Gamal Fahmy, Ph.D

Institute of Neuro Informatik, Ruhr University, Bochum, Germany
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Nationality: British   Language: English, Arabic, German.

Education

May 2003   Ph.D, Electrical Engineering, Arizona State University, Tempe, AZ
                Thesis " Joint Compression and Classification in the Wavelet Domain"
                Advisor: Prof. S. Panchanathan

Nov.1998   Ms.c, Electrical Engineering, Assiut University, Egypt
July 1996   Bs.c, Electrical Engineering, Assiut University, Egypt

Research Interests

Hardware Signal Processing, Digital Systems, Image Coding and Compression, Digital Signal Processing, Biometrics, Feature Extraction, Computer Vision, Media Processing, Video Architecture. FPGA and DSP technology, Security and Watermarking.

Professional Experience

July 2015-present   **Senior Research fellow**, Institute of Neuro Informatik, Ruhr University, Bochum, Germany, funded from Alexander von Humboldt foundation, Germany

Aug 2014-Aug 2015   **Associate Professor**, Electrical Engineering, Australian Collage in Kuwait, Kuwait

Jan2012.-August2014 **Associate Professor**, Electrical Engineering, Majmaah University, KSA

Sept. 2011-Dec. 2011 **Associate Professor**, American University in Bosnia and Herzegovina, Sarajevo

Jan. 2011- Sept. 2011 **Associate Professor**, School of Engineering, German University in Cairo, Egypt

Aug. 2008-Oct. 2011 **Alexander von Humboldt Fellow**, Aachen RWTH University, Germany, Prof Til Aach, Institute of Imaging and Computer vision

Jan. 2006- Dec. 2010 **Lecturer**, School of Engineering, German University in Cairo, Egypt

June 2008- Sept 2008 **Visiting Research Faculty**, Video Processing Laboratory University of Ulm, Germany

May 2003 –Jan 2006 **Research Assistant Professor,** Lane Department of Computer Science and Electrical Engineering, West Virginia University, Morgantown, WV, USA

June 2005-Jan 2006 **Lecturer**, Electrical Engineering Dept., Assiut University, Egypt

Aug. 1999-May 2003 **Graduate Teaching Assistant**, Electrical Engineering Department, Arizona State University, USA.

Aug. 1999-May 2003 **Graduate Research Assistant**, Electrical Engineering Department, Arizona State University, USA.

Jan 2001-Aug. 2001 **Design Engineer,** Motorola, Inc., Chandler AZ, USA.

Publications

I. Journal papers

1. **G. Fahmy**, "Integer DCT convergence for JPEG-75 forensics for images " accepted for publication at the International Journal of Information Assurance and Security (JIAS), ISSN 1554-1010 Volume 10 (2015) pp. 080-088.

2. M. F. Fahmy, and **G. Fahmy**, "Exponential Spline Perfect Reconstruction Decomposition with Applications in Compression and De-noising", Journal of Signal, Image and Video Processing Springer, Volume 8, Issue 6 (2014), pp. 1111-1120.

3. **G. Fahmy**" Image super resolution and Enhancement using E-splines", the Journal of Communications and Computers, January 2014.

4. **G. Fahmy**, "Joint Watermarking and Compression for Images in Transform domain", International Journal of Modern Engineering Research, vol.2, Issue.4, pp-2341-2351, July-Aug. 2012.

5. **G. Fahmy**," Shift variance behavior for different sub-band coding systems, Biorthogonal, Orthogonal and Bspline wavelets", International Journal of Modern Engineering Research, vol.2, Issue.4, pp-2331-2340, July-Aug. 2012

6. **G. Fahmy**," Fast Multiplier-less Implementation of B-spline basis with enhanced compression performance", American Journal of Signal Processing: 2011; 1(1): 1-6.

7. M. F. Fahmy, **G. Fahmy** and O. F. Fahmy, "B-splines Wavelets for Signal Denoising and Image Compression", Journal of Signal, Image and Video Processing, Springer London Volume 5, Issue 2 (2011), Page 141.

