

# Masoud Alghoniemy

Department of Electrical  
Engineering, University of  
Alexandria, Alexandria 21544,  
Egypt  
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## EDUCATION

- Ph.D. Electrical Engineering, (GPA 4.0) March 2001  
University of Minnesota, Twin Cities, MN, USA
- M.Sc. Electrical Engineering, April 1996  
University of Alexandria, Egypt
- B.Sc. Electrical Engineering, (Top of class with Honors degree) June 1993  
University of Alexandria, Egypt

## ACADEMIC POSITIONS

- UNIVERSITY OF ALEXANDRIA, EGYPT**  
Professor Winter 2017- present
- UNIVERSITY OF ALEXANDRIA, EGYPT**  
Associate Professor. Winter 2010 – Fall 2016
- EGYPT - JAPAN UNIVERSITY FOR SCIENCE AND TECHNOLOGY, EGYPT**  
Associate Professor. Fall 2010 – Summer 2012
- UNIVERSITY OF ALEXANDRIA, EGYPT**  
Assistant Professor. Fall 2002 –Fall 2009
- UNIVERSITY OF MINNESOTA, MN, USA**  
Research Assistant. Fall 1996 -Winter 2001

## INDUSTRIAL EXPERIENCE

- INTEL CORP., CENTER OF EXCELLENCE FOR WIRELESS APPLICATIONS (CEWA), SMART VILLAGE, CAIRO.**  
Senior Research Scientist. March -August 2010
- MALAYSIAN INSTITUTE FOR MICROELECTRONICS SYSTEMS (MIMOS BHD)**  
Senior Engineer -Wireless Communications. Fall 2006 – Fall 2008
- IBIQUITY DIGITAL CORP., NJ, USA**  
Audio Coding Engineer. Spring 2001 -Spring 2002
- INTEL CORP., MICROPROCESSOR RESEARCH LAB, SANTA CLARA, USA:**  
Summer Intern. Summer 2000

## PATENTS

- Deepen Sinha, Masoud Alghoniemy, Lin Lin, and Alex Cabanilla, "Efficient Coding of High Frequency Signal Information in a Signal Using a Linear/Non-linear Prediction Model Based on a Low Pass Baseband", US 7191136, March 13, 2007.

## INVITED TALKS

- “Digital Signal Processing”, panelist at the Egypt Computer Science Panel (ESCP-2014), ACM student chapter, Alexandrina Bibliotheca, Alexandria, May 2014.
- “A 24-GHz Radar for Ground Transportation”, Workshop on ICT Solutions to non-ICT Domain: Problems and Available Technologies, Egypt, April 2014.
- “Constrained Sequence Retrieval with Applications to Remote Sensing”, International Seminar for Remote Sensing Technology and Atmospheric Science, Osaka University, Japan, March 2013.
- “Self Synchronizing Watermarking techniques,” NJIT Workshop on Content Security and Data Hiding in Digital Media, Newark, March 1999.

## FUNDED PROJECTS

- Fiber to the Home (FTTH), 2015-2017. (Role: Researcher)
- Tsunami Radar: A project funded by Osaka University, Japan. 2013. (Role: Researcher)

## TEACHING EXPERIENCE

### Undergraduate courses

- Digital Signal Processing, Automatic Control Systems, Electric Circuits I& II, Electronic Circuits I& II, Analog Integrated Circuits.

### Graduate Courses

- Detection and Estimation, Adaptive Filtering, Advanced Digital Signal Processing, Image Processing, Selected Topics in Signal Processing.

## PROFESSIONAL SERVICES

- Technical Program Committee (TPC) member
  - 27th Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications - (PIMRC'16)
  - Japan-Egypt Conference on Electronics, Communications and Computers (JEC-ECC' 2012), (JEC-ECC' 2013), and (JEC-ECC' 2016)
- Technical referee for the National Telecommunication Regulatory Authority (NTRA)
- Technical reviewer for top tier journals and conferences (e.g., IEEE Trans. on Signal Processing, IEEE Trans. on Multimedia, IEEE Signal Processing Letters, IEEE Trans. on Image Processing, Elsevier Journal of Systems and Software, Elsevier Signal Processing, Elsevier Biomedical Signal Processing and Control, JASIP, ICASSP and ICC.)

