GlobeCom 2019, May 2018.
3. R. Hussein, H. Palangi, Z. Jane Wang, and R. Ward, "Robust Detection of Epileptic Seizures using Deep Neural Networks," IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Accepted, 2018.

4. R. Hussein, M. Elgendi and R. Ward, "High Performance EEG Feature Extraction for Fast Epileptic Seizure Detections", Proc. IEEE Global Conference on Signal and Information Processing (GlobalSIP), 2017.
5. J. Maggu, R. Hussein, A. Majumdar and R. Ward, "Impulse Denoising via Transform Learning", Proc. IEEE Global Conference on Signal and Information Processing (GlobalSIP), 2017.
6. P. Singh, R. Hussein, A. Majumdar and R. Ward, "Joint-sparse Dictionary Learning: Denoising Multiple Measurement Vectors," Proc. IEEE Global Conference on Signal and Information Processing (GlobalSIP), 2017.
7. M. Rouf, and R. Ward, "High dynamic range imaging with a single exposure-multiplexed image using smooth contour prior," Proc. IS&T Electronic Imaging (Image Processing: Algorithms and Systems), 2017.
8. D. Karimi and R. K. Ward, "Image reconstruction in computed tomography using variance-reduced stochastic gradient descent," IEEE 14th International Symposium on Biomedical Imaging (ISBI 2017), Melbourne, VIC, pp. 543-547, 2017.
9. M. Rouf, and R. Ward, "Dynamic range expansion of single images using intensity-invariant patch correspondences," Proc. IEEE Global Conference on Signal and Information Processing (GlobalSIP), 2017.
10. A. M. Nasser, C. Feng, V. Leung, and R. K. Ward, "Eliminating Pilot Contamination Using Dual Pilot Sequences in Massive MIMO ", IEEE 86th Vehicular Technology Conference: IEEE VTC2017-Fall, Toronto, Accepted, September 2017.
11. A. Majumdar and R. Ward, "Robust Greedy Deep Dictionary Learning for ECG Arrhythmia Classification", the International Joint Conference on Neural Networks (IJCNN 2017), pp. 4400-4407, 2017.
12. R. Hussein, R. K. Ward, Z. J. Wang, "L1-Regularization Based EEG Feature Learning for Detecting Epileptic Seizure", IEEE Global Conference on Signal and Information Processing (GlobalSIP), Washington, DC, pp. 1171-1175. 2016.
13. H. Palangi, R. Ward, and L. Deng, "Reconstruction of Sparse Vectors in Compressive Sensing with Multiple Measurement Vectors using Bidirectional Long Short-Term Memory", IEEE Global Conference on Signal and Information Processing (GlobalSIP), Washington, DC, pp. 192-196, 2016.
14. R. Hussein, R. K. Ward, Z. J. Wang, A. Mohamed "Energy Efficient EEG Monitoring System for Wireless Epileptic Seizure Detection", IEEE International Conference on Machine Learning and Applications (ICMLA), Anaheim, CA, pp. 294-299. 2016.
15. Hossein Bashashati, R. K. Ward, Ali Bashashati, "Neural Network Conditional Random Fields for Self-Paced Brain Computer Interfaces", IEEE International Conference on Machine Learning and Applications (ICMLA), Anaheim, CA, pp. 939-943, 2016.
16. A. Majumdar and R. Ward, "Robust dictionary learning: Application to signal disaggregation," 2016 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Shanghai, pp. 2469-2473, 2016.
17. Khurana, P., A. Majumdar, and R. Ward, "Class-wise Deep Dictionaries for EEG Classification", Inter Joint Conf. on Neural Networks, Vancouver, BC, pp. 3556-3563, 2016.
18. A. Majumdar, and R. Ward, "Real-time Reconstruction of EEG Signals from Compressive Measurements via Deep Learning", Inter Joint Conf. on Neural Networks, Vancouver, BC, pp. 2856-2863, 2016.
19. Majumdar, A., R. K. Ward and M. Gupta, "Non Intrusive Load Monitoring: A Robust Sparse Representation Approach", submitted to SPCOM 2016.
20. Mahrous, H., and R. K. Ward, "A Low Power Dirac Basis Compressed Sensing Framework for EEG using a Meyer Wavelet Function Dictionary", 2016 IEEE Canadian Conference on Electrical and Computer Engineering (CCECE), Vancouver, BC, , pp. 1-6, 2016.
21. Shahid, H., and R. K. Ward, "Codebook Design for Vector Quantization using Hexagonal Partitioning", 2016 IEEE Canadian Conference on Electrical and Computer Engineering (CCECE), Vancouver, BC, , pp. 1-6, 2016.
22. Bashashati, H., R. K. Ward, and A. Bashashati, "Bayesian Optimization of BCI Parameters", 2016 IEEE Canadian Conference on Electrical and Computer Engineering (CCECE), Vancouver, BC, , pp. 1-5, 2016.
23. Rouf, M., D. Reddy, K. Pulli and R. Ward, "Fast edge-directed single-image super-resolution", IS&T International Symposium on Electronic Imaging. Pp. 1-8, 2016.

24. Sheikhzadeh, F., Carraro, A., Korbelic, J., MacAulay, C., Guillaud, M., and Ward, R. K. "Automatic labeling of molecular biomarkers on a cell-by-cell basis in immunohistochemistry images using convolutional neural networks" SPIE- Medical Imaging Symposium, San Diego, US. Vol. 9791, 2016.
25. Karimi, D., and R. Ward, "Sinogram smoothing and interpolation via alternating projections onto the slope and curvature constraints", SPIE Medical Imaging Symposium, San Diego CA, vol. 9784, 2016.
26. Karimi, D., and R. Ward, "A novel structured dictionary for fast processing of 3D medical images, with application to computed tomography restoration and denoising", SPIE Medical Imaging Symposium, San Diego CA, vol. 9784, 2016.
27. Palangi, H., R. Ward, and L. Deng, "Exploiting Correlations Among Channels in Distributed Compressive Sensing with Convolutional Deep Stacking Networks", in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Shanghai, pp. 2692-2696, 2016
28. Bashashati, H., R. K. Ward and A. Bashashati, "Hidden Markov Support Vector Machines for Self-Paced Brain Computer Interfaces", International Conference on Machine Learning Applications (IEEE ICMLA), Miami, FL, pp. 382-385, 2015.
29. Valizadeh, S., P. Nasiopoulos, and R. Ward, "Optimal Lagrange Multiplier in Perceptually-Friendly High Efficiency Video Coding for Mobile Applications", The International Conference on Computing, Networking and Communications (ICNC16), CNC Workshop, Hawaii, USA, Feb. 2016.
30. Valizadeh, S., P. Nasiopoulos, and R. Ward, "Perceptual Distortion Measurement in the Coding Unit Mode Selection for 3D-HEVC", IEEE International Conference on Consumer Electronics ICCE 2016, Las Vegas, NV, USA, January 8-11, 2016.
31. Rouf, M., and R. Ward, "Retrieving information lost by image denoising", IEEE Global Conference on Signal and Information Processing (GlobalSIP), Florida, USA, December 2015 (Accepted)
32. Valizadeh, S., P. Nasiopoulos, and R. Ward, "Perceptually-Friendly Rate Distortion Optimization in High Efficiency Video Coding", EUSIPCO 2015, Nice, France, August 31- September 4 2015, (ACCEPTED for publication).
33. Majumdar, A. and Ward, R. "Learning Space-Time Dictionaries for Blind Compressed Sensing Dynamic MRI Reconstruction", 2015 IEEE International Conference on Image Processing, Quebec City, QB, September 2015.
34. Karimi, D. and Ward, R. "Angular upsampling of projection measurements in 3D computed tomography using a sparsity prior", 2015 IEEE International Conference on Image Processing, Quebec City, QB, September 2015.
35. Hashemian, M., H. Moradi, M. S. Mirian, M. Tehrani-Doost, and R. K. Ward. "Title Is the Mood really in the Eye of the Beholder?", 17th International Conference on Human-Computer Interaction, Los Angeles, California, August 2015.
36. Karimi, D. and Ward, R. "A fast weighted stochastic gradient descent algorithm for image reconstruction in 3D computed tomography", IUPESM 2015 World Congress on Medical Physics & Biomedical Engineering, Toronto, ON, June 7 – 12, 2015.
37. Sheikhzadeh, F., MacAulay, C., Guillaud, M., Lane, P., Carraro, A., Ward, R., and McKenna, J., "Fluorescence confocal microscopy for detection of cervical preneoplastic lesions", 2015 SPIE Medical Imaging Symposium, 21 - 26 February 2015, Orlando, Florida United States.
38. Majumdar, A., Shukla, A. and Ward, R. "Combining Sparsity with Rank-Deficiency for Energy Efficient EEG Sensing and Transmission over Wireless Body Area Network", IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), Brisbane, Australia, April 2015 (in press).
39. Majumdar, A., and Ward, R. "Learning the Sparsity Basis in Low-rank plus Sparse Model for Dynamic MRI Reconstruction", IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), Brisbane, Australia, April 2015 (in press).
40. Majumdar, A., and Ward, R. "Elastic Net Formulation for MRI Reconstruction", Proceedings of International Society for Magnetic Resonance in Medicine, Abstracts pp. 1551, 22(2014).
41. Majumdar, A., and Ward, R. "Improved Blind Compressed Sensing for Dynamic MRI Reconstruction", Abstracts pp. 4381, 22(2014).
42. Ward, R. and Majumdar, A. "Exploiting Sparsity and Rank-deficiency in Dynamic CT Reconstruction", IEEE Medcom 2014, 7th to 8th November, Greater Nodia, India.
43. Majumdar, A., and Ward, A., "Fast SVD Free Low-rank Matrix Recovery: Application to Dynamic MRI Reconstruction", IEEE Medcom 2014, pp. 24 – 29, 7th to 8th November, Greater Nodia, India.

