

Mohammed F. M. Farrag

Curriculum Vitae

Education

- 2010–2013 **Ph.D. in Electrical Engineering**, *Egypt-Japan University of Science and Technology (E-JUST)*, New Borg El-Arab City, Alexandria, Egypt.
Dissertation: Compressive Sensing for Cognitive Radio Applications.
Supervisor: Prof. Mohamed El-Sharkawy, Prof. Hiroshi Furukawa.
Courses: ECE 502 Advanced Digital and Data Communications, ECE 513 Sensors and DSP Systems design, ECE 704 Seminars on Advanced Topics in Communications, ECE 606 Mobile Communications, ECE 607 High Speed Communication Networks, CSE 603 Computer Vision.
- 2003–2008 **M.Sc. in Electrical Engineering**, *Assiut University*, Assiut, Egypt.
Dissertation: Orthogonal Decomposition of Time Signal.
Courses: Computational methods and programming, Digital communication and digital signal processing, Electronic circuits, Image and speech signal processing.
- 1996–2001 **B.Sc. in Electrical Engineering**, *Assiut University*, Assiut, Egypt.
Very Good.

Experience

- 2013–present **Lecturer**, *Department of Electrical Engineering, Assiut University*, Assiut, Egypt.
- 2010 – 2013 **Research Assistant**, *Egypt-Japan University of Science and Technology (E- JUST)*, New Borg El-Arab City, Alexandria, Egypt.
- Studied the cognitive Radio technology especially the spectrum sensing block.
 - Studied the compressive sensing algorithm and how it can be used in spectrum sensing.
 - Developed a new algorithm for spectrum sensing in cognitive radio network based on compressive sensing technique with reduced hardware complexity and enhanced security .
- 2003–2008 **Assistant Lecturer**, *Assiut University*, Assiut, Egypt.
- Prepared materials for lectures and laboratory sessions.
 - Graded laboratory reports, projects, and exams.
 - Organized the timetables of lectures and laboratories, and management of final exams.
 - Assisted in installation of electronics and computer laboratories.
 - Delivered sessions for the following courses: Digital signal processing, Digital communications, Numerical analysis, Electronic circuits, Speech signal processing, Information theory, Programming with C++, Electronic laboratory, Interfacing circuits with PC, Microwave circuits, Introduction to computers.
 - Mentored undergraduate student at final projects.
 - Helped in preparation for laboratory material, sessions scheduling, and maintaining the course web page.
- 2003–2008 **Research Assistant**, *Assiut University*, Assiut, Egypt.
- Developed signal denosing algorithms using optimized wavelet transform.
 - Developed image denosing and compression algorithms using optimized wavelet transform.

Publications

Journal Publications

- J1 Mohammed Abo-Zahhad, Osama Amin, Mohammed Farrag, Abdelhay Ali, A Survey on Protocols, Platforms and Simulation Tools for Wireless Sensor Networks , International Journal of Energy, Information and Communications Vol.5, Issue 6, pp.17-34, 2014.
- J2 Mohammed Abo-Zahhad, Osama Amin, Mohammed Farrag, Abdelhay Ali, Survey on Energy Consumption Models in Wireless Sensor Networks, Journal of Open Transactions on Wireless Sensor Network, In Press, 2014.
- J3 MY Abdelsadek, M Farrag, TA Khalaf, Compressed Measurements Based Cyclostationary Detector For Wideband Cognitive Radios, Journal of Engineering Sciences, JES, Assiut University, 42-3, 746-755 , May, 2014.
- J4 M. El-Khamy, M. Farrag, and M. El-Sharkawy, "Wide-band secure compressed spectrum sensing for cognitive radio systems," Progress In Electromagnetics Research B, Vol. 53, 47-71, 2013.