## PUBLICATIONS

1. T. Sallam, A. B. Abdel-Rahman, **M. Alghoniemy**, Z. Kawasaki and T. Ushio, "A Neural-Network-Based Beamformer for Phased Array Weather Radar," in *IEEE Transactions on Geoscience and Remote Sensing*, vol. 54, no. 9, pp. 5095-5104, Sept. 2016. [\[URL\]](#)
2. M. Elwekeil, **Alghoniemy, M**; O. Muta, A. Abdel-Rahman, H. Gacanin and H. Furukawa, "A dynamic distributed frequency reuse scheme for OFDMA downlink cellular networks," *IEICE Communications Express*, Vol. 5, No. 8, pp. 248-253, Aug. 2016. [\[PDF\]](#)
3. I. Al-Nahhal, **M. Alghoniemy**, O. Muta and A. B. A. El-Rahman, "Reduced complexity K-best sphere decoding algorithms for ill-conditioned MIMO channels," *2016 13th IEEE Annual Consumer Communications & Networking Conference (CCNC)*, Las Vegas, NV, USA, 2016, pp. 183-187. [\[URL\]](#)
4. Ramy Hussein, Amr Mohamed, **Masoud Alghoniemy**, "Scalable real-time energy-efficient EEG compression scheme for wireless body area sensor network", *Elsevier Biomedical Signal Processing and Control*, Volume 19, May 2015, Pages 122-129, ISSN 1746-8094, [\[URL\]](#)
5. Hussein, R.; Mohamed, A.; **Alghoniemy, M.**, "Energy-efficient on-board processing technique for wireless epileptic seizure detection systems," *Computing, Networking and Communications (ICNC), 2015 International Conference on*, vol., no., pp.1116-1121, 16-19 Feb. 2015. [\[URL\]](#)
6. B. Abdelhamid, M. Elsabrouty, **M. Alghoniemy**, S. Elramly, O. Muta, and H. Furukawa, "Underlay MIMO Cognitive Transceivers Designs with Channel Uncertainty," *IEICE Trans. on Communications*, Vol.E97-B, No.11, pp.-, Nov. 2014. [\[URL\]](#)
7. M. Elwekeil, **Alghoniemy, M**; O. Muta, A. Abdel-Rahman, H. Furukawa, and H. Gacanin "A Maxmin Model for Solving Channel Assignment Problem in IEEE 802.11 Networks," *Proceedings of the 22<sup>nd</sup> European Signal Processing Conference (EUSIPCO 2014)*, Sept. 2014 [\[URL\]](#)
8. Mohamed Elwekeil, **Masoud Alghoniemy**, Muta Osamu, Hiroshi Furukawa," Low Complexity Channel Assignment for IEEE 802.11b/g Multi-Cell WLANs," *IEICE Transactions on Fundamentals*, Vol.E97-A, No.8, pp. 1761-1769, Aug. 2014. [\[URL\]](#)
9. Mohamed Elwekeil, **Masoud Alghoniemy**, Osamu Muta, Adel Abdel-Rahman, Hiroshi Frukawa,"A Maxmin Approach for Channel Assignment in Multi-cell WLANs," *IEICE Communications Express (ComEx)*, Vol.3, No.5, pp. 175-181, May 2014. [\[PDF\]](#)
10. **Alghoniemy, M.**, "An algebraic approach to the design of low complexity personalized video playlist," *Consumer Electronics (ICCE), 2014 IEEE International Conference on* , vol., no., pp.380,383, 10-13 Jan. 2014 [\[URL\]](#)
11. Hashima, Sherief; Muta, Osamu; Elnoubi, Said; **Alghoniemy, Masoud**; Shalaby, Hossam; Frukawa, Hiroshi; Mahmoud, Imbaby, "Analysis and comparison of Fractional Frequency Reuse schemes based on worst case Signal to Interference power Ratio in OFDMA uplink," *Wireless Telecommunications Symposium (WTS), 2014* , vol., no., pp.1,6, 9-11 April 2014 [\[URL\]](#)
12. Sherief Hashima, Osamu Muta, **Masoud Alghoniemy**, Hossam Shalaby, Hiroshi Frukawa, Said Elnoubi, and Imbaby Mahmoud, "Area Spectral Efficiency Performance Comparison of Downlink Fractional Frequency Reuse Schemes for MIMO Heterogeneous Networks," *2014 International Conference on Information Science, Electronics and Electrical Engineering (ISEEE 2014)* [\[URL\]](#)
13. T. Sallam, A. B. Abdel-Rahman, **M. Alghoniemy** and Z. Kawasaki, "A novel approach to the recovery of aperture distribution of phased arrays with single RF channel using neural networks," *Microwave Conference (APMC), 2014 Asia-Pacific*, Sendai, Japan, 2014, pp. 879-881. [\[URL\]](#)
14. Tarek Sallam; Adel Bedair; **Masoud Alghoniemy**; Zen Kawasaki, "Aperture Distribution Reconstruction of Phased Array Antenna with Single RF Channel Based on Non-Uniform Spatial Sampling of Array Elements", *8<sup>th</sup> European Conference on Antennas and Propagation (EuCAP)* 6-11 April 2014 [\[URL\]](#)