8. **G. Fahmy**, "Beyond Band limited Sampling - 60 years after Shannon", Journal of Engineering Sciences-University of Assiut, vol. 39, no. 3, May 2011

9. M. N. Haggag, M. El-Sharkawy, and **G. Fahmy**, "Modified Efficient Fast Multiplication-Free Integer Transformation for the 2-D DCT H.265 Standard", Journal of Software Engineering and Applications, vol. 3, no. 8 , August 2010

10. **G. Fahmy,** M. F. Fahmy and U. S. Mohamed, "Nonblind and Quasiblind Natural Preserve Transform Watermarking", EURASIP Journal of advances on Signal Processing, volume 2010, ID. 452548.

11. **G. Fahmy**, J. Black and S. Panchanathan, "Texture Characterization for Joint Compression and Classification Based on Human Perception", IEEE Transactions on Image Processing, vol. 16, pp. 1389-1696 June 2006.

12. Eyad Haj Said, Diaa M. Nassar, **G. Fahmy** and Hany Ammar, "Teeth Segmentation in Digitized Dental X-Ray Films using Mathematical Morphology", IEEE Transactions for security and information forensics, vol. 1, pp. 178-189, June 2006.

13. **G. Fahmy**, D. Nassar, E. Haj-Said, H. Chen, O. Nomir, J. Zhou, R. Howell, H. Ammar, M. Abdel-Mottaleb and A. Jain "Towards an Automated Dental Identification System (ADIS)", Journal of Electronic Imaging, vol. 14.issue 4, 043018, December 2005.

14. **G. Fahmy**, S. Panchanathan, "A Lifting Based System for Compression and Classification trade off in the JPEG2000 framework", Journal of Visual Communication and Image Representation, vol. 15, issue 2, pp. 145-162, June 2004.

15. J. Bhalod, **G. Fahmy** and S. Panchanathan, Content Based Indexing in the Wavelet Domain, Asian Journal of Information Technology vol. 2 (2): 109-122, 2003

16. **G. Fahmy,** G. Raheem, M. Fahmy**,** A. Saleh, "On the design on Biorthogonal filters", International Journal for Circuit Theory and Applications, Volume 28, Issue 3, Date: May/June 2000, Pages: 209-224.

II. Selected Conference Papers

1. **G. Fahmy**, A. Alqallaf and R. Wurtz," Phase based detection of JPEG counter forensics", submitted to IEEE-ICECS 2015, Cairo Dec. 2015.

2. **G. Fahmy**, "Single Image Super-resolution using E-spline Functions", submitted to IEEE International Symposium for Signal Processing and Information Technology, Abu Dhabi, Dec, 2015.

3. **G. Fahmy, "**NONORTHOGONAL DCT IMPLEMENTATION FOR JPEG FORENSICS", International Hybrid, Intelligence Systems Conference, Kuwait Dec. 2014

4. **G. Fahmy**," Nonorthogonal DCT block convergence for JPEG-75 forensics", IEEE International Symposium for Signal Processing and Information Technology, India, Dec, 2014.

5. M.F. Fahmy, **G. Fahmy**, and O. F. Fahmy" E-spline Based Image Interpolators", IEEE International Symposium for Signal Processing and Information Technology, India, Dec, 2014.

6. **G. Fahmy** and M. Ihle," B-Spline based Perfect Reconstruction of Non-band Limited Signals Through Noisy Sensors", IEEE International Symposium for Signal Processing and Information Technology, Athens, Dec, 2013.

7. M. F. Fahmy, **G. Fahmy** and O. F. Fahmy, "Image Enhancement using E-spline Functions", IEEE International Symposium for Signal Processing and Information Technology, Athens, Dec, 2013.

8. M. F. Fahmy, and **G. Fahmy**, "E-spline Analysis for De-noising and Wavelet Compression Applications**,** IEEE EuroCon 2013 conference, Zagreb July 2013.