44. Palangi, H., Deng, L., and Ward, R. K. "Recurrent deep-stacking networks for sequence classification", 2nd IEEE China Summit & International Conference on Signal and Information Processing, pp. 510 – 514, Xi'an, China 9-13 July 2014.
45. Majumdar, A., and Ward, R. K., "Improved MRI Reconstruction via Non-Convex Elastic Net", IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), pp. 6924–6928. Florence, Italy, May 2014.
46. Guha, T., and Ward, R. K., "Learning Sparse Models for Image Quality Assessment", IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), pp. 151- 154, Florence, Italy, May 2014.
47. Palangi, H., Deng, L., and Ward, R. K. "Learning Input and Recurrent Weight Matrices in Echo State Networks", Deep Learning Workshop in Conference on Neural Information Processing Systems (NIPS), Lake Tahoe, Nevada, USA, December 2013.
48. Chiang, J., and Ward, R. K., "Data Reduction for Wireless Seizure Detection Systems", 6th International IEEE EMBS Conference on Neural Engineering, pp. 48 – 52, Nov 2013.
49. Majumdar, A., and Ward, R. K., "Dynamic CT Reconstruction by Smoothed Rank Minimization", MICCAI, 16(Pt 3):131-8, Nagoya, Japan, Sep 2013.
50. Majumdar, A., Ward, R. K., and Aboulnasr, T., "Generalized Non-linear Sparse Classifier", European Signal Processing Conference (EUSIPCO), Sep 2013.
51. Majumdar, A., Ward, R. K., and Aboulnasr, T., "FOCUSS Algorithm for Rank-aware Row Sparse MMV Recovery", European Signal Processing Conference (EUSIPCO), Sep 2013.
52. Agarwal, H. K., Majumdar, A., and Ward, R. K., "A Reconstruction Algorithm for Multi-Spectral Image Demosaicing", IASTED Signal and Image Processing, Banff, Canada, Jul 2013.
53. Harsha, G. N., Majumdar, A., and Ward, R. K., "Disparity Map Computation for Stereo Images Using Compressive Sampling", IASTED Signal and Image Processing, Banff, Canada, Jul 2013.
54. Shukla, A., Majumdar, A., and Ward, R. K., "Real-Time Dynamic MRI Reconstruction: Accelerating Compressed Sensing on Graphical Processor Unit", IASTED Signal and Image Processing, Banff, Canada, Jul 2013.
55. Fauvel, S., Agarwal, A., and Ward, R. K., "Compressed sensing and energy-aware independent component analysis for compression of EEG signals", IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), pp. 973-977, Vancouver, BC, May 2013.
56. Palangi, H., Ward, R. K., and Deng, L., "Using deep stacking network to improve structured compressed sensing with multiple measurement vectors", IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), pp. 3337 – 3341, Vancouver, BC, May 2013.
57. Majumdar, A., and Ward, R. K., "Exploiting Sparsity and Rank-deficiency in Dynamic MRI Reconstruction", IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), pp. 998-1002, Vancouver, BC, May 2013.
58. Guha, T., Ward, R. K., and Aboulnasr, T., "Image similarity measurement from sparse reconstruction errors", IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), pp. 1937 -1941, Vancouver, BC, May 2013
59. Majumdar, A., Ward, R. K., "Exploiting Rank Deficiency for MR Image Reconstruction from Multiple Partial K-space Scans", Canadian Conference on Electrical and Computer Engineering (CCECE), 2013.
60. Majumdar, A., Ward, R. K., "Non-linear Sparse and Group Sparse Classifier", Canadian Conference on Electrical and Computer Engineering (CCECE), 2013.
61. Vahedi, E., Ward, R. K. and Blake, I. F., "Analytical Modeling of RFID Generation-2 Protocol Using Absorbing Markov Chain Theorem", IEEE Globecom 2012, pp. 385-390, Anaheim, CA, Dec 2012.
62. Majumdar, A., Ward, R. K., and Aboulnasr, T., "A FOCUSS Based Method for Low Rank Matrix Recovery", IEEE International Conference on Image Processing (ICIP), pp. 1713-1716. Florida, Sep 2012.
63. Nezhadarya, E., Ward, R. K., and Wang, J. Z., "Wavelet-Based Gradient Transform and Its Applications" IEEE International Workshop on Multimedia Signal Processing (MMSP), pp. 107-111, Banff, Canada, Sep 2012.
64. Malekesmaeili, M., and Ward, R. K., "A Novel Local Audio Fingerprinting Algorithm" IEEE International Workshop on Multimedia Signal Processing (MMSP), pp. 136-140, Banff, Canada, Sep 2012.

65. Li, X., Wang, F., Chen, X., and Ward, R. K., "A P300-Based BCI Classification Algorithm Using Median Filtering and Bayesian Feature Extraction", IEEE International Workshop on Multimedia Signal Processing (MMSP), pp. 305-308, Banff, Canada, Sep 2012.
66. Yong, X., Fatourechi, M., Ward, R., and Birch, G., "Adaptive classification in a self-paced hybrid brain-computer interface system," IEEE EMBC, pp. 3274-3279, San Diego, CA, Aug 2012.
67. Mai, Z., Doutre, C., Nasiopoulos, P. and Ward, R. K., "Evaluation of Preferred Brightness and Detail Levels in 3D and 2D Images Based on HDR Tone Mapping", Seventh International Multi-Conference on Computing in the Global Information Technology, pp.195-199, Venice, Italy, June 2012.
68. Khojasteh, M., Ward, R. K., and MacAulay, C., "Quantification of membrane IHC stains through multi-spectral imaging", Int. Sym. Biomedical Imaging (ISBI), pp. 752-755, Spain, May 2012.
69. Gu, J. and Ward, R. K., "Novel Feature Generation and Classification for a 2-state Self-paced Brain Computer Interface System", Canadian Conference on Electrical and Computer Engineering (CCECE), pp. 1-4, Montreal, Apr 2012.
70. Mai, Z., Nasiopoulos, P. and Ward, R. K., "Evaluation of preferred brightness and detail levels in 3D and 2D images based on HDR tone-Mapping", IEEE Int. Conf. on Acoustics, Speech, and Signal Processing 2012 (ICASSP), pp. 1505-1508, Kyoto, Japan, Mar 2012.
71. Majumdar, A. and Ward, R. K., "Synthesis and Analysis Prior Algorithms for Joint-Sparse Recovery", IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), pp. 3421-3424, Kyoto, Japan, Mar 2012.
72. Majumdar, A. and Ward, R. K., "Face Recognition from Video: An MMV Recovery Approach", IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), pp. 2221-2224, Kyoto, Japan, Mar 2012.
73. Guha, T. and Ward, R. K., "A sparse reconstruction based algorithm for image and video classification", IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), pp. 3601-3604, Kyoto, Japan, Mar 2012.
74. Majumdar, A., Ward, R. K. and Aboulnasr, T., "k-t CaLM: Calibration-Less Multi-Coil Dynamic MRI Reconstruction", International Symposium on Magnetic Resonance in Medicine, Mar 2012.
75. Malekesmaeili, M., Ward, R. K., and Fatourechi, M., "Fast matching for video/audio fingerprinting algorithms," WIFS '11 Proceedings of the 2011 IEEE International Workshop on Information Forensics and Security, pp. 1-6, 2011.
76. Majumdar, A., and Ward, R. K., "Compressed Sensing Based MR Image Reconstruction from Multiple Partial K-Space Scans", IEEE SiPS, pp. 340 – 343, Beirut, Lebanon, Oct 2011.
77. Pourazad, M.T., Mai, Z., Nasiopoulos, P., Plataniotis, K., Ward, R.K., "Effect of brightness on the quality of visual 3D perception", IEEE Inter. Conf. Image Processing (ICIP), pp. 989-992, Sep 2011.
78. Yong, X., Fatourechi, M., Ward, R. K. and Birch, G., "Automatic artefact detection in a self-paced brain-computer interface system", IEEE PACRIM 2011, pp. 403-408, Victoria, Canada, Aug 2011.
79. Mai, Z., Doutre, C., Nasiopoulos, P., and Ward, R. K., "Subjective Evaluation Of Tone-mapping Methods on 3D Images", (Special Session) Human 3D Perception and 3D Video Assessments, Int. Conf. on Digital Signal Processing (DSP), pp. 1-6, July 2011.
80. Singh, T., Kharma, N. N., Daoud, M., Ward, R. K., " Genetic programming based image segmentation with applications to biomedical object detection" ACM 11th Annual conference on Genetic and evolutionary computation(GECCO), pp. 1123-1130, 2009.
81. Nezhadarya, E., Wang J. Z., and Ward, R. K., "A New Data Hiding Method Using Angle Quantization Index Modulation In Gradient Domain", IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), Prague, Czech, pp. 2440-2443, May 2011.
82. Vahedi, E., Ward, R. K. and Blake, I. F., "Security analysis and complexity comparison of some recent lightweight RFID protocols", 4th International Conference on Computational Intelligence in Security for Information Systems (CISIS 2011), LNCS 6694, pp. 92-99, Springer-Heidelberg, Spain 2011.
83. Guha, T. and Ward, R. , "Action Recognition by Learning Class-specific Overcomplete Dictionaries", IEEE Int. Conf. on Automatic Face and Gesture Recognition (FG), pp.143 – 148, Santa Barbara, CA, March 2011.
84. Majumdar A., and R. K. Ward, "Under-determined Non-Cartesian MR Reconstruction", MICCAI, pp. 513-520, Beijing, China, Sep 2010.

85. Sun, N., Mansour, H., and Ward, R. K., "HDR Image Construction From Multi-Exposed Stereo LDR Images", IEEE Inter Conf. on Image Processing 2010 (ICIP), Hong Kong, pp. 2973-2976, Sep 2010.
86. Mai, Z., Mansour, H., Nasiopoulos, P., and Ward, R. K., "Visually-Favorable Tone-Mapping with High compression Performance," IEEE Inter Conf. on Image Processing 2010 (ICIP), Hong Kong, pp. 1285-1288, Sep 2010.
87. Nezhadarya, E., Wang Z., J., and Ward, R., K., "Watermark Survival Chance (WSC) Concept For Improving Watermark Robustness Against JPEG Compression" , " IEEE Inter Conf. on Image Processing 2010 (ICIP), Hong Kong, pp. 3697 - 3700, Sep 2010.
88. Majumdar, A., and Ward, R. K., "A Compressive Color Imaging With Group-Sparsity On Analysis Prrior" Inter. Conf. on Image Processing (ICIP), pp. 1337-1340, Hong Kong, Sep 2010.
89. Faradji, F., Ward, R. K., and Birch, G. E., "A Simple Approach to Find the Best Wavelet Basis in Classification Problems," IEEE Inter. Conf. Pattern Recognition (ICPR), pp. 641-644, Turkey, August 2010.
90. Yong X., Ward, R. K. and Birch, G. E, "A self-paced brain computer interface (BCI) based *point-and-click* system", BCI Meeting, Asilomar, Calif, June 2010.
91. Mai, Z., Mansour, H., Mantiuk, R., Nasiopoulos, P., Ward, R. K., and Heidrich, W., "On-the-Fly Tone-Mapping for Backward-Compatible High Dynamic Range Image/Video Compression," IEEE International Symposium on Circuits and Systems 2010 (ISCAS), Paris, France, pp. 1831-1834, May 2010.
92. E. Vahedi, V. Shah-Mansouri, V. W.S. Wong and I. F. Blake, "A probabilistic approach for detecting blocking attack in RFID systems," IEEE ICC'10, pp. 1-6 , Cape Town, South Africa, May 2010.
93. Doutre, C., Pourazad, M.T., Nasiopoulos P., and Ward, R. K., "Correcting Unsynchronized Zoom in 3D Video", IEEE International Symposium on Circuits and Systems (ISCAS), pp. 3244 – 3247, Paris, France, May 2010.
94. Tang Q., Nasiopoulos, P. , and Ward, R. K., "Fast Block-Size Partitioning Using Empirical Rate-Distortion Models for MPEG-2 to H.264/AVC Transcoding", IEEE Int. Sym. Circuits Systems (ISCAS), pp. 2860-2863, Paris, France, May 2010.
95. Majumdar, A. and Ward, R. K., "A Matrix Completion Approach To Reduce Energy Consumption In Wireless Sensor Networks", Data Compression Conference (DCC), pp. 542-545, Snowbird, Utah, March 2010.
96. Nezhadarya, E., and Ward, R. K., "A Robust Morphological Gradient Estimator and Edge Detector for Color Images", IEEE Inter. Conf. Acoustics, Speech, and Signal Processing (ICASSP), pp. 1062 – 1065, Dallas, TX, March 2010.
97. Majumdar, A. and Ward, R. K., "Non-convex Group Sparsity: Application to Color Imaging", IEEE Inter. Conf. Acoustics, Speech, and Signal Processing (ICASSP), pp. 469-472, Dallas, TX, March 2010.
98. Guha, T., and Ward, R. K., "Differential Radon Transform for Gait Recognition", IEEE Inter. Conf. Acoustics, Speech, and Signal Processing (ICASSP), pp. 834-837, Dallas, TX, March 2010.
99. Mansour, H., Saab, R., Nasiopoulos, P., and Ward, R. K., "Color Image Desaturation Using Sparse Reconstruction", IEEE Inter. Conf. Acoustics, Speech, and Signal Processing (ICASSP), pp. 778-781, Dallas, TX, March 2010.
100. Pourazad, M.T., Nasiopoulos P., and Ward, R. K., "Conversion of H.264-encoded 2D video to 3D format", IEEE Conference on Consumer Electronics (ICCE), pp. 63 – 64, Las Vegas, US, January 2010.
101. Malekesmaeili, M., and Ward, R. K., "Robust Video Hashing Based on Temporally Informative Representative Images", 28th Inter. Conf. Consumer Electronics (ICCE), pp. 179–180, Las Vegas, USA, January 2010.
102. Malekesmaeili, M., Fatourehchi, M., and Ward, R. K., "Video Copy Detection Using Temporally Informative Representative Images", IEEE Int. Conf. on Machine Learning and Applications (ICMLA), pp. 69–74, Miami, Florida, December 2009.
103. Fatourehchi, M., Lv, X., Wang, Z. J., and Ward, R. K., "Towards Automated Image Hashing based on the Fast Johnson-Lindenstrauss Transform (FJLT)", 1st IEEE Int. Workshop Information Forensics and Security (WIFS), London, UK, pp.121-125, December 2009.
104. Tang, Q., Nasiopoulos, P. and Ward, R. K., "Efficient Motion Vector Re-Estimation for MPEG-2 to H.264 Transcoding with Arbitrary Down-Sizing Ratios", IEEE Inter. Conf. Image Processing (ICIP), pp. 3689-3692, Cairo, Egypt, November 2009.