15. Hussein, R.; Mohamed, A.; **Alghoniemy, M.**; Awad, A., "Design and analysis of an adaptive compressive sensing architecture for epileptic seizure detection," *Energy Aware Computing Systems and Applications (ICEAC), 2013 4th Annual International Conference on* , vol., no., pp.141,146, 16-18 Dec. 2013 [\[URL\]](#)
16. Sallam, T.; Abdel-Rahman, A.B.; **Alghoniemy, M.**; Kawasaki, Z., "A simple approach for the recovery of aperture distribution of phased array antennas with single RF channel," *Electronics, Communications and Computers (JEC-ECC), 2013 Japan-Egypt International Conference on* , vol., no., pp.130,134, 17-19 Dec. 2013 [\[URL\]](#)
17. Al-Nahhal, I.; **Alghoniemy, M.**; Abd El-Rahman, A.B.; Kawasaki, Z., "Modified zero forcing decoder for ill-conditioned channels," *Wireless Days (WD), 2013 IFIP* , vol., no., pp.1,3, 13-15 Nov. 2013 [\[URL\]](#)
18. Hussein, R.; Mohamed, A.; **Alghoniemy, M.**, "Adaptive compression and optimization for real-time energy-efficient wireless EEG monitoring systems," *Biomedical Engineering International Conference (BMEiCON), 2013 6th* , vol., no., pp.1,5, 23-25 Oct. 2013 [\[URL\]](#)
19. S. Hashima, H. shalaby, S. Elnoubi, **M. Alghoniemy**, . Muta, and H. Furukawa, " Performance analysis of uplink Fractional Frequency Reuse using worst case Signal to Interference Ratio," Science and Information Conference (SAI), Page(s): 839 – 844, 2013. [\[URL\]](#)
20. Hussein, R.; Awad, A.; El-Sherif, A.A.; Mohamed, A.; **Alghoniemy, M.**, "Adaptive energy-aware encoding for DWT-based wireless EEG tele-monitoring system," *Digital Signal Processing and Signal Processing Education Meeting (DSP/SPE), 2013 IEEE* , vol., no., pp.245,250, 11-14 Aug. 2013 [\[URL\]](#)
21. Hashima, S.; Elnoubi, S.; **Alghoniemy, M.**; Shalaby, H.; Muta, O.; Mahmoud, I., "Analysis of frequency reuse cellular systems using worst case Signal to Interference ratio," *Telecommunications (ConTEL), 2013 12th International Conference on* , vol., no., pp.185,190, 26-28 June 2013 [\[URL\]](#)
22. Hashima, S.; Shalaby, H.; **Alghoniemy, M.**; Muta, O.; Furukawa, H., "Performance analysis of Fractional Frequency Reuse based on worst case Signal to Interference Ratio in OFDMA downlink systems," *Personal Indoor and Mobile Radio Communications (PIMRC), 2013 IEEE 24th International Symposium on* , vol., no., pp.616,620, 8-11 Sept. 2013 [\[URL\]](#)
23. B. Abdelhamid, M. Elsabrouty, **M. Alghoniemy**, S. Elramly, O. Muta and H. Furukawa, "Underlay MIMO cognitive transceivers design with channel uncertainty," *Personal Indoor and Mobile Radio Communications (PIMRC), 2013 IEEE 24th International Symposium on*, London, 2013, pp. 1019-1023. [\[URL\]](#)
24. B. Abdelhamid, M. Elsabrouty, **M. Alghoniemy**, S. Elramly, O.Muta, and H. Furukawa, "Joint optimization design for single underlay cognitive transceiver with channel uncertainty," *IEICE Communications Express (ComEx)*, vol.2, no.3, pp.111-117, March 2013. [\[PDF\]](#)
25. B. Abdelhamid, M. Elsabrouty, **M. Alghoniemy**, S. Elramly, O. Muta, and H. Furukawa, "Joint Optimization Design for Underlay Cognitive Transceiver with Channel Uncertainty," Technical Report of IEICE RCS, Vol. 112, No. 423, pp. 177-182, Jan. 2013.
26. B. Abdelhamid, M. Elsabrouty, **M. Alghoniemy**, S. Elramly, O.Muta, and H. Furukawa, "Joint Optimization Design for Multiple Underlay MIMO Cognitive Transceiver with Channel Uncertainty," Technical Report of IEICE CS, Vol. 112, No. 484, pp.235-240, March 2013.
27. B. Abdelhamid, M. Elsabrouty, **M. Alghoniemy**, S. Elramly, O.Muta, and H. Furukawa, "A Distributed Cooperative MIMO Secondary Transceivers Design for Overlay Cognitive Radio Systems," Technical Report of IEICE RCS, Vol. 113 , No. 8, pp. 75-80, April 2013.
28. Mohamed Elwekeil; **Alghoniemy M.**; Osamu Muta; and Hiroshi Furukawa, "Lagrangian Relaxation Approach for Low Complexity Channel Assignment in Multi-Cell WLANs," Proceedings of the International Conference on Computing, Networking and Communications (ICNC-13) - Workshop on Computing, Networking and Communications, pp. 138-142, Jan. 2013. [\[URL\]](#)
29. Bassant Abdelhamid, Maha Elsabrouty, **Alghoniemy M.**; and Salwa Elramly, "Cooperative and Non Cooperative Multi-Secondary Users Cognitive Radio System with Channel Uncertainty," IEEE 23rd International Symposium on Personal Indoor and Mobile Radio Communications (PIMRC'12), pp.1582-1587, 2012 [\[URL\]](#)