9. M. F. Fahmy, **G. Fahmy** and T. Alkanhal, " E-spline in Image De-noising Applications", IEEE-National Radio Conference, Institute of Telecommunication, Cairo, Egypt, April 2013

10. **G. Fahmy**, "Detectable Tampering of JPEG Anti Forensics", National Workshop for information assurance, King Saud University, April 2012, also accepted at IEEE International Symposium for Signal Processing and Information Technology, ISSPIT, Vietnam, Dec. 2012.

11. M. F. Fahmy, and **G. Fahmy**, "Image Compression using Exponential B-spline functions", IEEE- National Radio Conference, Cairo Univ., April 2012.

12. **G. Fahmy**, "An interactive super resolution coding approach of images and videos for enhanced user visualization", accepted at IEEE International Symposium for Signal Processing and Information Technology, ISSPIT, Spain, Dec. 2011.

13. M. N. Haggag, M. El-Sharkawy, and **G. Fahmy**, "Modified Efficient Fast Multiplication-Free Integer Transformation for the 2-D DCT H.265 Standard", Data Compression Conference, Snowbird, UT, March 2011.

14. **G. Fahmy**, "A Novel Transform based Face Watermarking Approach for Security and Data Hiding Applications", IEEE International Symposium for Signal Processing and Information Technology, ISSPIT, Luxor, Dec. 2010

15. H. Deghiedy, M. El-Sharkawy, and **G. Fahmy**, "VC-1 Zero Block Detection Method in Motion Estimation Video Coding", IEEE International Symposium for Signal Processing and Information Technology, ISSPIT, Luxor, Dec.2010

16. M. N. Haggag, M. El-Sharkawy, and **G. Fahmy**, "Efficient Fast Multiplication-Free Integer Transformation for the 2-D DCT H.265 Standard", IEEE International Conference for Image Processing, ICIP 2010, Hong Kong

17. **G. Fahmy** and T. Aach, "Enhanced Bspline based compression performance for images", IEEE International conference on Acoustics, Speech and Signal Processing, ICASSP, Dallas, March 2010.

18. **G. Fahmy**, "A Quasi Blind Watermark Extraction of Watermarked Natural Preserve Transform Images on a DSP Board", IEEE International Symposium for Signal Processing and Information Technology, ISSPIT, Ajman, UAE, Dec. 2009.

19. M. F. Fahmy, O. M. Fahmy and **G. Fahmy**, "A Quasi Blind Watermark Extraction of Watermarked Natural Preserve Transform Images", IEEE International Conference on Image Processing, ICIP November 2009.

20. M. F. Fahmy; O. F. Fahmy**; G. Fahmy**; G. M. Raheem, O. S. Mohamed, "Natural preserving transform watermarking technique", 26th National Radio Science Conference, C32, Future University, Egypt, March 2009

21. **G. Fahmy**, "Bspline based Wavelets with Lifting Implementation", IEEE International Symposium for Signal Processing and Information Technology, ISSPIT, Sarajevo, Dec. 2008.

22. M. Fahmy, G. Raheem, O. Mohammed, O. Fahmy and **G. Fahmy**, "Watermarking via Bspline Expansion and Natural Preserving Transforms", IEEE International Symposium for Signal Processing and Information Technology, ISSPIT, Sarajevo, Dec. 2008.

23. Mamdouh F. Fahmy, Gamal F. Abdel Raheem, Osama S Mohammed, Omar F. Fahmy, **G. Fahmy**, "Signal Denoising and Image Compression Using Bspline Wavelets", IEEE International Symposium for Signal Processing and Information Technology, ISSPIT, Sarajevo, Dec. 2008.

24. **G. Fahmy**, "Bspline based Super-Resolution Construction of Textured Images", IEEE International Symposium for Signal Processing and Information Technology, ISSPIT, pp. 267-272, Cairo, Dec. 2007.