105. Pourazad, M.T., Nasiopoulos, P., and Ward, R. K., "An efficient low random-access delay panorama-based multiview video coding scheme," IEEE Inter. Conf. Image Processing (ICIP), pp. 2945–2948, Cairo, Egypt, November 2009.
106. Nezhadarya, E., and Ward, R. K., "Image Quality Monitoring Using Spread Spectrum Watermarking", IEEE Inter. Conf. Image Processing (ICIP), pp. 2233 – 2236, Cairo, Egypt, November 2009.
107. Nezhadarya, E., and Ward, R. K., "An Efficient Method for Robust Gradient Estimation of RGB Color Images", IEEE Inter. Conf. Image Processing (ICIP), pp. 701-704, Cairo, Egypt, November 2009.
108. Majzoub, S., Saleh, R., Wilton, S.J., and Ward, R.K., "Simultaneous PVT-Tolerant Voltage-Island Formation and Core Placement for Thousand-Core Platforms", Inter. Sympo. System-on-Chip Conf. (SoC), pp. 1-4, Tampere, Finland, October 2009.
109. Majzoub, S., Saleh, R., Wilton, S.J., and Ward, R.K., "Removal-Cost Method: An Efficient Voltage Selection Algorithm for Multi-Core Platforms under PVT", The 22nd IEEE Inter. System-on-Chip Conf.(SoC), pp. 357-360, Belfast, Northern Ireland, UK, September 2009.
110. Faradji, F., Ward, R. K., and Birch, G.E., "A self-paced BCI using stationary wavelet packets", IEEE Inter. Conf. of the Engineering in Medicine and Biology Society (EMBC), Minneapolis, Minnesota, USA, pp.962-965, September 2009.
111. Majumdar, A., and Ward, R. K., "Fast Group Sparse Classification", IEEE Pacific Rim Conf. on Communications, Computers and Signal Processing (PACRIM), Victoria, Canada, pp.11-16, August 2009.
112. Pourazad, M. T., Nasiopoulos, P., and Ward, R. K., "A new prediction structure for multiview video coding," 16th IEEE Inter. Conf. on Digital Signal Processing, Greece, pp.1-5, July 2009.
113. Dhot, T.S., Kharma, N., Daoud, M., and Ward, R. K., "Genetic Programming based Image Segmentation with Applications to Biomedical Object Detection", Genetic and Evolutionary Computation Conf. (GECCO), pp.1123-1130, Montreal, Canada, July 2009.
114. Majumdar, A., and Ward, R. K., "Discriminative Sift Features for Face Recognition", Canadian Conf. Elec. Comp. Eng. (CCECE), pp.27-30, Newfoundland and Labrador, Canada, May 2009.
115. Coria, L., Nasiopoulos, P., and Ward, R. K., "A Region-Specific QIM-Based Watermarking Scheme for Digital Images," IEEE Inter. Symp. Broadband Multimedia Systems and Broadcasting (BMSB), 6 pages, Bilbao, Spain, May 2009.
116. Yong, X., Ward, R. K., and Birch, G. E., "Generalized Morphological Component Analysis for EEG Source Separation and Artifact Removal", The 4th Inter. IEEE EMBS Conf. Neural Engineering, pp.343-346, Antalya, Turkey, April 2009.
117. Chuang, A. Y., Ward, R. K., and Birch, G. E., "Rapid Detection of Voluntary Movements in a Self-Paced Brain-Computer Interface via Compressive Sensing", The 4th Inter. IEEE EMBS Conf. Neural Engineering, pp.335-338, Antalya, Turkey, April 2009.
118. Faradji, F., Ward, R. K., and Birch, G. E., "Design of a Mental Task-Based Brain-Computer Interface with a Zero False Activation Rate Using Very Few EEG Electrode Channels", The 4th Inter. IEEE EMBS Conf. Neural Engineering, pp.403-406, Antalya, Turkey, April 2009.
119. Faradji, F., Ward, R. K., and Birch, G. E., "A Brain-Computer Interface Based on Mental Tasks with a Zero False Activation Rate", The 4th Inter. IEEE EMBS Conf. Neural Engineering, pp.355-358, Antalya, Turkey, April 2009.
120. Faradji, F., Ward, R. K., and Birch, G. E., "A Custom Designed Mental Task Based Brain Computer Interface", The 34th IEEE Inter. Conf. . Acoustics, Speech, and Signal Processing (ICASSP), pp.529-532, Taipei, Taiwan, April 2009.
121. Du, S., and Ward, R.K., "Component-Wise Pose Normalization for Pose Invariant Face Recognition", The 34th IEEE Inter. Conf. . Acoustics, Speech, and Signal Processing (ICASSP), pp.873-876, Taipei, Taiwan, April 2009.
122. Yong, X., Ward, R. K., and Birch, G. E., "Artifact removal in EEG using morphological component analysis", The 34th IEEE Inter. Conf. . Acoustics, Speech, and Signal Processing (ICASSP), pp.861-864, Taipei, Taiwan, April 2009.
123. Majumdar, A., and Ward, R. K., "Classification via Group Sparsity Promoting Regularization", The 34th IEEE Inter. Conf. . Acoustics, Speech, and Signal Processing (ICASSP), pp. 873-876, Taipei, Taiwan, April 2009.

124. Majzoub, S., Saleh, R., and Ward, R.K., "PVT Variation Impact on Voltage Island Formation in MPSoC Design", Inter. Symp. Quality Electronic Design (ISQED), pp.814-819, San Jose, CA, USA, March 2009.
125. Pourazad, M.T., Nasiopoulos, P., and Ward, R. K., "Converting H.264-derived Motion Information into Depth Map", The 15th Inter. MultiMedia Modeling Conf. (MMM), Lecture notes in Computer Science 5371 Springer 2009, pp. 108-118, Sophia, Antipolis, France, January 2009.
126. Pourazad, M.T., Nasiopoulos, P., and Ward, R. K., "An H.264-based Scheme for 2D to 3D Video Conversion", IEEE Inter. Conf. on Consumer Electronics (ICCE), pp. 742-748, Las Vegas, USA, January 2009.
127. Fatourechi, M., Ward, R. K., Mason, S. G., Huggins, J., Schlögl, A., and Birch, G. E., "Comparison of Evaluation Metrics in Classification Applications with Imbalanced Datasets", IEEE Inter. Conf. on Machine Learning and Applications (ICMLA), pp.777-782, San Diego, California, December 2008.
128. Shadaydeh, M., Xiao, Y., and Ward, R. K., "Extraction of Fetal ECG Using Adaptive Volterra Filters", The 16th European Signal Processing Conference (EUSIPCO), Lausanne, Switzerland.
129. Majumdar, A., and Ward, R. K., "Single Image Per Person Face Recognition With Images Synthesized by Non-linear Approximation", IEEE Inter. Conf. Image Processing (ICIP), pp.2740-2743, San Diego, California, October 2008,.
130. Yong, X., Ward, R. K., and Birch, G. E., "Robust Common Spatial Patterns for EEG Signal Preprocessing", IEEE Inter. Conf. of the Engineering in Medicine and Biology Society (EMBC), pp.2087-2090, Vancouver, Canada, August 2008.
131. Xiong, C. Z., Ward, R. K., and Xu, J. Y., "On the Security of Singular Value Based Watermarking", IEEE Inter. Conf. Image Processing (ICIP), pp.437-440, San Diego, California, October 2008.
132. Fatourechi, M., Ward, R. K., and Birch, G. E., "Evaluating the Performance of a Self-Paced BCI with a New Movement and Using a More Engaging Environment", IEEE 2008 Inter. Conf. of the Engineering in Medicine and Biology Society (EMBC'08), pp.650-653, Vancouver, Canada, August 2008.
133. Faradji, F., Ward, R. K., and Birch, G. E., "Self-Paced BCI Using Multiple SWT-Based Classifiers", IEEE 2008 Inter. Conf. of the Engineering in Medicine and Biology Society (EMBC), pp.2095-2098, Vancouver, Canada, August 2008.
134. Majumdar, A., and Ward, R. K., "Fingerprint Recognition with Curvelet Features and Fuzzy KNN Classifier", IATED Int. Conf. on Signal and Image Processing, pp. 243-248, Kailua-Kona, Hawaii, August 2008,.
135. Xiao, Y., Shadaydeh, M., and Ward, R. K., "New narrowband active noise control systems with significantly less computational requirements", IEEE Inter. Symp. Circuits and Systems (ISCAS 2008), pp.41-44, Seattle, USA, May 2008.
136. ElShafie, D., Kharma, N., and Ward, R. K., "Parameter Optimization of an Embedded Watermark Using a Genetic Algorithm", IEEE Inter. Symp. Communications, Control and Signal Processing (ISCCSP), pp.1263-1266, St. Julians, Malta, March 2008.
137. Mai, Z., Nasiopoulos, P., and Ward, R. K., "DVB-MHP iTV to Blu-ray System Information Transcoding", IEEE Inter. Symp. Communications, Control and Signal Processing (ISCCSP), pp.1460-1463, St. Julians, Malta, March 2008,.
138. Yong, X., Ward, R. K., and Birch, G. E., "Facial EMG Contamination in EEG Signals: Characteristics and Effects of Spatial Filtering", IEEE Inter. Symp. Communications, Control and Signal Processing (ISCCSP 2008), pp.729-734, St. Julians, Malta, March 2008.
139. Majumdar, A., and Ward, R. K., "Pseudo-Fisher Face Method for Single Image per Person Face Recognition", IEEE Inter. Conf. on Acoustics, Speech and Signal Processing (ICASSP'08), pp.989-992, Las Vegas, USA, April 2008,.
140. Tang, Q., Mansour, H., Nasiopoulos, P., Ward, R.K., "Bit-Rate Estimation for Bit-Rate Reduction H.264/AVC Video Transcoding in Wireless Networks", 2008 Inter. Symp. Wireless Pervasive Computing, pp.464-467, Santorini, Greece, April 2008,.
141. Yong, X., Ward, R. K., and Birch, G. E., "Sparse Spatial Filter Optimization for EEG Channel Reduction in Brain-Computer Interface", IEEE Inter. Conf. on Acoustics, Speech and Signal Processing (ICASSP), pp. 417-420, Las Vegas, USA, April 2008.