Conference Publications

- C1 Mohammed Abo-Zahhad, Mohammed Farrag, Abdelhay Ali and Osama Amin, Energy Consumption and Lifetime Analysis for Wireless Sensor Networks , IEEE 32nd National Radio Science Conference (NRSC), IEEE, In Press. , <http://nrsc2015.msa.edu.eg>, March, 2015
- C2 M. Abo-Zahhad, Osama Amin, Mohammed Farrag and Abdelhay Ali, An Energy Consumption Model for Wireless Sensor Networks, 5th Annual International Conference on Energy Aware Computing Systems and Applications (ICEAC), Cairo, Egypt, 2015.
- C3 Farrag, M.; Muta, O.; El-Khamy, M.; Furukawa, H.; El-Sharkawy, M., "Wide-Band Cooperative Compressive Spectrum Sensing for Cognitive Radio Systems Using Distributed Sensing Matrix," Vehicular Technology Conference (VTC Fall), 2014 IEEE 80th , vol., no., pp.1,6, 14-17 Sept. 2014.
- C4 M. Farrag, M. El-Khamy, and M. El-Sharkawy, A blindly optimized compressive sensing receiver for cognitive radio, in IEEE International Conference on Consumer Electronics (ICCE) 2012. IEEE, 2012, pp. 174177.
- C5 M. Farrag, M. S. El-Khamy and M. El-Sharkawy, Secure Cooperative Blindly-Optimized Compressive Spectrum Sensing for Cognitive Radio, 29th National Radio Science Conference (NRSC12), April 2012.
- C6 M. Farrag, M. El-Khamy, O. Muta, M. El-Sharkawy, H. Furukawa, "Reduced Complexity Secure Cooperative Compressive Spectrum Sensing for Wideband Cognitive Radio Systems," Proceedings of IEEE Vehicular Technology Society Asia Pacific Wireless Communications Symposium, August 2012.
- C7 Mohammed Farrag, Mostafa El-Khamy, Osamu Muta, Mohamed El-Sharkawy, Hiroshi Furukawa, "Reduced Complexity Secure Cooperative Compressive Spectrum Sensing for Cognitive Radio Applications," Technical Report of IEICE on Radio Communication Systems (RCS), July 2012.
- C8 M. Farrag, M. El-Khamy, and M. El-Sharkawy, Optimized bases compressive spectrum sensing for wideband cognitive radio, in IEEE 22nd International Symposium on Personal Indoor and Mobile Radio Communications (PIMRC) 2011. IEEE, 2011, pp. 305309.
- C9 M. F. Mohamed, M. F. Fahmy, and Y. M. Y. Hasan, "Orthogonal Signal Decomposition with Applications in Wavelet Denoising", In Proc. of the 22nd National Radio Science Conference (NRSC,URSI), The Arab Academy of Science, Tech. & Maritime Transport (Cairo Branch), 15-17 March, Cairo, Egypt, pp.C13:1-8, 2005.

Professional Activities

Referee for:

- IET Institution of Engineering and Technology Transactions,
- IEEJ Institute of Electrical Engineers of Japan Transactions,
- IEEE Japan-Egypt Conference on Electronics, Communications and Computers (ECC-JEC),
- IEEE Vehicular Technology Conference.

Member of:

- The committee of updating the research plan for the electrical engineering department, Assiut University,
- The committee of updating the postgraduate bylaw for the Faculty of Engineering, Assiut University.

Honors & Awards

Citations h-index **3**.

2003 Mobinil Education excellence award, Egypt.

2010-2013 Scholarship of the Egyptian Ministry of Higher Education, Egypt.

2014 NTRA Sponsorship of Graduation Projects

Internships & Training

2013 Faculty and Leadership Development Training, Assiut University, Assiut, Egypt.

2004 Effective Teaching, Assiut University, Assiut, Egypt.

2004 Teacher Preparation Training, Assiut University, Assiut, Egypt.

2004 Teaching with Technology, Assiut University, Assiut, Egypt.

1999 Cairo Radio and Television Union, Cairo, Egypt.

2000 Mobimil Company for Telecommunications, Cairo, Egypt.

2000 Student exchange program to visit Halap University, Halap, Syria.

Technical Skills

Programming C++/C, Visual Basic, and Fortran.

Hardware Koyo DL06 PLC , Xilinx Spartan FPGAs, Intel 8086 Microprocessor, and PIC Microcontrollers.

Operating Systems MS-DOS, Microsoft Windows, Windows 2000 server, Mac OS X, and Linux variants.

Design & Simulation Matlab, Simulink, and LabVIEW.

Applications MS Office, L^AT_EX, HTML, PhotoShop, and other common packages for Windows.

Language skills TOEFL iBT: 89 (Reading 23, Listening: 28, Speaking 18, Writing 20).

Memberships

2008-2013 The Institute of Electrical and Electronics Engineer (IEEE)

2013- Associate Member IEEE

Present

2001- Egyptian Syndicate of Engineers, *Member*.
Present

References

Prof. M. El-Khamy,

Electrical Engineering Department, Alexandria University, Alexandria 21544, Egypt, Samsung Electronics America R&D, Mobile Solutions Lab, San Deigo, CA, USA,

Email: m_elkhamy@ieee.org

Prof. Osamu Muta,

Department of Advanced information Technology. Graduate School of Information Science and Electrical Engineering, Kyushu University,

Email: muta@ait.kyushu-u.ac.jp

Prof. Mohamed El-Sharkawy,

Purdue School of Engineering and Technology, IUPUI Indianapolis, USA,

Email: melshark@iupui.edu