25. A. El-attar and **G. Fahmy**, "An Improved Watchdog Timer to Enhance Imaging System Reliability In The Presence Of Soft Errors", IEEE International Symposium for Signal Processing and Information Technology, ISSPIT, pp. 1116-11120, Cairo, Dec. 2007.

26. A. El-attar, and **G. Fahmy**, "A Study of Fault Coverage of Standard and Windowed Watchdog Timers", IEEE International Conference on Signal Processing and Communications, pp. 325-328, Dubai Nov. 2007

27. M. F. Fahmy, T. K. Abdel Hameed and **G. Fahmy**, "A Fast B_SPLINE Based Algorithm for image zooming and compression", 24th National Radio Science Conference, pp. C-20(1-9), Ain Shams, Egypt, March 2007.

28. **G. Fahmy**, "Super-Resolution Construction of IRIS Images from a Visual Low Resolution Face Video", IEEE International Conference for Signal Processing and its applications, ISSPA 2007, WB-P4-4, Sharjah, UAE, Feb. 2007

29. M. F. Fahmy and **G. Fahmy**, "'A New Signal Compression Algorithm Using AllPass Extraction And Its Use In Image Compression And Coding", IEEE International Symposium for Signal Processing and Information Technology, ISSPIT, pp. 91-94, Vancouver, August 2006.

30. **G. Fahmy,** A. Elsherbeeny, H. Ammar, S. Mandala, M. Abdel-Mottaleb, "The effect of lighting direction/condition on the performance of face recognition algorithms", SPIE Human Identification Conference (6202-21) April 2006.

31. **G. Fahmy**, N. Schmid and Vivekanad Dorairaj, " Performance Evaluation of non-ideal IRIS Based Recognition System Implementing Global ICA Encoding", IEEE International Conference on Image Processing, pp. 285-288, Genova, Italy 2005.

32. **G. Fahmy**, N. Schmid and Vivekanad Dorairaj, " Performance Evaluation of IRIS Based Recognition System Implementing Global ICA Encoding", SPIE Human identification conference, Proc SPIE 5779, pp. 51, April 2005.

33. **G. Fahmy**, J. Black and S. Panchanathan, "Texture Characterization for Joint Compression and Classification Based on Human Perception in the Wavelet Domain", IEEE International Conference on Image Processing, pp. 2335-2338, Singapore, Sept. 2004.

34. **G. Fahmy**, D. Nassar, E. Haj-Said, H. Chen, O. Nomir, J. Zhou, R. Howell, H. Ammar, M. Abdel-Mottaleb and A. Jain "Towards an Automated Dental Identification System (ADIS)", IEEE International Conference of Biometric Authenticity, pp. 789-796, Hong Kong 2004.

35. **G. Fahmy**, L. Hornak, N. Schmid, X. Li and S. Schuckers, "Non-frontal/non-ideal iris localization and acquisition", SPIE ITCOM 2004 Philadelphia, Proc SPIE 5601 pp. 267, October 2004.

36. Eyad Haj Said, Diaa Eldin M. Nassar, **G. Fahmy** and Hany H. Ammar, " Dental X-Ray Image Segmentation ", SPIE Human identification conference, Proc SPIE 5404, pp. 409, April 2004.

37. Omaima Nomir, Mohamed Abdel-Mottaleb, Diaa Eldin Nassar, **G. Fahmy**, and Hany H. Ammar, "challenges of developing an Automated Dental Identification System", IEEE mid-west symposium or circuits and systems, pp. 411- 414, Cairo, Egypt, December 2003

38. **G. Fahmy** and S. Panchanathan, "Perceptual Indexing of Visual Information", Proc. Visual Communications and Image Processing 2002, Proc SPIE 4671 pp. 978, San Jose, CA, January 2002.

39. **G. Fahmy** and S. Panchanathan, "A Lifting Based System for Optimal Compression and Classification in the JPEG2000 framework", Proc. IEEE International Symposium on Circuits and Systems (ISCAS 2002), pp. IV153- 156, Phoenix, AZ, May 2002.