142. Tang, Q., Nasiopoulos, P., and Ward, R.K., "Fast Block Size Prediction for MPEG-2 to H.264/AVC Transcoding", IEEE Inter. Conf. on Acoustics, Speech and Signal Processing (ICASSP), pp.1029-1032, Las Vegas, USA, April 2008,.
143. Coria, L. E., Nasiopoulos, P., Ward, R. K., and Pickering, M., "An Access Control Video Watermarking Method that is Robust to Geometric Distortions," IEEE Inter. Conf. on Digital Information Management (ICDIM), pp.460-465, Lyon, France, October, 2007,.
144. Ersahin, K., Cumming, I.G., and Ward, R. K., "Segmentation of Polarimetric SAR Data using Spectral Graph Partitioning: Utilizing Multiple Cues", Advanced SAR Workshop (ASAR), Vancouver, BC, Canada, September 2007.
145. Abdel-Hady, M., and Ward R. K., "A Framework for Evaluating Video Transmission Over Wireless Ad Hoc Networks", IEEE Pacific Rim Conf. on Communications, Computers and Signal Processing (PACRIM2007), pp.78-81, Victoria, Canada, August 2007,.
146. Ersahin, K., Cumming, I.G., and Ward, R. K., "Segmentation of Polarimetric SAR Data using Contour Information via Spectral Graph Partitioning", IEEE Inter. Geoscience and Remote Sensing Symposium (IGARSS), pp.2240-2243, Barcelona, Spain, July 2007,.
147. Du, S., and Ward, R. K., "A Robust Approach for Eye Localization Under Variable Illuminations", IEEE Inter. Conf. on Image Processing (ICIP), pp. 377-380, San Antonio, Texas, USA, 16-19 September 2007.
148. Bashashati, A., Ward, R. K., and Birch, G. E., "Recent Advances in the Design of a 3-state Self-paced (Asynchronous) Brain Computer Interface", IEEE-EMBS Neural Eng. Conference, pp.188-191, Hawaii, USA, May 2007.
149. Mai, Z., Nasiopoulos, P., and Ward, R. K., "Efficient DVB-MHP to Blu-ray System Information Transcoding", IEEE Canadian Conf. on Electrical and Computer Engineering, pp.20-23, Vancouver, Canada, Apr 22-26 2007.
150. Bashashati, A., Ward, R. K., and Birch, G. E., "Comparison of Using Monopolar and Bipolar Electroencephalogram (EEG) Electrodes for Detection of Right and Left Hand Movements in a Self-paced Brain Computer Interface (BCI)", IEEE Canadian Conf. on Electrical and Computer Engineering, pp.725-728, Vancouver, Canada, April 2007.
151. Fatourechi, M., Birch, G.E., and Ward, R.K., "Applying a Hybrid Genetic Algorithm in the Design of a Self-paced Brain Interface with a Low False Positive Rate," IEEE Inter. Conf. on Acoustics, Speech, and Signal Proc. (ICASSP) (Special session on EEG Signal Processing and Applications), pp.IV-1157- IV-1160, Hawaii, USA. April 2007.
152. Tang, Q., Nasiopoulos, P., and Ward, R.K., "Efficient Chrominance Compensation for MPEG2 to H.264 Transcoding," IEEE Inter. Conf. on Acoustics, Speech, and Signal Proc. (ICASSP), pp. I.1129 – I.1132, Hawaii, USA. April 2007.
153. Coria, L., Nasiopoulos, P., and Ward, R.K., "A Robust Content-dependent Algorithm for Video Watermarking", Sixth ACM Workshop on Digital Rights Management (DRM), pp.97-101, Alexandria VA, USA, October 2006.
154. Pourazad, M.T., Nasiopoulos, P., Ward, R.K., "An H.264-Based Video Encoding Scheme for 3D TV," 14th European Signal Processing Conf., Florence, Italy, September, 2006.
155. Su, W. and Ward, R.K., "An Edge-based Image Interpolation Approach Using Symmetric Biorthogonal Wavelet Transform," IEEE Inter. Workshop on Multimedia Signal Processing (MMSP), pp. 355–359, Victoria, Canada, October, 2006,.
156. Wang, Q. and Ward, R.K., "Fast Image/Video Contrast Enhancement Based on WTHT", IEEE Inter. Workshop on Multimedia Signal Processing (MMSP), pp.338-343, Victoria, Canada, October 3-6, 2006.
157. Tang, Q., Nasiopoulos, P., and Ward, R. K., "An Efficient MPEG2 to H.264 Half-pixel Motion Compensation Transcoding," Inter. Conf. on Image Processing (ICIP), pp.865-868, Atlanta, USA, October 2006.
158. Fatourechi, M., Ward, R.K., and Birch, G.E., "Recent Studies in the Design of a Self-paced Brain Interface with Low False Positive Rate," IEEE 2006 Inter. Conf. of the Engineering in Medicine and Biology Society (EMBC'06), pp. 2944-2949, New York, USA, August 30-September 3, 2006.

159. Tang, Q., Nasiopoulos, P., and Ward, R.K., "An Efficient Re-quantization Error Compensation for MPEG2 to H.264 Transcoding," IEEE Symp. on Signal Processing and Information Technology (ISSPIT), pp. 530-535, Vancouver, Canada, August 2006.
160. Fatourechi, M., Mason, S., Birch, G. E., and Ward, R.K., "Is Information Transfer Rate a Suitable Performance Measure for Self-paced Brain Interface Systems?," IEEE Symp. on Signal Processing and Information Technology (ISSPIT), pp. 212-216, Vancouver, Canada, August 2006.
161. Zou, J., Zheng, W., and Ward, R. K., "A Novel Digital Watermarking Method for Commercial Bills Based on a Class of Orthogonal Function Systems," IEEE Symp. on Signal Processing and Information Technology (ISSPIT), pp. 40-43, Vancouver, Canada, August 2006.
162. Ghazel, M., Traboulsee, A., and Ward, R.K., "Semi-Automated Segmentation of Multiple Sclerosis Lesions in Brain MRI using Texture Analysis," IEEE Symp. on Signal Processing and Information Technology (ISSPIT), pp. 6-10, Vancouver, Canada, August 2006.
163. Ghazel, W., Ward, R. and Traboulsee, A. "Semi-Automated Segmentation of Multiple Sclerosis Lesions in Brain Magnetic Resonance Imaging (MRI) using Texture Analysis", The 6th IEEE International Symposium on Signal Processing and Information Technology (ISSPIT'06), Vancouver, British Columbia, Canada, August 27-30, 2006. ISSPIT'06 proceedings: pp. 415-419 2006.
164. Ghazel, W., Ward, R. and Traboulsee, A. "Optimal Filter Design for Multiple Sclerosis Lesion Segmentation from Regions of Interest in Brain Magnetic Resonance Imaging (MRI)" The 6th IEEE International Symposium on Signal Processing and Information Technology (ISSPIT'06), Vancouver, British Columbia, Canada, August 27-30, 2006. ISSPIT'06 proceedings: pp. 410-414 2006.
165. Bashashati, A., Ward, R.K., and Birch, G.E., "Detection of Hand Extension Movements in the Context of a 3-state Asynchronous Brain Interface," IEEE Inter. Conf. on Acoustics, Speech, and Signal Proc.(ICASSP), pp. V-897 – V-900, Toulouse, France, May 2006.
166. Deng, H., Ward, R.K., Beddoes, M., and O'Shaughnessy, D., "Obtaining Lip and Glottal Reflection Coefficients from Vowel Sounds," IEEE Conf. on Acoustics, Speech and Signal Processing (ICASSP), pp. I-373 - I-376, Toulouse, France, May 2006.
167. Du, S. and Ward, R.K., "Adaptive Region-Based Image Enhancement Method for Face Recognition under Varying Illumination Conditions," IEEE Conf. on Acoustics, Speech and Signal Processing (ICASSP), pp. II-353 – II- 356, Toulouse, France, May 2006,.
168. Fatourechi, M., Birch, G.E., and Ward, R.K., "Using a Multiple Classifier System for Improving the Performance of Asynchronous Brain Interface Systems," IEEE Conf. on Acoustics, Speech and Signal Processing (ICASSP), V-905, V- 908, Toulouse, France, May 2006.
169. Khojasteh, M., Coe, B.P., Shah, S., Ward, R.K., Lam, W.L., and MacAulay, C., "A Novel Algorithm for the Analysis of Array CGH Data," IEEE Conf. on Acoustics, Speech and Signal Processing (ICASSP), pp. II-1020 – II-1023, Toulouse, France, May 2006.
170. Ugur, K., Nasiopoulos, P., and Ward R.K., "An Efficient H.264 Based Fine-Granular-Scalable Video Coding System," IEEE 2005 Workshop on Signal Processing Systems, Athens, Greece, Nov. 2-4, 2005.
171. Khojasteh, M., Lam, W. L., Ward, R. K., and MacAulay, C., "A stepwise framework for the normalization of array CGH data", BMC Bioinformatics, 6:274, Nov 2005.
172. Ghazel, M., Freeman, G.H., Vrscay, E.R., and Ward, R.K., "Wavelet Image Denoising using Localized Thresholding Operators," in "Image Analysis and Recognition," Lecture Notes in Computer Science, Vol. 3656, Proceedings ICIAR, M. Kamel, A. Campilho, Eds. (Springer Verlag, 2005).
173. Jiancheng, Z., Yanhong, S., and Ward, R.K., "A Novel Digital Image Encryption Method Based on DES," IACIS Pacific Conference, Taipei, Taiwan, May 19-21, 2005.
174. Jiancheng, Z., ChangZhen, X., Jianhong, Z., and Ward, R.K., "A New Image Encryption Algorithm Based on Chaotic Map," IACIS Pacific 2005 Conference, Taipei, Taiwan, May 19-21, 2005.
175. Deng, H., Ward, R.K., and Beddoes, M., "Glottal Waves via Inverse Filtering of Vowel Sounds," Inter. Conf. of the IEEE Engineering in Medicine and Biology Society, pp. 7000-7003, Shanghai, Sep2005,.
176. Pourazad, M.T., Moussavi, Z., Farahmand, F., and Ward, R.K., "Heart Sounds Separation from Lung Sounds Using Independent Component Analysis," Inter. Conf. of the IEEE Engineering in Medicine and Biology Society, pp. 2736-2739, Shanghai, Sep 2005,.

177. Du, S., and Ward, R.K., "Wavelet-based Illumination Normalization for Face Recognition," IEEE Inter. Conf. on Image Proc., pp. II 954-II 957, Genoa, Italy, Sep 2005.
178. Mendoza, C., Nasiopoulos, P., and Ward, R.K., "A Robust Watermarking Scheme Based on Informed Coding and Informed Embedding," IEEE Inter. Conf. on Image Proc. 2005, pp. I 681-I 684, Genoa, Italy, Sep 2005.
179. Wang, Q., and Ward, R.K., "Contrast Enhancement for Enlarged Images Based on Edge Sharpening," IEEE Inter. Conf. on Image Proc., pp. II 762-II 765, Genoa, Italy, Sep 2005.
180. Ghazel, M., Freeman, G. H., Vrscay, E. R., and Ward, R. K., "Wavelet Image Denoising Using Localized Thresholding Operators", The International Conference on Image Analysis and Recognition (ICIAR'05), Toronto, Ontario, Canada, September 28 - 30, 2005. ICIAR'05 proceedings: pp. 149-158 2005.
181. Pourazad, M.T., Farahmand, F., Moussavi, Z. K. and Ward, R. K., "Heart sounds separation from lung sounds using independent component analysis", Int. Conf. IEEE Engineering in Medicine and Biology Society (EMBC 05), China, Aug 2005.
182. Ghazel, M., Vrscay, E.R., Freeman, G.H., Ward, R.K., and Abugharbieh, R., "Simultaneous Fractal Image Denoising and Interpolation," Pacific Rim 2005 Conf., pp. 558-561, Victoria, Canada, Aug. 24-26, 2005.
183. Ghazel, M., Freeman, G. H., Vrscay, E. R., Ward, R. K. "Joint Fractal-Wavelet Image Denoising and Interpolation," 2005 IEEE Pacific Rim Conference on Communications, Computers and Signal Processing (PACRIM'05), Victoria, British Columbia, Canada, August 24-26, 2005. PACRIM'05 proceedings: pp. 321-325, 2005.
184. Zou, J., Zhong, W., and Ward, R.K., "A Novel Digital Image Scrambling Method Based on DES," Proc. of the IASTED Inter. Conf. on Communication Systems and Applications, pp. 70-74, Banff, Canada, Jul. 19-21, 2005.
185. Zou, J., Xiong, C., and Ward, R.K., "The Application of Chaotic Maps in Image Encryption," IEEE NEWCAS 05, pp. 186-189, Quebec City, Canada, Jun, 2005.
186. Ghazel, M., Freeman, G. H., Vrscay, E. R., and Ward, R. K., "Simultaneous Fractal Image Denoising, Interpolation and Compression", The IEEE Canadian Conference on Electrical and Computer Engineering, Saskatoon, Saskatchewan, Canada, May 1-4, 2005. CCECE'05 proceedings: pp. 975-978 2005.
187. Deng, H., Ward, R.K., Beddoes, M., and Hodgson, M., "Effects of Glottal and Lip Boundary Conditions on Vocal-Tract Area-Function Estimates from Speech signals," Proc. of the Inter. Conf. on Acoustics, Speech, and Signal Proc., Vol. I, pp 901-93, Philadelphia, March 2005.
188. Bashashati, A., Ward, R.K., and Birch, G. "A New Design of the Asynchronous Brain Computer Interface Using the Knowledge of the Path of Features," Proc. of 2nd IEEE-EMBS Conf. on Neural Eng., pp 101-104, Arlington, VA, Mar. 16-19, 2005.
189. Du, S., and Ward, R.K., "Statistical Non-Uniform Sampling of Gabor Wavelet Coefficients for Face Recognition," Proc. of the Inter. Conf. on Acoustics, Speech, and Signal Proc., Vol. II, pp 73-76, Philadelphia, March 2005.
190. Fatourehchi, M., Bashashati, A., Ward, R.K., and Birch, G., "A Hybrid Genetic Algorithm Approach for Improving the Performance of the LF-ASD Brain Computer Interface," Proc. of the Inter. Conf. on Acoustics, Speech, and Signal Proc., pp 345-348, Philadelphia, March 2005.
191. Fu, B., Beddoes, M.P., Peck, C.C., Ward, R.K., Hannam, A.G., "Jaw Motion for EMG Signals - A New Bruxism Monitor," IASTED Inter. Conf., Biomedical Engineering, pp. 624-628, Innsbruck, Austria, Feb. 2005.
192. Ghazel, M., Vrscay, E.R., Freeman, G.H., Ward, R.K., and Abugharbieh, R., "Joint Fractal-Wavelet Image Denoising and Interpolation," Canadian Conf. on Electrical and Computer Engineering, Saskatoon, Canada, February 2005.
193. Fatourehchi, M., Bashashati, A., Birch, G. E., and Ward, R.K., "Improving the Performance of the LF-ASD Brain Computer Interface by Means of Genetic Algorithm", The IEEE Symposium on Signal Processing and Information Technology (ISSPIT), Rome, Italy, December 2004.
194. Bashashati, A., Mason, S.G., Ward, R.K., Birch, G.E., "An Automatic Method to Generate Ensemble Averages of Movement-Related Potentials for Individuals with Spinal Cord Injuries," Proc. of the 26th Inter. Conf. of the IEEE Eng. in Medicine and Biology Science, pp. 4529-4532, San Francisco, CA, Sep. 1-5, 2004.