30. Mohamed Elwekeil; **Alghoniemy M.**; Mostafa Elkhamy; Osamu Muta; and Hiroshi Furukawa, "Optimal Channel Assignment for IEEE 802.11 Multi-cell WLANs," Proc. of the EUSIPCO conference, pp. 694-698, Romania, 2012. [\[URL\]](#)
31. Bassant Abdelhamid, Maha Elsabrouty, **Alghoniemy M.**; and Salwa Elramly, "Opportunistic Interference Alignment for MIMO Cognitive Networks with Channel Imperfection," International Conference on Wireless Communications and Mobile Computing (MIC-WCMC) pp. 62-67, Spain 2012.
32. **Alghoniemy M.**; Badawi A.; and ElGebaly H., "On the Design of Fractional Frequency Reuse in Cellular Wireless Systems," proceedings of the IEEE workshop on Statistical Signal Processing (SSP-12), pp. 836-839 August 2012.
33. **Alghoniemy M.**; and Tewfik A. H., "Low Complexity Customized Video Playlist Generation," IEEE International Conference on Emerging Signal Processing Applications (ESPA), pp. 63-66, Las Vegas, Jan. 2012. [\[URL\]](#)
34. **Alghoniemy M.**; and Tewfik A. H., "MIMO Cube Decoder," *Journal of Communications Software and Systems (JCOMSS)*, pp. 104-108, Vol. 7, No. 3, Sept.2011.
35. **Alghoniemy M.**; and Tewfik A. H., "Cube Lattice Decoder," the 18th International Conf. on Software Telecommunications and Computer Networks (SoftCOM), pp. 250-253, Sept. 2010. [\[URL\]](#)
36. **Alghoniemy M.**, "Regularized MIMO Decoders," *Journal of Communications Software and Systems (JCOMSS)*, Vol. 5, No. 4, pp. 149-153, Dec. 2009. **[Invited]**
37. **Alghoniemy M.**, "A New Family of MIMO Receivers based on the Equivalence between the MMSE and Tikhonov Regularization," *Elsevier Alexandria Engineering Journal (AEJ)*, Vol. 48, No. 5, pp. 543-549, Sept. 2009.
38. **Alghoniemy M.**, "On the Equivalence between the MMSE Receiver and Tikhonov Regularization", the 17th International Conf. on Software Telecommunications and Computer Networks (SoftCOM), pp. 221-224, Sept. 2009. [\[URL\]](#)
39. Elsayed, H. A.; and **Alghoniemy M.**, "Lossless Audio Coding using Burrows-Wheeler Transform and Move-to-Front Coding," Proc. IEEE International Conf. on Computer Engineering and Systems (ICCES), pp. 209-212, Nov. 2007.
40. Tewfik A. H.; and **Alghoniemy M.**, "Polynomial Time and Stack Decoding Solutions to Bounded Error Subset Selection," Proc. IEEE International Conf. on Acoustics Speech and Signal Processing (ICASSP), Vol. 3, pp. 69-72, May 2006. [\[URL\]](#)
41. Elsayed, H. A.; **Alghoniemy M.**; El-Banna, M., "A Comparative Study of Lossless Audio Coding Schemes," Proc. IEEE International Conf. on Computer Engineering and Systems (ICCES), pp. 271-275, Nov. 2006.
42. **Alghoniemy M.**; and Tewfik A. H., "Progressive Quantized Projection Approach to Data Hiding," *IEEE Trans. on Image Processing*. Vol. 15, No. 2, pp. 459-472, Feb. 2006. **[Top 10 articles published in the domain. Source: BioMedLib]**
43. Tewfik A. H.; and **Alghoniemy M.**, "Pruned Enumeration Approach to Bounded error Subset Selection," Signal Processing with Adaptive Sparse Structured Representation workshop (SPARS'05), Rennes, Nov. 2005.
44. **Alghoniemy M.**; and Tewfik A. H., "Cube Decoding", Proc. IEEE International Conf. on Communications (ICC), Vol. 3, pp. 1901-1905, Seoul, May 2005. [\[URL\]](#)
45. **Alghoniemy M.**; and Tewfik A. H., "Reduced Complexity Bounded Error Subset Selection," Proc. IEEE International Conf. on Acoustics Speech and Signal Processing (ICASSP), Vol. 5, pp. 725-728, Philadelphia, March 2005. **[Invited]** [\[URL\]](#)
46. **Alghoniemy M.**; and Tewfik A. H., "Bounded Subset Selection with Non-Integer Coefficients" Proc. of the Eusipco conference, pp. 317-320, Vienna, Sept. 2004. [\[URL\]](#)
47. **Alghoniemy M.**; and Tewfik A. H., "A Sparse Solution to the Bounded Subset Selection Problem: A Network Flow Model Approach", Proc. IEEE International Conf. on Acoustics Speech and Signal Processing (ICASSP), Vol. 5, pp. 89-92, Canada, May 2004. [\[URL\]](#)