40. **G. Fahmy** and S. Panchanathan, "A lifting based system for optimal image compression in the wavelet domain", Proceedings. (ICASSP '02). IEEE International Conference on Acoustics, Speech, and Signal Processing, Volume: 4, pp. 4188-4189 May 2002.

41. **G. Fahmy**, J. Bhalod and S. Panchanathan, "A Joint Compression and Indexing Technique in Wavelet Compressed Domain", Proc. IEEE International Conference on Multimedia and Expo (ICME2001), pp. 249 -252, Tokyo, Japan, August 2001.

42. **G. Fahmy** and L. Karam, "Prediction of the quality of JPEG-compressed color images based on the SCIELAB metric", The Thirty-Fourth Asilomar Conference on , Volume: 2 , pp. 1054 –1057, 29 Oct.-1 Nov. 2000

II. Presentation

1. Gamal Fahmy, " Challenges of developing an Automated Dental Identification Systems ", at the Biometric Consortium in Crystal city, in Arlington, VA 2003

2. Gamal Fahmy, "Towards an Automated Dental Identification System (ADIS)", at the National Conference on Digital Government Research dg.o 2004, Seattle WA 2004

3. Gamal Fahmy, "Automatic Identification ", invited talk at the IEEE meeting for young researchers, Toronto, Canada, February 2004.

4. Gamal Fahmy, "Media Processing and Computer Vision Applications", invited talk at the industry summit at Texas A & M Universty- Texarkana, March 2005.

Instruction

Undergraduate

Electromagnetics 1, Fall 2012, 2013 Majmaah, KSA
Signals and System, Fall 2012, 2013 Majmaah, KSA
Image and Video Processing, Fall 2012, 2013 Majmaah, KSA
Electronic 1, Spring 2012, 2013 Majmaah, KSA
Modulation and Communication, Spring 2012 Majmaah, KSA
Wireless Communications, Fall 2011, AUBIH
Data Communication and Networking Fall 2011, AUBIH

Digital Logic Design (2nd semester), Spring 2006, teaching evaluation 2.94 (GUC)
Computer system architecture (6th semester), Spring 2006, teaching evaluation 3.77 (GUC)
Digital System Design, (5th and 6th semester), Spring 2007, Spring 2008, Winter 2008, Spring 2009, Winter 2009, Spring 2010, Teaching evaluation 2.01 (GUC)
Microcomputer applications (7th semester), Winter 2006 & Winter 2007, Winter 2008, Winter 2009, teaching evaluation 2.12 & 2.81 (GUC)

Digital Signal Processing (Juniors), Assiut University, Fall 2005
Computer Organization (Juniors), Assiut university, Fall 2005

Graduate

Programmable Logic Architecture, (9th semester), Winter 2007, evaluation 2.01   (GUC)
Image Processing, (10th semester), Spring 2008 (GUC), evaluation 2.2
Source Coding and Compression (9th semester), Winter 2008, Winter 2009, Winter 2010 (GUC) Teaching evaluation 2.4
Electronic Imaging, (10th semester), Spring 2008, Spring 2009, Spring 2010, Spring 2011 (GUC) Teaching evaluation 2.3
Information Theory, (10th semester), Spring 2011, (GUC), Teaching evaluation 2.3

VLSI Architecture, (10th semester at West Virginia University), teaching evaluation 3/5

Lab supervision:

Micro-electronic Lab Winter 2006, Winter 2007, Winter 2008, Winter 2009, Winter 2010
Advanced Communication Lab Spring 2009, Spring 2010, Spring 2011
Advanced Electronic Lab, Spring 2008, Spring 2009

Curriculums:

Helping in curriculum development of Electronic Engineering students
Helping in curriculum development of Communication Engineering students
Helping in curriculum development of Media Engineering students
Helping in curriculum development of Biometric Engineering students at West Virginia

Developing the syllabus of several grad and undergrad courses like, Digital System Design, Micro Computer applications, Digital Image processing and Source Coding and Compression.