195. Zou, J., Ward, R.K., and Qi, D., "A New Digital Image Scrambling Method Based on Fibonacci Numbers," Proc. of the IEEE Inter Symposium on Circuits and Systems 2004, Vol. III, pp. 965-968, Vancouver, May 23-26, 2004.
196. Avanaki, A., Hamidzadeh, B., Kossentini, F., and Ward, R.K., "Multi-Reference Object Pose Indexing and 3-D Modeling from Video Using Volume Feedback," Proc. of the IEEE Inter Symposium on Circuits and Systems 2004, Vol. III, pp. 893-896, Vancouver, May 23-26, 2004.
197. Xiao, Y., Ma, L., Ward, R.K., and Xie, L., "Fast RLS Fourier Analyzers in the Presence of Frequency Mismatch," Proc. of the IEEE Inter Symp. on Circuits and Systems 2004, Vol. III, pp. 497-500, Vancouver, May 23-26, 2004.
198. Adams, M., and Ward R.K., "Jasper: A Portable Flexible Open-Source Software Tool Kit for Image Coding/Processing," Proc. of the IEEE ICASSP, vol. V, pp. 241-244, Montreal, May 2004.
199. Zou, J., Ward, R.K., and Qi, D., "The Generalized Fibonacci Transformations and Application to Image Scrambling," Proc. of the IEEE ICASSP, Montreal, Vol. III, May 2004, pp. 385-388.
200. Fatourech. M., Mason, S., Birch, G., and Ward, R.K., "A Wavelet-Based Approach for the Extraction of Event Related Potentials from EEG," Proc. of the IEEE ICASSP, Montreal, Vol. II, May 2004, pp. 737-740.
201. Azimi, M., Nasiopoulos, P., and Ward, R.K., "A New Signal Model and Identification Algorithm for Hidden Semi-Markov Signals," Proc. of the IEEE ICASSP, Montreal, Vol. II, May 2004, pp. 521-524.
202. Deng, H., Ward, R.K., Beddoes, M., and Hodgson, "Estimating Vocal-Tract Area Functions from Vowel Sound Signals Over Closed Glottal Phases," Proc. of the IEEE ICASSP, Montreal, Vol. I, May 2004, pp. 589-592.
203. Zou, J., Ward, R.K., and Qi, D., "Some Novel Image Scrambling Methods Based on Chaotic Dynamical Systems," Proc. of the 46th IEEE Midwest Symposium on Circuits and Systems, Cairo, Egypt, Dec. 27-30, 2003.
204. Zou, J., Ward, R.K., and Qi, D., "Image Encryption Methods Based on Chaotic Discrete Dynamical Systems," Proc. of the 9th Joint Inter. Computer Conf. (JICC 2003), Zhuhai, China, Nov. 13-14, 2003, pp. 287-290.
205. Deng, H., Beddoes, M., Ward, R.K., and Hodgson, M., "Obtaining the Vocal-tract Area Function from a Speech Signal," Proc. of the Can. Acoustic Week, Edmonton, October 2003, pp. 40-41.
206. Bashashati, A., Ward, R.K., Birch, G., Hashemi, M.R., and Khalilzadeh, M.A., "Fractal Dimension-Based EEG Biofeedback System," Proc. of the 25th Inter. Conf. of the IEEE Engineering in Medicine & Biology Society, Mexico, Sep. 17-20, 2003, pp. 2220-2223.
207. Wang, Q. and Ward, R.K., "A Contour Preserving Image Interpolation Method," Trans. of the IEEE Inter. Conf. on Image Processing, Vol. 3, Barcelona, September 2003, pp. 673-676.
208. Deng, H., Beddoes, M. Ward, R.K., and Hodgson, M., "Estimating the Vocal-tract Area Function and the Derivative of the Glottal Wave from a Speech Signal," Proc. Of the European Conf. on Speech Comm. And Technology, Eurospeech 2003, Switzerland, August 2003, pp. 2437-2440.
209. Deng, H., Beddoes, M., Ward, R.K., and Hodgson, M., "Estimating the Glottal Waveform and the Vocal Tract Filter from a Vowel Sound Signal," IEEE PacRim Conf. on Comm., Comp. and Sig. Proc., August 2003, pp. 297-300.
210. Ismaeil, I.R. and Ward, R.K., "Removal of DCT Blocking Artifacts Using DC and AC Filtering," Proc. of the IEEE Pacific Rim Conf. on Comm., Comp., and Sig. Proc. 2003, Vol. 1, Aug. 28-30, 2003 pp. 229-232.
211. Zou, J. and Ward, R.K., "Introducing Two New Image Scrambling Methods," Proc. of the IEEE PacRim Conf. on Comm., Comp., and Sig. Proc. 2003, Vol. 2, Aug. 28-30, 2003, pp. 708-711.
212. Ugur, K., Louizis, G., Nasiopoulos, P., and Ward, R.K., "Extremely Fast Selective Enhancement Method for Fine Granular Scalable Enabled H.264 Video," Trans. of the Can. Conf. on Elect. and Comp. Eng., 2003, pp. 1103-1106.
213. Azimi, M., Nasiopoulos, P., and Ward, R.K., "A Robust method for Fitting the (Sigma, Rho) Model to a Traffic Source," Trans. of the Inter. Conf. on Information Technology Research and Education, New Jersey, August 2003, pp. 228-232.
214. Deng, H., Beddoes, M., Ward, R.K., and Hodgson, M., "On Estimating the Vocal-Tract Shape: Correction of an Old Misunderstanding," Trans. of the Inter. Conf. on Industrial Automation, Montreal, June 2003, MS-14.

215. Xiao, Y., Ward, R.K., and Ikuta, A., "Steady-state Properties of the Sign Algorithm for the Constrained Adaptive IIR Notch Filter," Proc. of the IEEE ISCAS 2003, Vol. IV, Bangkok, May 2003, pp. 25-28.
216. Xiao, Y., Ward, R.K., and Xu, L., "A New LMS-based Fourier Analyzer in the Presence of Frequency Mismatch," Proc. of the IEEE ISCAS 2003, Vol. IV, Bangkok, May 2003, pp. 369-372.
217. Xiao, Y., Ward, R.K., Ma, L., and Xu, L., "A Robust LMS-based Fourier Analyzer Capable of Accommodating the Frequency Mismatch," Proc. of the IEEE ICASSP 2003, Vol. VI, Hong Kong, April 2003, pp. 73-76.
218. Turkowski, K., Hamidzadeh, B., and Ward, R.K., "Word Endpoint Correction Techniques for a Test-to-Multimedia Composition System," Proc. Of the Inter. Conf. on Tools with Artificial Intelligence, Washington D.C., November 2002, pp. 325-332.
219. Azimi, M., Nasiopoulos, P., and Ward, R.K., "A Scheduling Scheme for Multiplexing Extra Streaming Data into Digital TV Programs," 14th Inter. Conf. on Digital Signal Processing, Greece, July 2002, pp. 579-582.
220. Azimi, M., Nasiopoulos, P., and Ward, R.K., "A Scheduling Scheme for Multiplexing VBR Sources in Digital TV Systems" Proc. of the IEEE International Conf. on Image Processing, Rochester, NY, Vol. III, September 2002, pp. 173-176.
221. Wang, Q., Ward, R.K., and Shi, H., "Isophote Estimation by Cubic-Spline Interpolation," Proc. of the IEEE International Conf. on Image Processing, Rochester, NY, Vol. III, 2002, pp. 401-404.
222. Beddoes, M.P. and Ward, R.K., "A Possible Genetic-Algorithm Based method for Optimizing a Class of ANN Transfer Functions," Proc. of the Inter. Conf. on Digital Signal Processing, Greece, July 2002, pp. 1353-1356.
223. Paquet, A. and Ward, R.K., "Wavelet-based Digital Watermarking for Image Authorization," Trans. of the Canadian Conference on Electrical and Computer Engineering, Vol. 2, pp. 879-884, May 2002.
224. Shi, H. and Ward, R.K., "Canny Edge Based Image Expansion," Proc. of the IEEE International Conference on Circuits and Systems, Vol. I, May 2002, pp. 785-788.
225. Paquet, A., Zahir, S., and Ward, R.K., "Wavelet Packets-Based Image Retrieval," Trans. of the IEEE ICASSP, Vol. 4, May 2002, pp. 3640-3643.
226. Adams, D., and Ward, R.K., "Two Families of Symmetry-Preserving Reversible Integer-to-Integer Wavelet Transforms," Trans. of the IEEE ISCAS, Vol. 2, May 2002, pp. 600-603.
227. Adams, D., and Ward, R.K., "Symmetry - Preserving Reversible Integer-to-Integer Wavelet Transforms," Trans. of the IEEE ICASSP, Vol. 3, May 2002, pp. 2509-2512.
228. Ahmad, M., Kharm, N., and Ward, R.K., "A Knowledge-base System for Recognizing and Solving Mathematical Problems," IEEE Inter. Symposium on Signal Processing and Information Technology, Cairo Egypt, December 2001.
229. Beddoes, M.P., Peck, C.C., Hannam, A.G., and Ward, R.K., "ANN-models for Jaw Research," Proc. of the 23rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Turkey, October 2001.
230. Hussein, F., Kharm, N., and Ward, R.K., "Genetic Algorithms for Feature Selection and Weighting, A Review and Study," Proc. of the 6th International Conf. on Document Analysis and Recognition, ICDAR 2001, Seattle, September 2001, pp. 1240-1244.
231. Azimi, M., Nasiopoulos, P., and Ward, R.K., "New Interactive Services for Digital TV," Proc. of the IEEE Conf. on Image Processing, Vol. I, October 2001, pp. 814-817.
232. Wang, Q and Ward R.K. "A New Edge - Directed Image Expansion Scheme," Proc. of the IEEE Conf. on Image Processing, Vol. III, October 2001, pp. 899-902.
233. Mousavi, P., Fels, S., Ward, R.K., and Landsorp, P., "Classification of Homologous Human Chromosomes Using Mutual Information Maximization," Proc of the IEEE Conf. on Image Processing, October 2001, pp. 845-848.
234. Adams, M.A. and Ward, R.K., "Wavelet Transforms in the JPEG-2000 Standard", Proc. of the IEEE PACRIM, Vol. 1, August 2001, pp. 160-163.
235. Shi, H., Kharm, N., and Ward, R.K., "Expanding the Definitions of Linguistic Hedges", Fuzziness and Soft Computing in the New Millenium Joint 9th IFSA World Congress and 20th NAFIPS International Conf., July 2001, pp. 2591-2595.

