Curriculum Vitae

MOHAMMED A. KHASAWNEH, *Ph. D. ECE, IEEE/ACM Senior Member, ANS Member*

Professor of Electrical & Computer Engineering, *(promoted to rank December 1, 2014, rank effective May 2014)*
Department of Electrical Engineering
PO Box 3030
Jordan University of Science & Technology
Irbid 221 10 Jordan

Assistant President for Scientific Research and Technology Transfer (Aug. 2009 – Aug. 2010)
Jordan University of Science & Technology

Associate Professor of Electrical & Computer Engineering
Department of Electrical Engineering
PO Box 3030
Jordan University of Science & Technology
Irbid 221 10 Jordan
(217)-239 7696
Email: mkha@ieee.org, mkha@acm.org

Visiting Research Associate Professor *(Aug 2007 – Aug 2009)*
216 Talbot Laboratory, 104 S Wright St.
Nuclear, Plasma, & Radiological Engineering
University of Illinois at Urbana Champaign

Urbana, IL 61801, USA
email: mkhas@uiuc.edu, ***Cell*:** +1-(217)-418 2525, ***Home***: (217)-239 7696

Associate Professor of Information Systems (Aug 2001 – Jul 2004)
Zayed University
P. O. Box 4783
Abu-Dhabi
United Arab Emirates
+(971)-50 667 7962 (Cell)

Lead Software Engineer (November 2000 – July 2001)
Global Telecommunications Solutions Sector
Motorola, Inc.
Arlington Heights, Illinois
USA

Major Accomplishments

Supervised and maintained, as Electronics Engineer, a state-of-the-art Micro-Fische based archived data retrieval system for the military in Jordan for two years

Supervised & co-supervised a good number of Master's degree students at Jordan University of Science & Technology mainly on adaptive algorithm development for telecommunications applications

Supervised hi-tech senior projects of a good number of undergraduate students in areas of image processing, Speech processing, neural networks, fuzzy systems, Time-Frequency Signal Analysis, and web-based distance learning and data base archival systems

Built an integrated INTRANET for a major university campus linking faculty members and student labs with university services

Assisted in establishing a UNESCO-funded audio-visual center at faculty of engineering at Jordan University of Science & Technology

Conducted and Coordinated a number of short courses, seminars, and workshops in collaboration with international institutions oriented towards field engineers, and the industry as part of a continuing education program

Secured local and international funding (around $600,000) for projects aimed at local and regional industries

Developed a new web-based software-independent scheme in distance learning for on-campus students and field engineers

Published over 50 peer reviewed papers in Technical Journals and at International Conferences and Symposia

Participated as technical review committee member and session chair at a number of international IEEE conferences

Received funding for two novel projects to deploy state-of-the-art in Wireless technologies to control traffic speed on Roads and Highways in Jordan (2005)

Received funding for an e-Voting System for Jordan's parliametary elections (2006)

Received funding for two novel projects dealing with Intelligent traffic light system and an e-security system for government and residential installations (2007)

Acquired Fastlink's (currently dubbed ZAIN) state-of-the-art Wireless (Cellular) Lab donation for Research and Training at Jordan University of Science & Technology ~ Estimated at $1,500,000.00

Co-Architected Jordan University of Science & Technology (JUST) Memos of Understanding (MOUs) with leading World Institutions in the US, viz. University of Illinois at Urbana Champaign (UIUC), and with other US instituions, viz. The University of Mississippi (Olemiss).

Architected the first proposal for a National Nanotechnology Center for Jordan which was submitted to His Majesty King of Jordan in 2009.

Co-drafted Jordan's National Strategy on Nanotechnology for the

establishment of a National Nanotechnology Center in Jordan, February 2014.

