Abdallah Y. Alma'aitah

CONTACT
INFORMATION

Assistant Professor
Dept. of Network Engineering and Security
Jordan University of Science and Technology
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PROFILE

- Research expertise: Embedded systems programming and optimization for Internet of Things (IoT), RFID anti-collision and localization protocols, gate and transistor levels design of RFID tags, wireless sensor networks, security in power constrained devices and systems (cryptography and authentication).
  - Accomplishments: 18 refereed publications, 1 pending patent.
- Broad standardization knowledge: Zigbee (IEEE 802.15.4), RFID EPC C1G2, RFID ISO 18000-x.
- Labview, Multisim, SPICE system simulation and performance evaluation experience.
- Strong analytical and programming skills.
- Experienced university lecturer for freshman and senior-level engineering courses.
- Team leader and Director of 5 industry-academia projects.
- Formal business training: project management, strategic planning, and management information systems.

EDUCATION

Queen's University, Kingston, ON Canada

Ph.D., Electrical and Computer Engineering, April 2013

- Thesis Proposal: *Enabling Efficient Passive RFID Systems Through Modulation Silencing*
- Adviser: Professor Hossam S. Hassanein and Professor Mohamed Ibnkahla
- Area of Study: RFID systems and Wireless Sensor Networks

The University of Western Ontario, London, ON Canada

M.Sc., Electrical and Computer Engineering, June 2008

- Thesis Topic: *Nanoelectronic Logic Circuits for Cryptographic Applications*
- Adviser: Professor Zine-Eddine Abid
- Area of Study: Power and time optimization of security primitives

Mutah University, Mutah, Al-Karak The Hashemite Kingdom of Jordan

B.S., Computer Engineering, February 2005

- With Honors (ranked 1st over 134 students)

REFEREED
JOURNAL
PUBLICATIONS

[1] **A. Alma'aitah**, H. S. Hassanein, "Digital Continous Wave Absense Detection In Passive RFID tags" submitted to IEEE Transactions on Circuits and Systems: Express briefs II.

[2] **A. Alma'aitah**, H. S. Hassanein, M. Ibnkahla "Modulation Silencing: Design and Application in RFID Anti-Collision Protocols," IEEE Transactions on Communications , vol. 62, no. 11, pp. 4068-4079, 2014.

[3] W. Alsalih, **A. Alma'aitah**, W. Alkhater "RFID Localization using Angle of Arrival Cluster Forming," In the International Journal of Distributed Sensor Networks, Vol. 2014, Article ID 269596, 8 pages, 2014.

[4] Z.E. Abid, **A. Alma'aitah**, M. Barua and W. Wang, "Efficient CMOL XOR design for Cryptographic applications," IEEE Transactions on Nanotechnology, Vol. 8, Issue 3, pp. 315-321, May 2009.

[5] Z.E. Abid, M. Barua, **A. Alma'aitah**, "Design of a Transmission-Gate based CMOL Memory Array," IET Micro and Nano letters, Vol. 3, Issue 3, pp. 70-76, Sep. 2008.

CONFERENCE
PUBLICATIONS

[6] **A. Alma'aitah**, H. S. Hassanein, "RFID localization by Power Optimized Waveforms (POW)" submitted to IEEE international conference on RFID 2016.

[7] **A. Alma'aitah** and Hassanein, H. S. "Utilizing Sprouts WSN Platform for Equipment Detection and Localization in Harsh Environments" submitted to 14th IEEE International Workshop on Wireless Local Networks of Local Computer Networks (WLN-LCN 2016).

[8] L. Eslim, H.S. Hassanein ,W. Ibrahim, **A. Alma'aitah** "A Cooperative Localization Scheme Using RFID Crowdsourcing and Time-Shifted Multilateration," 39th Annual IEEE Conference on Local Computer Networks, Edmonton, AB, 2014, pp. 185-192.

[9] A. Elkouche, H.S. Hassanein, **A. Alma'aitah** "Configuring a UHF Antenna for Sensor Nodes in Harsh Environments" Communications (QBSC), 2014 27th Biennial Symposium on, Kingston, ON, 2014, pp. 66-70.

[10] **A. Alma'aitah** , H. S. Hassanein, M. Ibnkahla, "Rapid Tag Collision Resolution Using Enhanced Continuous Wave Absence Detection" In IEEE International Workshop on Wireless Local Networks of Local Computer Networks 2013.

[11] A. Elkouche, **A. Alma'aitah**, H. S. Hassanein, K. Obaia "Monitoring Operational Mining Equipment Using Sprouts Wireless Sensor Network Pltaform" accepted in IEEE IWCMC 2013.