236. Azimi, M., Nasiopoulos, P, and Ward, R.K., "Implementation of MPEG System Target Decoder", Proc. of the Cdn. Conf. on Elec. and Comp. Engg., Vol. I, May 2001, pp. 943-948.
237. Ismail, I., Shirani, S., Kossentini, F., and Ward, R., "An Efficient, Similarity-based Error Concealment Method for Block-based Coded Images" Proc. of the IEEE International Conference on Image Processing, Vol. III, September 2000, pp. 388-391
238. Mousavi, P., Ward, R.K., Lansdorp, P.M., and Fels, S.S. "Multi-Feature Analysis and Classification of Human Chromosome Images Using Centromere Segmentation Algorithms," Proc. of the IEEE Conference on Image Processing, Vol I, September 2000, pp.152-155
239. Pronina, E., Ward, R.K., and Nasiopoulos, P., "Interactive DVD Programming Using Next Generation Content-Based Encoded Multimedia Data," Proc. of the IEEE International Conference on Image Processing, Vol III, September 2000, pp. 246-249.
240. Poon, S. and Ward, R.K. "A Simple and Effective Filter Based on the Rank Difference Filter," Proc. of the IEEE Conference on Image Processing, Vol I, September 2000, pp. 900-903.
241. Mousavi, P., Ward, R.K., Sameti, M., Lansdorp, P.M., and Fels, S.S., "Homologue Classification of Human Chromosome Images Using an Iterative Centromere Segmentation Algorithm," Proc. of IEEE Engineering in Medicine and Biology (EMBS) International Conference at World Congress on Medical Physics and Biomedical Engineering 2000. July 2000, pp. 4314-4318, (Best Student Paper Award.)
242. Ismaeil, I., Docef, A., Kossentini, F., and Ward, R. "Computational Performance Control for DCT - Based Video Coding," ICASSP2000, June 2000, Vol. IV, pp. 1911-1914.
243. Zahir, S., Muvad Agha, A.K., and Ward, R.K., "A Near Exact-Image Expansion scheme for Bi-Level Images". Proc. of the IEEE International Conference on Image Processing, Vol 9, Sept 2000, pp.331-335.
244. Shirani, S., Jerbi, A., Kossentini, F., and Ward, R.K., "A Shape Descriptor and its Application in Content-Based Retrieval," Int'l. Conf. on Computer Vision, Pattern Recognition and Image Processing, February 2000.
245. Ismaeil, I., Docef, A., Kossentini, F., and Ward, R.K., "Efficient Motion Estimation Using Spatial and Temporal Motion Vector Prediction," Proc. of the IEEE Inter. Conf. on Image Proc., Kobe, Japan, October 1999, Vol. 1, pp. 70-75.
246. Shirani, S., Jerbi, A., Kossentini, F., and Ward, R.K., "Content-Based Video Retrieve Under Partial Occlusion," Proc. of the IEEE Inter. Conf. on Image Proc., Kobe, Japan, October 1999, Vol. 3, pp. 255-259.
247. Barzykina, E. and Ward, R.K., "Removal of Blocking Artifacts Using Random Pattern Filtering," Proc. of the IEEE Inter. Conf. on Image Proc., October 1999, Vol. 2, pp. 904-908.
248. Kharma, N. and Ward, R.K., "A Novel Invariant Mapping Applied to Handwritten Arabic Characters," Proc. of the Inter. Conf. on Document Analysis and Recognition, September 1999, pp. 41-44.
249. Ahmed, M. and Ward, R.K., "A Novel Intelligent System for Defining Similar Symbols," Proc. of the IEEE PACRIM, Victoria, BC, August 1999, pp. 197-200.
250. Mousavi, P., Ward, R.K., and Lansdorp, P., "Classification of Chromosome 16 Homologues Using Centromere and Telomere Intensity Features," Proc. of the IEEE PACRIM, Victoria, BC, August 1999, pp. 205-208.
251. Murad-agma, A., Zahir, S., and Ward, R.K., "Image Expansion Using Segmentation-Based Method," Proc. of the IEEE PACRIM, Victoria, BC, August 1999, pp. 95-98.
252. Shirani, S., Kossentini, F., and Ward, R.K., "Error Concealment Methods, A Comparative Study," Proc. of the Can. Conf. on Elec. & Comp. Eng., Edmonton, Canada, May 1999, pp. 835-840.
253. Mousavi, P., Ward, R.K., and Lansdorp, P., "Feature Analysis and Classification of Homologous Chromosome 16s Using Fluorescence Microscopy Images," Proc. of the Can. Conf. on Elec. & Comp. Eng., May 1999, pp. 841-846, (Best Student Paper Award.)
254. Ismaeil, I., Kossentini, F., and Ward, R.K., "Joint Rate Control for MPEG-2 Encoding of Multiple Video Sequences," Proc. of the Can. Conf. on Elec. & Comp. Eng., May 1999, pp. 847-850.
255. Kharma, N., Ahmed, M., and Ward, R.K., "A New Comparative Database of Hand-Written Arabic Words, Numbers and Signatures for OCR Testing," Proc. of the Can. Conf. on Elec. & Comp. Eng., May 1999, pp. 766-768.

256. Ismaeil, I., Docef, A., Kossentini, F., and Ward, R.K., "Motion Estimation Using Long Term Motion Vector Prediction," Proc. of the IEEE Data Compression Conf. (DCC), March 1999, pp. 531.
257. Koo, I., Nasiopoulos, P., and Ward, R. K., "Joint MPEG-2 Coding for Multi-Program Broadcasting of Pre-Recorded Video," IEEE, ICASSP, March 1999, pp. 2227-2230.
258. Shirani, S., Kossentini, F., and Ward, R.K., "An Adaptive Markov Random Field Based Error Concealment Method for Video Reconstruction in an Error Prone Environment," IEEE, ICASSP, March 1999, Vol. 4, pp. 3117-3120.
259. Poon, S., Ward, R.K., and Lansdorp, P., "Segmenting Telomeres and Chromosomes in Cells," IEEE, ICASSP, March 1999, pp. 3413-3416.
260. Koo, I., Nasiopoulos, P., and Ward, R.K., "Optimum Picture Quality and Bandwidth Allocation for MPEG-2 Video Broadcasting," Asilomar '98 Conf., INVITED PAPER, Monterey, California, November 1-4, 1998, pp. 108-111.
261. Shirani, S., Kossentini, F., and Ward, R.K., "Reconstruction of Motion Vector Missing Macroblocks in H•263 Encoded Video Transmission Over Lossy Networks," Proc. of the IEEE Inter. Conf. on Image Proc., Chicago, IL, October 1998, Vol. 3, pp. 487-491.
262. Sameti, M., Morgan-Parkes, J., Ward, R.K., and Palcic, B., "Classifying Image Features in the Last Screening Mammograms Prior to Detection of a Malignant Mass," Digital Mammography, N. Karssemeijer, et al, ed. Kluwer Academic Publishers, June 1998, pp. 127-134. Accepted as a long paper (8 pages); the other types of accepted papers are short papers (4 pages) and short abstracts (2 pages).
263. Shirani, S., Kossentini, F., and Ward, R.K., "Packet Loss Concealment in Baseline JPEG Coded Images," Proc. of the IEEE Symposium on Advances in Digital Filtering and Signal Processing, Victoria, BC, June 1998, pp. 16-19.
264. Barzykina, E., Nasiopoulos, N., and Ward, R.K., "MPEG-2 Video Coding with Image Partitioning," IEEE ICASSP '98, Seattle, WA, May 1998, Vol. 5, pp. 2825-2828.
265. Sameti, M., Ward, R.K., and Palcic, R. "Texture Feature Extraction for Tumour Detection in Mammographic Images," Proc. of the IEEE Pac. Rim Conf. on Comm., Computers and Signal Processing, August 1997, pp. 831-834.
266. Barzykina, E., Nasiopoulos, P., and Ward, R.K., "Image Compression of Facial Photographs Based on Wavelet Transform," IEEE Pac. Rim Conf. on Comm., Computers and Signal Processing, August 20-22, 1997, pp. 322-325.
267. Lee, Y., Kossentini, F., and Ward, R.K., "Efficient RD Optimized Macroblock Coding Mode Selection for MPEG-2 Video Encoding," Proc. of the IEEE Inter. Conf. on Image Processing, Santa Barbara, California, October 1997, pp. 582-585.
268. Nasiopoulos, P., Ward, R.K., and Otsuka, M., "The Challenge of DVD Authoring," Proc. Of the 13th Inter. Conf. On Digital Signal Processing (DSP 97), Vol. 1, pp. 311-314, Greece, July 1997.
269. Lee, Y., Kossentini, F., Smith, M., and Ward, R.K., "Predictive and Search Techniques for RD-Optimized Motion Estimation in a Very Low Bit Rate Video Coding Framework," ICASSP 97, Vol. 4, Munich, Germany, April 1997, pp. 2861-2864.
270. Sameti, M., Ward, R.K., Morgan-Parkes, J., and Palcic, B., "A Method for Detection of Malignant Masses in Digitized Mammograms Using a Fuzzy Segmentation Algorithm," Proc. of the 19th Inter. Conf. IEEE/EMBS '97, Chicago, IL, 1997.
271. Sameti, M. and Ward, R.K., "A Fuzzy Segmentation Algorithm for Mammogram Partitioning," 3rd Inter. Workshop on Digital Mammography, Chicago, IL, Elsevier Science B.V., Publisher, June 1996, pp. 471-474.
272. Ward, R.K., "Nonlinear Filtering & Processing of Cable TV Picture," Computational Engineering in Systems Applications, INVITED PAPER, Lille, France, July 1996, pp. 759-764.
273. Lee, Y., Ward, R.K., Kossentini, F., and Smith, M., "Very Low Rate DCT Based Video Coding Using Dynamic VQ," IEEE Conf. on Image Processing, INVITED PAPER, Lauzanne, Switzerland, September 1996, pp. 669-672.
274. Kossentini, F., and Ward, R.K., "An Analysis-Compression Technique for Black/White Documents," IEEE S.W. Symp. on Image Analysis and Interpretation, San Antonio, Texas, April 1996, pp. 141-144.