ACADEMIC QUALIFICATIONS

Ph. D. in Electrical Engineering, August 1989
North Carolina State University, Raleigh, NC, USA
Dissertation Research: Gradient Adaptive Digital Filtering: Theory and Applications
Advisor: Professor Winser E. Alexander
Major: Communications and Signal Processing
Departmental Minor: Control and Solid State
Minor: Mathematics
GPA: 3.737 / 4.00

M. Sc. in Electrical Engineering, December 1985
North Carolina State University, Raleigh, NC, USA
Advisor: Professor J. B. O'Neal
Major: Communications and Signal Processing
Departmental Minor: Control, Solid State, and Electromagnetics
Minor: Mathematics
GPA: 3.9 / 4.0

B. S. E. in Electrical Engineering, May 1981
The University of North Carolina at Charlotte, Charlotte, NC, USA
Senior Project: "Design and Implementation of a Versatile Sensing Instrument for Biomedical Applications"
Academic Advisor: Dr. Y. P. Kakad
GPA: 3.3 / 4.0

SCE (Scottish Certificate of Education), Passed June 1977, Equivalent of a First Year of College in the USA.
Bell College of Technology, Hamilton, Scotland, U. K.

WORK EXPERIENCE

Professor of Electrical & Computer Engineering, *Jordan University of Science & Technology, Irbid, Jordan, (December 1st, 2014 – present)*

Assistant President for Scientific Research and Technology Tramsfer, *Jordan University of Science & Technology, Irbid, Jordan, (August 2009 – August 2010)*

Visiting Research Associate Professor, Nuclear, Plasma and Radiological Engineering, *College of Engineering, University of Illinois at Urbana-Champaign (August 2007 – August 2009)*

Postgraduate course taken (with course description)

NPRE 402 (Nuclear Power Engineering): Principles of utilization of fission energy

in nuclear power engineering; includes such topics as fission processes and controlled chain reactions; nuclear reactor types, design principles, and operational characteristics; power reactor design criteria; radiation hazards and radioactive waste treatment; economics; other applications such as propulsion and research reactors.

NPRE 412 (Nuclear Power Econ & Fuel Mgmt): Quantitative analysis of the impact of the nuclear power industry; nuclear fuel cycle and capital costs for thermal and fast reactors; optimization of the use of nuclear fuels to provide the lowest energy costs and highest system performance; comparison between fossil fuel systems, fission systems, and controlled thermonuclear fusion systems.

NPRE 429 (Plasma Engineering): Basic principles and examples for adapting and applying the plasma state to solve a number of modern engineering problems. Plasma processing of materials for microelectronics and other uses, lighting, plasma displays, and other technologies.

NPRE 435 (Imaging w/Ionizing Radiation): Techniques to generate ionizing radiation useful in the imaging of solids and medical imaging. Theory and applications of biological and medical imaging modalities that use ionizing radiation: X-ray diagnostic methods such as plain film and digital, computer axial tomography (CAT); radionuclide imaging techniques such as positron emission tomography (PET), single photon emission computed tomography (SPECT), and gamma cameras. Theory and applications of materials imaging, including x-ray, electron, and neutron diffraction, in addition to small angle neutron and x-ray scattering (SANS SAXS).

NPRE 446 (Radiation Interaction w/Matter I): Experimental and theoretical foundations of interaction of neutrons, photons, and charged particles with matter. Emphasis on topics that underlie the following applications: radiation detection, biological effects and radiation dosimetry, radiation damage and nuclear materials, neutron activation analysis, and fission and fusion energy systems. Classical theory of charged particle cross sections. Introductory quantum mechanics. Exact and numerical solutions of the Schroedinger equation. Quantum theory of cross sections. Photon interactions with atomic electrons and nuclei. Radioactive-series decay.

NPRE 447 (Radiation Interaction w/Matter II): Continuation of NPRE 446. Quantum theory of ionization of matter by charged particles. Nuclear models and structure. Alpha decay, fission and fusion reactions. Beta and gamma decay. Nuclear reactions. Radiation damage effects. Special topics. Computer assignments to illustrate fundamental concepts.

NPRE 457 (Safety Analysis Nuclear Reactor Systems): Basic safety philosophy in nuclear reactor systems; brief review of nuclear reactor systems; regulatory processes; siting considerations; safety problems related to reactor dynamics; evaluation of postulated accidents; risks associated with nuclear fuel cycle; methods of systems safety analysis.