[12] A. Al-Fagih, A. Elkouche, S. Oteafy and **A. Alma'aitah** "Utilizing RFID-WSNs for Reducing the Footprint of the Oil Sands Industries" accepted GLOBECOM 2012.

[13] **A. Alma'aitah**, H. S. Hassanein and M. Ibnkahla, "Secure and Efficient RFID Key Exchange with Modulation Silencing" accepted in the 12th IEEE International Workshop on Wireless Local Networks of Local Computer Networks (WLN-LCN 2012)

[14] **A. Alma'aitah**, H. S. Hassanein and M. Ibnkahla, "Efficient and Anonymous RFID Tag Counting and Estimation using Modulation Silencing," accepted in the 8th International Wireless Communications and Mobile Computing Conference (IWCMC 2012).

[15] **A. Alma'aitah**, H. S. Hassanein and M. Ibnkahla, "Modulation silencing: Novel RFID anti-collision resolution for passive tags," RFID (RFID), 2012 IEEE Intl. Conference on, pp.81-88, 3-5 April 2012. **(Nominated for best paper award)**

[16] **A. Alma'aitah** and Z.-E. Abid, "Transistor Level Optimization of Sub-Pipelined AES Design in CMOS 65nm," IEEE 23rd Intl. Conference on Microelectronics (ICM), Dec. 2011.

[17] **A. Alma'aitah** and Z.-E. Abid, "Area efficient-high throughput sub-pipelined design of the AES in CMOS 180nm," IEEE Design and Test Workshop (IDT), 2010 5th International , pp.31-36, 14-15 Dec. 2010.

[18] **A. Alma'aitah**, K. Ali, H. S. Hassanein and M. Ibnkahla, "3D Passive Tag Localization Schemes for Indoor RFID Applications," IEEE International Conference on Communications (ICC), pp.1 - 5, May 2010.

[19] **A. Alma'aitah** and Z.E. Abid "A Nanoelectronic Array Structure based on two types of Molecular Switches," IEEE 3rd International Conference on Design and Technology of Integrated Systems in Nanoscale Era, pp.1 - 4, Mar. 2008.

PAPERS IN PREPARATION

[20] **A. Alma'aitah**, H. S. Hassanein, "Variance- and Mean-Based RFID Tags Estimation" submitted to Elsivier Computer Communications.

[21] **A. Alma'aitah**, H. S. Hassanein, "Estimating transmitter-to-tag distance by PIE cycles" for journal paper submission

PENDING PATENTS

[22] **A. Alma'aitah**, H. S. Hassanein, M. Ibnkahla, Modulation Silencing for Far-Field RFID tags Under review by PARTEQ, technology identification No. 2011-053, Sept. 2013/14.

NON REFEREED PUBLICATIONS

[23] **A. Alma'aitah** *Enabling Efficient Passive RFID Systems Through Modulation Silencing*. Ph.D. thesis, Queen's University, Kingston, ON, Apr. 2013.

[24] **A. Alma'aitah** *Enabling Efficient Passive RFID Systems Through Modulation Silencing*, Ph.D. Thesis, ECE department, Queens' University, Kingston, ON, Apr. 2013.

[25] **A. Alma'aitah** *Novel RFID Anti-Collision Resolution Mechanism: Design and Performance Analysis*, Second comprehensive examination report, ECE department, Queens' University, Kingston, ON, Jul. 2011.

[26] **A. Alma'aitah** *RFID Anti-Collision Protocols in Internet of Things Era*, First comprehensive exam report, ECE department, Queens' University, Kingston, ON, Jul. 2010.

[27] **A. Alma'aitah** *Nanoelectronic Logic Circuits for Cryptographic Applications*. Master's thesis, The University of Western Ontario, London, ON, Jun. 2008.

[28] **A. Alma'aitah** "Quadruple Time Redundancy (QTR) 64bit Kogge-Stone adder with modified ling equations" Technical report- Western Ontario University, February 2007.

[29] **A. Alma'aitah** "Behavioral study on CMOS 0.18um transistor level Phase Locked Loop (PLL) using Cadence simulation tools" Technical report- Western Ontario University, December 2006.

[30] **A. Alma'aitah**, A.Nasrallah, M. Halhouli, M.R. Saidat "Computer vision based robot system using artificial intelligence algorithm to play Tic-Tac-Toe game", undergraduate project report -Mu'tah University, May 2004.

POSTERS

[31] **A. Alma'aitah** "Modulation Silencing : Enabling Mechanism of Power and Time Efficient Passive RFID Systems", in the 4th Annual WiSense Workshop, Ottawa, ON, 2012.