275. Lee, Y., Kossentini, F., and Ward, R.K., "Improving the Subjective Quality of Low Bit Rate Subband/Wavelet-coded Images," IEEE Conf. On Acc., Speech and Signal Processing, Atlanta, Georgia, May 1996, pp. 2367-2370.
276. Zhang, Q. and Ward, R.K., "Impulse Noise Cancelling in TV Pictures," IEEE Inter. Conf. on Consumer Electronics, Chicago, IL, June 1995, pp. 292-293.
277. Shi, P. and Ward, R.K., "Enhancing Television Pictures," IEEE Inter. Conf. on Systems, Man & Cybernetics, Vancouver, BC, October 1995, pp. 3498-3502.
278. Shi, P. and Ward, R.K., "Cable TV Impairments Cancellation," 2nd National Conference of Young Scientists and Engineers, Beijing, China, July 26-28, 1995.
279. Nasiopoulos, P. and Ward, R.K., "A Hybrid Coding Method for Digital HDTV Signals," the 1995 IEEE International Symposium on Circuits and Systems, Seattle, Washington, U.S.A., Vol. 2, May 1995, pp. 769-772.
280. Nasiopoulos, P. and Ward, R.K., "Image Compression for Facial Photographs" the 1995 IEEE Workshop on Nonlinear Signal and Image Processing, Halkidiki, Greece, Vol. 1, June 1995, pp. 436-439.
281. Nasiopoulos, P., Yedlin, M., and Ward, R.K., "A Fixed-Length Compression Method Using the Karhunen-Loeve Transform" the 1995 IEEE Pacific Rim 1995 Conference, Victoria, BC, Canada, May 1995, pp. 581-584.
282. Nesbitt, D., Aghdasi, F., Ward, R.K., and Morgan-Parkes, J., "Detection of Microcalcifications in Digitized Mammogram Film Images Using Wavelet Enhancement and Local Adaptive False Positive Suppression," Proc. of IEEE Pac. Rim Conference on Communications, Computers and Signal Processing, Victoria, BC, Canada, May 1995, pp.594-597.
283. Xie, Q., Ward, R.K., and Laszlo, C., "Nonparametric Classifier Design Using Vector Quantization," Proc. of the IEEE-IMS Workshop on Information Theory and Statistics, Alex., Va, October 1994, pp. 22, INVITED PAPER.
284. Shi, P. and Ward, R.K., "Improving the Quality of Cable T.V. Pictures," IEEE Conf. on Image Processing, Austin, Texas, November 1994, pp. 197-201.
285. Ward, R.K., Montieth, D., and Madden J., "Can. Video Noise Reduction Save Money?," National Cable Television Assoc. Convention Technical Papers, New Orleans, May 1994, pp. 48-56.
286. Aghdasi, F., Ward, R.K., and Palcic, B., "Neural Networks In Segmentation of Mammographic Microcalcifications," Medical Imaging 1994: Image Processing, Proc. of the SPIE, Vol. 2167, May 1994, pp. 799-810.
287. Xie, Q., Laszlo, C., and Ward, R.K., "Vector Quantization Technique for Non-Parametric Classifier Design," Proc. of the 20th Can. Medical and Biological Engineering Society Conf., Vancouver, BC, May 1994, pp. 114-115.
288. Aghdasi, F., Ward, R.K., Morgan-Parkes, J., and Palcic, B., "Feature Selection for Classification of Mammographic Microcalcification Clusters," Proc. of the Annual Intl. Conference of the IEEE Engineering in Medicine & Biology Society, San Diego, October 1993, Vol. 15, pp. 58-59.
289. Xie, Q., Ward, R.K., and Laszlo, C., "Determining Normal Infants' Level of Distress from Cry Sounds," Proc. of the Can. Conf. on Elect. & Comp. Eng., Vancouver, BC, September 1993, pp. 1094-1097.
290. Shi, X., and Ward, R.K., "Reconstruction of Photon-limited Stellar Images by Generalized Projections Using the Cross Spectrum," Proc. of the CCECE, Vancouver, BC, September 1993, pp. 1017-1020.
291. Zhang, Q. and Ward, R.K., "A Non-intrusive Scheme for Measuring the Signal-to-Noise Ratio in Television Images," Proc. of the CCECE, Vancouver, BC, September 1993, pp. 656-659.
292. Nasiopoulos, P. and Ward, R.K., "A Noise Resistant HDTV Compression Scheme," Proc. of the CCECE, Vancouver, BC, Sept. 1993, pp. 648-651.
293. Aghdasi, F., Ward, R.K., and Palcic, B., "Classification of Mammographic Micro-calcification Clusters," Proc. of the CCECE, Vancouver, BC, September 1993, pp. 1196-1199.
294. Foster, M., Petrell, R., Ito, M.R., and Ward, R.K., "Detection and Counting of Uneaten Food Pellets in a Sea Cage Using Image Analysis," Proc. of the Aquaculture Engineering Conf., Techniques for Modern Aquaculture, American Soc. Agricultural Engineers, Spokane, WA, June 21-23, 1993, pp. 392-402.

295. Xie, Q., Ward, R.K., and Laszlo, C.A., "Multidimensional Histogram Classifier Design by Using Vector Quantization," Proc. of the IEEE Pac. Rim Conf. on Comm., Comp. and Sig. Proc., Victoria, BC, May 19-21, 1993, pp. 34-42.
296. Shi, X. and Ward, R.K., "Phase Retrieval from Photon-limited Data Using the Cross Correlation," Proc. of the IEEE Pac. Rim Conf. on Comm., Comp. And Sig. Proc., Victoria, BC, May 19-21, 1993, pp. 43-46.
297. Nasiopoulos, P. and Ward, R.K., "Improving the HDTV Pictures Quality Under Noisy Conditions," IEEE Conf. on Acc., Speech and Signal Processing (ICASSP), April 1993, pp. V277-V280.
298. Poon, S., Lockett, S.J., and Ward, R.K., "Characterization of a 3D Microscope Imaging System," SPIE Proc., Biomedical Image Processing & Biomedical Visualization, Vol. 1905, February 1993, pp. 121-128.
299. Aghdasi, F., Ward, R.K., and Palcic, B., "Restoration of Mammographic Images in the Presence of Signal-Dependent Noise," Proc. of SPIE, Biomedical Image Processing & Biomedical Visualization, Vol. 1905, February 1993, pp. 740-751.
300. Aghdasi, F., Ward, R.K., and Palcic, B., "Noise Filtering for Mammographic Images," Proc. of the IEEE Engineering in Medicine & Biology Society, Vol. 14, 1992, pp. 1877-1878.
301. Gresseth R., and Ward, R.K., "Automatic Recognition of the Hum Impairment in Cable TV Systems," Proc. of the CSECE Conference, Toronto, September 1992, pp. TM5.13.1-4.
302. Aghdasi, F., Ward, R.K., and Palcic, B., "Restoration of Mammographic Images Using Local Statistics," Proc. of the Can. Conf. on Elect. & Comp. Eng., Toronto, Vol. II, 1992, pp. MA7.6.1-4.
303. Nasiopoulos, P., Bouras, D., and Ward, R.K., "All Digital HDTV Broadcasting Over Channels With Interference," Proc. of the CSECE Conference, Toronto, September 1992, pp. WA5.2.8.1-4.
304. Shi, P. and Ward, R.K., "Analysis and Automatic Detection of Composite Triple Beats," Can. Cable Television 35th Annual Convention, Vancouver, BC, May 31-June 3, 1992, pp. 103-109.
305. Shi, P., Ward, R.K., and Zhang, Q., "Automatic Recognition of Intermodulation Beat Products in Cable Television Pictures," Proc. of the IEEE Conf. on Circuits & Systems, May 1992, pp. 1660-1663.
306. Zhang, Q. and Ward, R.K., "Automatic Monitoring of the Quality of Cable Television Picture," Proc. of the IEEE Conf. on Acc., Speech and Signal Processing, March 1992, pp. III 549-552.
307. Poon, S., Ward, R.K., and Palcic, B., "Analysis of Three-Dimensional Images in Quantitative Microscopy," SPIE Proceedings, Vol. 1660, Biomedical Image Processing and Three Dimensional Microscopy, 1992, pp. 178-185.
308. Aghdasi, F., Ward, R.K., and Palcic, B., "Restoration of Mammographic Images Acquired By a New Fast Digitization System," Proc. of SPIE, Vol. 1657, Image Processing Algorithms & Techniques III, February 1992, pp. 256-267.
309. Aghdasi, F., Ward, R.K., and Palcic, B., "Detection and Segmentation of Microcalcifications in Mammographic Image Analysis," Proc. of the Cdn. Conf. on Elect. & Computer Engg., Vol II, 1991, pp. 63.1.1-63.1.4.
310. Zhang, Q. and Ward, R.K., "An Automatic System which Detects Impairments in Cable Television Pictures," Proc. of the Cdn. Conf. on Electr. And Computer Eng., Sept. 1991, pp. 28.2.1-28.2.4.
311. Ward, R.K. and Lam, E., "Semi-Blind Restoration from Differently Blurred Versions of an Image," Proc. IEEE Conf. on Acoustics, Speech and Signal Processing, May 1991, pp. 2949-2952.
312. Zhang, Q. and Ward, R.K., "Feature Extraction of Cable Television Picture Impairments," Proc. of the IEEE Pacific Rim Conf. on Comm., Computers and Signal Processing, May 1991, pp. 486-489.
313. Shi, P. and Ward, R.K., "OSNet: A Neural Network Implementation of Order Statistic Filters," Proc. of the IEEE Pacific Rim Conf. on Comm., Computers and Signal Processing, May 1991, pp. 453-456.
314. Lam, E. and Ward, R.K., "Semi-blind Restoration of Images Distorted by Random Time-Varying Point Spread Functions," Proc. of the Cdn. Conf. On Electr. and Computer Engineering, Sept. 1990, pp. 69.1.1-69.1.4.
315. Shi, P. and Ward, R.K., "The Case for Abandoning the Biological Resemblance Restriction: An Example of Neural Network Solution for Simultaneous Equations," Proc. Inter Joint Conf. on Neural Networks, June 1990, pp. III 875-882.

316. Shi, P. and Ward, R.K., "A Neural Network Structure for Sorting Non-negative Integers in Fixed Time," Proc. of the Can. Conf. On Electrical & Computer Engineering, Sept. 1989, pp. 420-423.
317. Ward, R.K. and Guan L., "Restoration of Images Blurred by Time-Varying Random Blur: The Case of Time-Space Separable Noise Correlation," Proc. of the Cdn. Conf. on Electrical & Computer Engineering, Sept. 1989, (an invited paper), pp. 20-23.
318. Shi, P. and Ward, R.K., "An Artificial Neural Network Implementation of the Median Filter," Proc. of the IEEE Pac. Rim Conference on Communications, Computers and Signal Proc., June 1989, pp. 513-516.
319. Shi, P. and Ward, R.K., "Using the Perceptron to Process Binary Noisy Images," Proc. of the Society for Computer Simulation Conf., San Diego, CA, January 1989.
320. Guan, L. and Ward, R.K., "Restoration of Stochastically Blurred Images by the Constrained Deconvolution Method," Proc. of the Cdn. Conf. On Electrical and Computer Engineering, November 1988, pp. 751-754.
321. Shi, P. and Ward, R.K., "Using the Hopfield Neural Net to Enhance Binary Noisy Images," Proc. of the Cdn. Conf. on Electrical and Computer Engineering, November 1988, pp. 760-763.
322. Guan, L. and Ward, R.K., "A Maximum A Posteriori Approach to the Restoration of Randomly Distorted Signals," Proc. of the IEEE Conf. On Acoustics Speech and Signal Processing, April 1988, pp. 1770-1773.
323. Shi, P. and Ward, R.K., "Restoration of Images Distorted by Sampling Jitter," Proc. of the 25th Allerton Conf. on Communication, Control & Computing, Urbana-Champaign, June 1987, pp. 503-512.
324. Ting, V.C.R. and Ward, R.K., "Separation and Recognition of Connected Hand-printed Capital English Characters," IEEE, Pacific Rim Conf. On Computers, Communication & Signal Processing, Victoria, June, 1987, pp. 512-516.
325. Rey, C and Ward, R.K., "An On-Line Algorithm for Determining Convex Polytopes," Proc. of the IEEE Conf. on Systems, Man and Cybernetics, Arizona, November 1985, pp. 1064-1067.
326. Ward, R.K. and Saleh, B.A., "Restoration of Images Recorded Under Spatial and Random Temporal Degradation," Advances in Image Processing & Pattern Recognition, Proc. Intl. Conf., Pisa, Italy, December 1985, pp. 112-119.
327. Rey, C. and Ward, R.K., "An Adaptive Minimum-Variance Predictor-Smoother Algorithm for Image Enhancement," Proc. of The 22nd Allerton Conf. on Communication, Control and Computing, Urbana-Champaign, IL, October 1984, pp. 122-131.
328. Rey, C. and Ward, R.K., "Obtaining the Minimax Line Fit from the Convex Hull in a Two Dimensional Space," Proc. Of the IEEE Systems, Man and Cybernetics Conf., India, January 1984, pp. 1064-1067.
329. Saleh, B. and Ward, R.K., "Restoration of Images Distorted by Optical Systems of Randomly Fluctuating Pupil Functions," Proc. IEEE Conf. On Systems, Man and Cybernetics, October 1984, pp. 90-93.
330. Ward, R.K., "Diagnosis of Errors in the Estimates of the Parameters within a System for Six Estimation Methods," Proc. IEEE Systems, Man and Cybernetics Conf., India, January 1984, pp. 952-957.
331. Ward, R.K., "Error Detection, A Geometric Approach". Proc. 21st Allerton Conf. on Communication, Control and Computing, October 5-7, 1983, pp. 537-545.
332. Ward, R.K., "The Optimal Instrumental Variables Method," Proc. of the AMSE '83 Intl. Winter Conf., Bermuda, March 1-3, 1983, pp. 99-112.
333. Ward, R.K., "A Recursion Algorithm for Discrete Linear Estimation," Proc. IEEE Intl. Conf. on Systems, Man and Cybernetics, Seattle, October 2-3, 1982, pp. 290-293.
334. Ward, R.K., "On Reliability of Linear Combinations of Estimates in Linear Models," Proc. IEEE Intl. Conf. on Systems, Man and Cybernetics, October 1981, pp. 462-464.
335. Ward, R.K., "A Land Reform Model for Zimbabwe," Proc. IEEE Intl. Conf. on Cybernetics and Society, October 1980, pp. 860-863.
336. Ward, R.K., "Energy economy model for Zimbabwe Rhodesia's Electricity Demand," Proc., IEEE Intl. Conf. on Cybernetics and Society, October 1979, pp. 882-886.