NPRE 455 (Nuclear Diffusion & Transport): Neutron migration, neutron slowing down and thermalization; neutron continuity equation, multigroup diffusion theory, homogeneous and heterogeneous medium, thermal and fast assemblies; numerical methods for multigroup diffusion equations; reactor dynamics perturbation theory; reactivity coefficients; introductory transport theory.

NPRE 421 (Plasma & Fusion Science): Physics of plasmas, including particle and fluid descriptions, waves, collisions, stability, and confinement, with applications to controlled thermonuclear fusion rectors, problems in fusion engineering, and astrophysics.

ECE 437 (Sensors & Instrumentation): Hands-on exposure to fundamental technology and practical application of sensors. Capacitive, inductive, optical, electromagnetic, and other sensing methods are examined. Instrumentation techniques incorporating computer control, sampling, and data collection and analysis are reviewed in the context of real-world scenarios .

ECE 439 (Wireless Networks): Overview of wireless network architectures including cellular networks, local area networks, multi-hop wireless networks such as

ad hoc networks, mesh networks, and sensor networks; capacity of wireless networks; medium access control, routing protocols, and transport protocols for wireless networks; mechanisms to improve performance and security in wireless networks; energy-efficient protocols for sensor networks.

ECE 457 (Microwave Devices and Circuits): Electromagnetic wave propagation, microwave transmission systems, passive components, microwave tubes, solid state microwave devices, microwave integrated circuits, S-parameter analysis, and microstrip transmission lines.

ECE 453 (Wireless Communication Systems): Design of a radio system for transmission of information; modulation, receivers, impedance matching, oscillators, two-port network analysis, receiver and antenna noise, nonlinear effects, mixers, phase-locked loops.

ECE 470 (Introduction to Robotics): Fundamentals of robotics including rigid motions; homogeneous transformations; forward and inverse kinematics; velocity kinematics; motion planning; trajectory generation; sensing, vision; control.

ECE 416 (Biosensors): Learn the underlying engineering principles used to detect small molecules, DNA, proteins, and cells in the context of applications in diagnostic testing, pharmaceutical research, and environmental monitoring. Biosensor approaches including electrochemistry, fluorescence, acoustics, and optics will be taught. The course also teaches aspects of selective surface chemistry, including methods for biomolecule attachment to transducer surfaces. Students will learn how biosensor performance is characterized and will analyze case studies of commercial biosensor systems. Blood glucose detection, fluorescent DNA microarrays, label-free biochips, and bead-based assay methods will be covered. The course teaches classical methods for biodetection, but also extends into current areas of research and novel sensors involving nanotechnology, photonic crystals, and new tools used in the fields of genomics and proteomics.

ECE 561 (Detection and estimation theory): Detection and estimation theory, with applications to communication, control, and radar systems; decision-theory concepts and optimum-receiver principles; detection of random signals in noise, coherent and noncoherent detection; parameter estimation, linear and nonlinear estimation, and filtering.

ECE 485 (Introduction to Microelectromechanical devices and systems): Introduction to principles, fabrication techniques, and applications of microelectromechanical systems (MEMS). In-depth analysis of sensors, actuator principles, and integrated microfabrication techniques for MEMS. Comprehensive investigation of state-of-the-art MEMS devices and systems.

ECE 598 JL (Advanced Nanotechnology): Subject offerings of new and developing areas of knowledge in electrical and computer engineering intended to augment the existing curriculum.

ECE 598 SB (High-Speed Clock and Data Recovery Systems): Subject offerings of new and developing areas of knowledge in electrical and computer engineering intended to augment the existing curriculum.

Supervision of Graduate Students:

Supervised and co-supervised a number of Master's and Ph. D. Students with the Department of Nuclear, Plasma and Radiological Engineering, University of Illinois at Urbana-Champaign.