48. **Alghoniemy M.;** and Tewfik A. H., "Geometric Invariance in image Watermarking," *IEEE Trans. on Image Processing*, Vol. 13, No. 2, pp. 145-153, Feb. 2004.
49. **Alghoniemy M.;** and Tewfik A. H., "A Network Flow Model for Playlist Generation," Proc. International Conf. on Multimedia and Expo (ICME), Japan, Aug. 2001.
50. **Alghoniemy M.;** and Tewfik A. H., "User-Defined Music Sequence Retrieval," Proc. of the eighth ACM MM'00 International Multimedia Conference, pp. 356-358, Los Angeles, Nov. 2000.
51. **Alghoniemy M.;** and Tewfik A. H., "Geometric Distortion Correction through Image Normalization," Proc. International Conf. on Multimedia and Expo (ICME), Vol. 3, pp. 1291-1294, Aug. 2000. **[Invited]**
52. **Alghoniemy M.;** and Tewfik A. H., "Image Watermarking by Moment Invariants," Proc. IEEE International Conf. on Image Processing (ICIP), Vancouver, Sept. 2000.
53. **Alghoniemy M.;** and Tewfik A. H., "Personalized Music Distribution," Proc. IEEE International Conf. on Acoustics Speech and Signal Processing (ICASSP), Vol. 6, pp.2433-2436, Turkey, June 2000.
54. **Alghoniemy M.;** and Tewfik A. H., "Geometric Distortion Correction in Image Watermarking," Proc. SPIE on Security and Watermarking of Multimedia Contents II, Vol. 3971, pp. 82-89, San Jose, Jan. 2000.
55. **Alghoniemy M.;** and Tewfik A. H., "Progressive Quantized Projection Watermarking Scheme," Proc. the seventh ACM MM'99 International Multimedia Conference, pp. 295-298, Orlando, Nov. 1999.
56. **Alghoniemy M.;** and Tewfik A. H., "Synchronization Recovery in Image Watermarking," Multimedia and Security Workshop at the ACM MM '99, GMD-Report 85, pp. 59-63, Orlando, Nov. 1999. **[Invited]**
57. **Alghoniemy M.;** and Tewfik A. H., "Rhythm and Periodicity Detection in Polyphonic Music," Proc. IEEE third Workshop on Multimedia Signal Processing, pp. 185-190, Denmark, Sept. 1999.
58. **Alghoniemy M.;** and Tewfik A. H., "Self-Synchronizing Watermarking Techniques," Proc. of Symposium on Content Security and Data Hiding in Digital Media, Newark, March 1999. **[Invited]**
59. Nam J.; **Alghoniemy M.;** and Tewfik A. H., "Audio-Visual Content-based Violent Scene Characterization," Proc. IEEE International Conf. on Image Processing (ICIP), Vol. I, pp. 353-357, Chicago, 1998.
60. **Alghoniemy M.;** and Elkhamy S., "Wavelets for Data Reduction with Application in Matched Filter," Proc. URSI International Union of Radio Science, Lille, France, Aug. 1996.
61. El-Khamy, S.E.; **Alghoniemy, M.B.;** "The Wavelet Transform: A Review and Application to Enhanced Data Storage Reduction in Mismatched Filter receivers," Radio Science Conference, NRSC '96, Thirteenth National, pp. 1-21, 1996.