2. **NON-REFEREED PUBLICATIONS**

(a) *Journals*

1. Ahmed, M., Ward, R.K., and Kharma, N., "Solving Mathematical Problems Using Knowledge-Based Systems," ACA 2002, Volos, Greece, June 25-28, 2002.
2. Afghdasi, F., Ward, R.K., and Palcic, B., "Neural networks in segmentation of mammographic microcalcifications," Technical Abstract Digest, Proc. of SPIE Annual Conf. on Medical Imaging: Image Processing, Newport Beach, CA, p. 304, 1994.
3. Aghdasi, F., Ward, R.K., and Palcic, B. "Restoration of mammographic images in the presence of signal-dependent noise," Abstracts of SPIE/IS&T Symposium on Electronic Imaging, Science and Technology, P.84, San Jose, CA, January 31-February 4, 1993.
4. Zhang, Q. and Ward, R.K., "The Automatic Evaluation of the Carrier-to-Signal Ratio in Television Pictures," IEEE Broadcast Technology Symposium Abstracts, September 1992.
5. Aghdasi, F., Ward, R.K., and Palcic, B., "Reduction of mammographic images acquired by a new fast digitization system," Abstracts of SPIE/OS&T Symposium on Electronic Imaging, Science and Technology, p. 63, San Jose, CA, February, 1992.
6. Aghdasi, F., Ward, R.K., and Palcic, B. "Reduction of Boundary Artifacts in Image Restoration," IEEE Trans. on Image Processing, Vol. 1, No. 3, 1991, p. 441.
7. Poon, S.S., Ward, R.K., Beddoes, M., and Palcic, B., "Detection and Segmentation of Nucleated Cells in Blood Smears," 1st Conf. Eur. Soc. for Analyt. Cells Pathology, Schloss Elmau, F.R.G., Nov. 12-17, Vol. 1, No. 516, p. 279 Abstract No. 33, 1989.
8. Poon, S.S., Ward, R.K., Beddoes, M., and Palcic, B., "Detection of Leukocytes in a Wright's Stained Blood Smear," Proffered paper in "Digital Imaging Technology Oncology," National Cancer Inst. Workshop, Vancouver, BC, Oct. 19-22, 1988.
9. Saleh, B.E., and Ward, R.K., "Image Restoration in Random Time-Varying Systems". Paper presented and abstract published in the Conf. of the Optical Society of America, Washington, D.C., October 1985.
10. Ward, R.K., "An Econometric Model to Forecast Electricity Demand for Zimbabwe, an Update". An invited paper, Proc. Regional Workshop on Energy for Development in Eastern and Southern Africa, Vol. II, Arusha, Tanzania, pp. 317-344 April 4-13, 1983. (Also see section B1.)
11. Ward, R.K., "An Outlook on the Nation's Economy and its Demand for Electricity," The Rhodesia Science News, Vol. 13, No. 1, pp. 7-10, Jan. 1979.

3. BOOKS

1. MRI: Physics, Image Reconstruction, and Analysis. Edited by A. Majumdar and R. K. Ward, CRC Press, 2015.
2. "Mentoring for Engineering Academia II", Edited by R. M. Gray, Sh. Hemami, E. Riskin, R. K. Ward, S. Brainard, P. Cosman, N.n Fortenberry, J. Rutledge, and T. Whitney, 2008.

4. CHAPTERS IN BOOKS

1. Faradj, F., Ward, R., and Birch, G., "Using Autoregressive Models of Wavelet Bases in the Design of Mental Task-Based BCIs" in Brain-Coputer Interface Systems - Recent Progress and Future Prospects, ed. Reza Fazel-Rezai, InTech, ISBN 978-953-51-1134-4, 270 pages, June 2013.
2. Angshul Majumdar and Rabab Ward, "Multicoil Parallel MRI" in Medical Imaging: Technology and Applications, EDITED BY TROY FARNCOMBE AND KRIS INIEWSKI, Pages 485-528, CRC Press, 2013.
3. Nezhadarya, E., Wang, Z. J. and Ward, R. K., "Image Watermarking in Higher-Order Gradient Domain", in Advances in Wavelet Theory and Their Applications in Engineering, Physics and Technology, Intech, ISBN 978-953-51-0494-0.
4. Majumdar, A., Ward, R. K., and Nasiopoulos, P., "Distributed Face Recognition" in Face Recognition: Methods, Applications and Technology, Nova Publishers, NY.

5. Fatourehchi, M., Lv, X., Malek Esmaeili, M., Wang, J. Z., and Ward, R. K., "Image and video detection using content-based fingerprinting", Multimedia Image and Video Processing, 2nd Edition (editors: L. Guan, Y. He and S.Y. Kung), CRC Press, pp. 460 - 485, Feb 2012.
6. Majumdar, A., and Ward, R. K., "Compressive Classification for Face Recognition" in Face Recognition, State of the Art in Cognitive and Computational Processes, in Face Recognition, Intech Publishers, Milos Oravec ed. pp. 47-64, 2010.
7. Majumdar, A., and Ward, R. K., "Multiresolution Methods in Face Recognition" in Face Recognition, State of the Art in Cognitive and Computational Processes, Eds. M. S. Bartlett, K. Delac and M. Grgic, InTech Education and Publishing, Vienna, Austria , pp. 79-96, 2009.
8. Nasiopoulos, P., Ward, R.K., and Morse, D., "Adaptive Compression Coding," in Image Data Compression, B.V. Dasaralthy, editor, published by the IEEE Computer Society Press, 1995, pp. 164-173.
9. Ward, R.K. and Saleh, B.E., "Deblurring Random Blur," in "Selected Papers in Digital Image Restoration," SPIE Milestone Series, ed. M.I. Sezan, Vol. MS-47, 1992, a reprint book of outstanding optical engineering papers selected from the world literature.
10. Poon, S.S., Ward, R.K., and Palcic, B., "Detection and Segmentation of Nucleated Cells in Blood Smears," Advances in Analytical Cellular Pathology, G. Burger, M. Oberholzer and G.P. Vooijs, Ed., pp. 231-232. Excerpt MEDICA, Int. Congress Series 911, 1990, Elsevier Science Publishers.
11. Kreidieh, R., "Method of Estimation: Acreage Response Functions" in Foreign Trade Regimes and Economic Development: Egypt, by Bent Hansen and K. Nashashibi. National Bureau of Economics Research, New York. Distributed by Columbia University Press, Conf. Series on Foreign Trade and Economic Development, Vol. IV, 1975, pp. 331-341, in Appendix A.
12. Hansen, B. and Kreidieh, R., "An Afghanistan-type Model for Simulating Fiscal, Monetary and Foreign Exchange Policy". Published by the Dept. Of Economics, University of California, Berkeley, California, Paper No. 25, April 1972, 144 pp.
13. Kreidieh, R. and Tourk, K., "Agricultural Supply Elasticities," in "An Appraisal of Economic Development in Afghanistan, 1960-1970" by Bent Hansen, Inst. of Intl. Studies, University of California, Berkeley, CA, Appendix 2, 1971, pp. 1-4.

5. PATENTS

1. Robin Atkins and Rabab Ward "Systems and Methods For Controlling Dual Modulation Displays", US file Application number 61660611, US Provisional Patent Application, Assignee Dolby Laboratories.
2. Mai, Z., Nasiopoulos, P., and Ward, R. K., "Efficient tone-mapping of high-bit-depth video to low-bit-depth displays", US 61/610734, applied to the US patent & trademark office, non-provisional patent, May 2013.
3. Du, J., Li, X., Shi, P., and Ward, R.K., "Noise Reduction for Video Signals," U.S. Patent registration number 6,061,100, issued May 9, 2000.
4. Ward, R.K., "System for Non-Intrusive Measurements of Noise Impairments in Cable TV," U.S. Patent registration number 5,661,529, issued February 27, 1997.
5. Ward, R.K., Shi, P. and Xie, Q., "System for Reducing Beat Type Impairment in a TV Signal," U.S. Patent registration number 5,585,859, issued Dec.17, 1996.
6. Shi, P. and Ward, R.K., "Cancelling Composite Triple Beats in Cable TV Pictures," U.S. Patent registration number 5,323,239, issued June 21, 1994.
7. Zhang, Q. and Ward, R.K., "Automatic Signal-to-Noise Ration Assessment of TV Pictures," U.S. Patent registration number 5,329,311, issued July 12, 1994.
8. Zhang, Q. and Ward, R.K., "Cable Television Signal Quality Monitoring System," U.S. Patent registration number 5,221,967, issued June 22, 1993., PCT #92908960, Japan #HEI 4-508,411, Canada #2,102,404, held 1993.

6. OTHER WORKS

Technical Reports

1. A total of 3 progress reports on our findings regarding our project on "Facial Image Compression" were submitted to Sierra Consulting Ltd., & BC ASI. The dates these reports were submitted are Jan. 1995, April 1995 and Aug. 1995.
2. A total of 25 reports on our findings regarding our projects, "Automatic Monitoring of the Quality of the Cable Television Picture," "Noise Reduction in TV Pictures" and "Video Compression," have been written for the Canadian Cable Labs Fund of the Rogers Cable Television Company. The dates these reports were submitted are Oct. 1990, Jan. 1991, April 1991, July 1991, Oct. 1991, Jan. 1992, April 1992, July 1992, Oct. 1992, Jan. 1993, April 1993, July 1993, Oct. 1993, Jan. 1994, April 1994, July 1994, Oct. 1994, Jan. 1995, April 1995, July 1995, Oct. 1995, April 1996, July 1996, Nov. 1996, Jan. 1997, March 1997, June 1997, Dec. 1997, March 1998 and July 1998.
3. "An Econometric Model to Forecast Electricity Demand for Zimbabwe, An Update," July 1982. No. of pages: 28. Invited research study organized by the University of Zimbabwe and co-sponsored by CIDA. Organized by the International Development Office of the AUCC.
4. "Land Reform Model," report to the Whitsun Foundation, June 1980. No. of pages: 8. This report was subsequently published.
5. "Energy for Development," report to the "Development Studies Committee" University of Zimbabwe, June 1979. No. of pages: 4. This was part of the "Development for Independence" summary report which was written by eight authors (including myself) each reporting on one of the following topics: water, agriculture, energy, education and employment, housing, transportation, public health and pollution.
6. "Five Years Plan, Transportation," wrote part (approx. 40 pages) of the confidential report which was submitted by Arab Projects and Development to the Iraqi Ministry of Planning in February 1976.