[32] **A. Alma'aitah**, Fadi Al-Turjman, B. Al-Nabulsi, Z. El-Jabi, A. Abu-Alkhier, and M. Ibnkahla, "Design and Hardware Implementation of Wireless Sensor Networks for Environment Monitoring", in the 2nd annual WiSense workshop program, Kingston, ON, 2010.

[33] Fadi Al-Turjman, **A. Alma'aitah**, Z. El-Jabi, A. Abu-Alkhier, and M. Ibnkahla, "Wireless Sensor Networks for Natural Resources Assessment and Monitoring", in Ontario Centers of Excellence (OCE) - Earth and Environmental Technology, Ottawa, ON, 2009.

TEACHING EXPERIENCE	**Jordan University of Science and Technology**, Irbid, Jordan **September 2015 - present**

Assistant professor- NES Department

- Fall 2015
  - Instructor"Communication Skills : NES 201".
  - Instructor"Wireless Networks : NES 440".
  - Instructor"Wireless Networking Protocols : NES 540".
  - Instructor"Wireless Networks Lab : NES 543".
- Winter 2016
  - Instructor"Networks Simulation and Modeling : NES 412".
  - Instructor"Wireless Networking Protocols : NES 540".
  - Instructor"Wireless Networks Lab : NES 543".

Queen's University, Kingston, ON Canada   **September 2008 - August 2015**

Term Adjunct Assistant professor- ECE Department

- Winter 2014, 2015
  - Instructor"Computer Systems Engineering : ELEC 374".

Teaching Assistant - ECE Department

- Fall 2012
  - Assisted "Electrical Circuits: ELEC221" instructor.

- Winter 2012
  - Assisted "Digital Systems Engineering: ELEC374" instructor.
  - Grading assignments and supervising labs. Students used ALTERA® Quartus®II and Modelsim® for designing and testing RISC CPU on Cyclone® II FPGA.
  - Giving VHDL tutorials

- Winter 2011 and Winter 2010
  - The head TA of "Introduction to Computer Programming for Engineers: APSC142" instructors team.
  - Managing course website, marks, and Labs.
  - Assigning TA tasks for 26 undergraduate TAs and 6 graduate TAs.
  - Marking final project submissions.

Teaching Assistant - School of computing

- Winter 2009
  - Assisted "System-Level Programming:CISC220" instructor.
  - Grading assignments and supervising labs.

The University of Western Ontario, Kingston, ON Canada

Teaching Assistant - ECE Department   **September 2006 - April 2008**

- Winter 2008
  - Supervising and grading "Electrical Laboratory II: ECE241b" (currently ECE2241b) labs.
- Fall 2006 and Fall 2007

- Assisted "Very Large Scale Integration and Microelectronics:ECE480a" (currently ECE4480a) instructor.
- Grading assignments and supervising labs. Students used Cadence® Virtuoso Analog Design Environment for layout and schematic design.
  - Winter 2007
    - Assisted "Electronic II: ECE235b" (currently ECE2235b) instructor.
    - Grading assignments and giving tutorials.

PROFESSIONAL SERVICE

Consulting
- *Research consultant, 2012, RFID network optimization, King Saud University - KSA*
- *Research consultant, 2013, Active-passive RFID tag localization prototyping, King Saud University - KSA*
- *Research consultant, 2013, Prototyping Internet of Things platforms, United Arab Emirates University - UAE*

Course outcome committee member
- *improving computer engineering course learning outcomes through defining the required knowledge base, problem analysis, investigation, design, and ethics*

Chairing Service
- *Poster session chair of IEEE QBSC 2014*
- *Chair IEEE WLN - LCN 2014*

Referee Service
- *IEEE Journal on Selected Topics in Communications*
- *IEEE Transactions on Mobile Computing*
- *IEEE Transactions on Communication*
- *IEEE Transactions on Wireless Communications*
- *IEEE Transactions on Circuits and Systems*
- *Elsevier Microelectronics Journal*
- *Canadian Journal of Electrical and Computer Engineering*
- *KSII Transactions on Internet and Information Systems*
- *IEEE INFOCOM 2012, 2014*
- *IEEE GLOBECOM 2011, 2012, 2013, 2014*
- *IEEE Symposium on Computers and Communications 2010*
- *IEEE Workshop on Personalized Networks 2011*

PROFESSIONAL EXPERIENCE

TRL Lab - Queen's University, Kingston, ON Canada

Project Director   **April 2013 to August 2015**
- Wireless sensor group director
- Team leader of ChipTag smart parking project
- Team leader of the GET monitoring in mining industry project

Team Member   **September 2009 to April 2013**
- Wireless sensor nodes design for "Syncrude's Oil Sand Vibration Screen Health Monitoring" project
- Design testing models and environments for Signal propagation, nodes robustness and sensors reading reliability.