## FORMER STUDENTS

- Mohamed Elwekeil (Ph.D., 2016, M.Sc. 2012)
- Tarek Sallam Ph.D. 2015
- Sherif Hashima Ph.D. 2014
- Ibrahim Al-Nahhal M.Sc. 2014
- Ramy Hussein M.Sc. 2014
- Bassant Abd-Elhamid Ph.D. 2013
- Ibrahim Magdi Ibrahim Mahmoud Khamis M.Sc. 2010
- Mohamed Abd El Karim Abu Elhasan Mohamed M.Sc. 2009
- Iman Shawki Abd El Fattah M.Sc. 2007
- Ahmed Mohamed Ahmed Ragab M.Sc. 2007
- Hend Ali Elsayed M.Sc. 2006

## **HONORS and AWARDS**

- State Incentive Award for Engineering Science, from the Egyptian Academy of Science, 2014
- University of Alexandria Incentive Award for Engineering Science, 2014
- University of Alexandria publications award 2005, 2006, and 2014.
- The publication "Progressive Quantized Projection Approach to Data Hiding," IEEE Trans. on Image Processing. Vol. 15, No. 2, pp. 459-472, Feb. 2006. Has been recognized as one of **Top 10 articles published in the domain. Source: BioMedLib**).
- Listed in the 23rd Ed. of the Marquis Who's Who in the World. 2006
- University of Minnesota, Minneapolis: Elected member of the honor society Phi Kappa Phi. 1999
- Received the Young Scientist Award at the XXV<sup>th</sup> General Assembly of the Union Radio Scientifique Internationale (URSI), France. 1996
- Egyptian Engineering Syndicate, Certificate of Honor 1993.
- Graduated with Honors, top of B.Sc. class, University of Alexandria. 1993
- Egyptian Ministry of Education: Ministry certificate of Honor (ranked sixth nationwide in the general secondary school certificate exam) 1988.