Bsc Project Supervision:
10-15 Bsc project every year in the area Image and Video Coding, Microprocessor implementation and design, Micro controller realization and Signal analysis and decomposition.

Graduate Students

Susmita Mandala, "The Effect of lighting Direction on Face Recognition Performance", Msc Thesis, West Virginia University Spring 2005

Mythili Ogirala, "MULTI RESOLUTION DENTAL IMAGE REGISTRATION BASED ON GENETIC ALGORITHM" Msc Thesis, West Virginia University, Spring 2004

Zainab Akil, Msc. Student Lane Department of Computer Science and Electrical Engineering, West Virginia University, Spring 2004

Faisal Chaudhry, Msc. student Department of Mechanical and Industrial Engineering, West Virginia University, Spring 2004

Ashraf El-Attar, Msc "A Survey of Fault Detection Techniques for Microprocessors and Simulation of a Watchdog Processor and Timer Using FPGA", German University in Cairo, Sept., 2007

Mohamed Nasr Haggag, Msc. "Efficient Fast 1-D Multiplication-Free Integer Transformation for the 2-D DCT H.265 Standard", German University in Cairo, Dec. 2009.

Hesham Deghiedy, "VC-1 Zero Block Detection Method in Motion Estimation Video Coding", German University in Cairo, Jun. 2010.

Research Work

Funded Research Projects
1- "Implementation of Hardware Digital Image and video coders and decoder", monitored by the Office research and innovation (RDI) from the ministry of higher education in Egypt, and funded from European Union. (budget 25,000.00 EUR, 9/2008-9/2009)
2- "Implementation of Watermarking Image coders on FPGA/DSP boards", funded from the ministry of communications (ITIDA), Egypt. (budget 100,000.00 EGP, 3/2009-9/2011)
3- Automatic Dental Identification System, (9/2002-8/2006, budget 1,9 Millon USD) funded from the United State National Science Foundation
4- Non- Ideal Iris Identification and Recognition, (1/2004-12/2006, budget 220,000 USD) funded from the Center for Identification Technology (Government NSF funded Research Center)
5- Facial Image Quality Assessment System, (7/2004-12/2005, budget 80,000 USD) funded from the Center for Identification Technology (Government NSF funded Research Center), USA

6- Ear Identification System, (9/2005-12/2007, budget 222,000 USD) funded from the Federal Bureau of Investigations, Quantico Virginia, USA
7- Face Acquisition System, (9/2004-9/2006, budget 30,000 USD) funded from the National Institute of Justice, USA

Awards

Humboldt foundation, fellowship, Germany 2015
Egypt National State incentive award in Engineering Sciences 2012-2013
Alexander von Humboldt Egypt-Tunisia special award, Germany 2012-2013
George Foster fellowship funded from Alexander von Humboldt, Germany 2009-2011
Graduate instate tuition wavier, Arizona State University, United States 2002-2003
SPIE conference scholarship, ITCOM, Denver, United States 2001
Excellence undergrad student award, Assiut University, Egypt 1992-1996

Professional Activities

Panel Reviewer for the Natural Sciences and Engineering Research Council of Canada NSERC (Canadian NSF)
Reviewer for IEEE Transaction for Circuits and Systems for Video Technology
Reviewer for IEEE Transaction for Image Processing
Reviewer for IEEE Transaction for Multimedia
Reviewer for International Conference of Image Processing, 2004-Present
Reviewer for International Conference of Acoustics, Speech and Signal Processing, 2007-Present
Technical Program committee member for IEEE International Symposium for Signal Processing and Information Technology, 2007

References

Sethuraman Panchanathan, Ph.D
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Mohamed Abdel-Mottaleb, Ph.D, Associate Professor
Electrical and Computer Engineering Department
University of Miami,

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