WISIP Lab - Queen's University, Kingston, ON Canada

Project team leader   **October 2009 to June 2010**
- Supervised undergraduate group in designing a sensor network of the "Food safety project" in Wireless Communications and Signal Processing Laboratory (WISIP) Lab.

- Team Leader of the "Forestry project group" in WISIP lab
- Schematic and PCB Designer using Cadence OrCAD® and CadSoft Eagle® layout editor.

Zain Group - Jordan, Amman, Jordan

NMC (Network Management Center) Administrator **June 2005 to August 2006**

- Adding new H/W, installing S/W, adding users, solving H/W, S/W failures and puts backup procedures.
- Maintaining base-stations (BSs) connectivity to the NMC, through CISCO routers, and Digital Cross Connect devices.

PROFESSIONAL MEMBERSHIPS	Association for Computing Machinery (ACM) member (since 2012) • ACM Special Interest Group on communication and computer networks (SIGCOMM) member (since 2012) Institute for Electrical and Electronics Engineers (IEEE), Member, 2008–present. • IEEE Computer Society (2009–present) Jordan Engineers Association (JEA), Member 2005-present.
CERTIFICATES	• LABview® CLAD certificate, Ocober 2012. • Unix Solaris 10 certificate, April 2006. • Cisco® Certification (CCNA),30-July-2004. • Computer Maintenance Certificate from Computer Center - Mutah University, 2002.
HARDWARE AND SOFTWARE SKILLS	Analog and Digital Electronics: • MOSFET implementations of 1) Analog: amplifiers, modulators, converters, and filters; and 2) Digital: Logic and memory • Computer-Aided Design Tools: Cadence OrCAD, NI Multisim, HSPICE, Virtuoso Schematic Editor, Agilent ADS Embedded and Real-time Systems: • Software and hardware development with several MCU and SOC platforms (e.g., Texas Instruments CC2430, CC2530, Atmel ATmega MCU's, Microchip PIC MCU's, and others) for WSN under Zigbee, Dash7 and customized stacks. Computer Programming: • C, C++, Java, UNIX shell scripting, MySQL, MATLAB, Maple Operating Systems: • Microsoft Windows family, Apple OS X, IBM OS/2, Linux, BSD, IRIX, AIX, Solaris, and other UNIX variants
EXPERTISE	Mathematics: • Applied Mathematics, Real and Complex Analysis, Measure Theory, Differential Geometry, Game Theory, Graph Theory Communications and Signal Processing: • Probability, Random Variables, Stochastic Processes, Information Theory, Estimation, Network optimization
AWARDS AND SCHOLARSHIPS	• R.S. McLaughlin Award ECE department- Queens University 2010-11, 2011-12 and 2012-13 ($10,000 each) • Queens University Graduate Award (QGA) 2008-present

- International Tuition Award (ITA) 2008-2009

- Western Engineering Scholarship 2006-2008

- Mutah University Merit scholarship (1st semester (Fall) 2002, 1st semester 2003, and 2nd semester (Winter) 2004)

- One time in the annual university honor list 2004 (ranked 1st on the computer engineering class of 2005)

- Five time in the faculty of engineering semester honor list Winter 2001, Winter 2002, Fall 2003, Winter 2004, Fall 2004

REFERENCES
AVAILABLE TO
CONTACT

Prof. Hossam S. Hassanein (e-mail: hossam@cs.queensu.ca; phone: +1-613-533-6052)
- Professor, School of computing and Electrical and Computer Engineering department, Queen's University, Canada
- ⋆ *Prof. Hassanein was my PhD adviser and my current manager as a post-doctoral fellow.*

Prof. Mohamed Ibnkahla (e-mail: mohamed.ibnkahla@queensu.ca; phone: +1-613-533-3074)
- Professor, Electrical and Computer Engineering Department, Queen's University, Canada
- ⋆ *Prof. Ibnkahla is my PhD co-adviser.*

Dr. Michael Greenspan ; phone: (613) 533-6000 ext. 74949/77736
- Professor, Department Head, Electrical and Computer Engineering Department, Queen's University
- ⋆ *Dr. Greenspan is my direct manager as a term adjunct assistant professor*

Prof. Zine-Eddine Abid (e-mail: zeabid@eng.uwo.ca ; phone: +1-519-661-2111 x87290)
- Professor, Electrical and Computer Engineering Department, The University of Western Ontario, Canada
- ⋆ *Prof. Abid was my master's degree adviser.*