Published research:

Published research papers in the areas:

- Wireless sensor networks and algorithms for personnel guidance for radiation avoidance
- Performability modeling for nuclear infrastructure
- Wireless Infrasrtucture for Tele-Traffic Speed Control
- Virtual reality modeling for personnel training at nuclear facilities

Associate Professor of Information Systems, *College of Information Systems, Zayed University, P. O. Box 4783, Abu-Dhabi, United Arab Emirates (August 2001 – July 2004)*

Teaching: JAVA Programming, Internet Databases, Introduction to Web-Programming (XML), And Advanced Web-Programming, and Computer Hardware Configuration and Deployment, plus Network Configuration and Deployment.

Training: Received CCNA certification, as prelude to CCAI, *January 2004*.

Lead Software Engineer, *Motorola, Inc., High Availability Platform Development, GTSS, Arlington Heights, Il.* (11/2000 – 7/2001)

Modeling and analysis work on telecommunication networks and subsystems; this included Markov modeling using MEADEP and MATLAB; Tier 1 subsystem and work for Highly Available Platforms. Software/Hardware modeling and analysis for CBTSP subsystems (SDU; CCA, ISB, SPROC, WBX, BTS), for a Highly Available Platform (HAP) UMTS. Software fault containment and isolation analysis and prevention strategies; Code optimization for highly available, highly reliable telecommunications subsystems.

Assistant Dean, Faculty of Engineering (9/92 - 9/96)

Acting Computer Center Director, Jordan University of Science & Technology, Irbid, Jordan, summers 1994, spring 1995.

Visiting Professor, Department of Electrical Engineering, University of Ottawa, Ottawa, Ont. K1N 6N5, Canada, Funded by The Canadian International Development Agency (CIDA), summer 1991.

Filed for Tenureship to Associate Professor, (12/96)
Dept. of Electrical Engineering, JORDAN Univ. Of Science and Technology, Irbid, JORDAN

Associate Professor of Electrical Engineering, (6/98 – 9/2000)

Assistant Professor, (8/89 - 6/98)
Dept. of Electrical Engineering, JORDAN Univ. Of Science and Technology, Irbid, JORDAN
Teaching: Random Processes (Graduate Level), EE 705, Communications Electronics (Senior Level), EE 527, Advanced Topics in Digital Signal Processing (Adaptive Filtering), EE 750, Digital Signal Processing, EE 550, Numerical Analysis, EE 302, Probability Theory for Communications, EE 301, Electronics I, EE 220, Communications Lab. I (Analog), EE 452, Communications Lab. II (Digital), EE 552, and supervising the First Electrical Engineering Lab. (Circuits), EE 216, Electrical Circuits for Non-EE Majors, EE 303, Linear Algebra, EE 300, Electronics Lab. I, EE 222, Instrumentations Lab, EE 426, Digital Electronics Lab, EE422

Developed a solid working experience in Computer Networking (Microsoft Windows NT and 95-based)

Training: Attended a UNESCO-Sponsored workshop, "Project Management in Contract R&D", March 2004, Amman, Jordan

Supervised and co-supervised: In excess of twenty five Masters degree students, theses titles include:

New Approach for Carbon Nano Tube Field Effect Transistor Modeling, by Atheer Mahmoud Alshaggah, March 2015.

A Novel Optimization Algorithm to Detect Human Emotions Using Artificial Intelligence Techniques, by Abeer Issa Albashiti, December 2014

ALGORITHM FOR RADIATION EVASION FOR NUCLEAR FACILITIES, by Zeina Aman Mahmoud Al-Shboul, December 2012.

Comparison of Combined Algorithms for Stereophonic Acoustic Echo Cancellation, by R. M. Shalabi, May 2000.

Isolated Word Recognition for Speech Using Polynomial Classifier Techniques for the Arabic Numerals, by W. F. Sweidan, Dec. 2000

New Fast Variable Degree Variable Step Size LMS-Based Algorithms, by M. I. Haddad, 1999

Fast Robust LMS-Based Adaptive Algorithms Utilizing the Dynamics of Physical Systems, by T. F. Haddad, February 1995.

A Comparative Study of a Newly Developed Variable Step Size (VSS) Adaptive Algorithm with Existing VSS Algorithms, by Juma M. Abu-Ghalune, December 1994.

Smoothing the Wigner Distribution Using Modified Cone-Shaped Kernels for Time-Frequency Representation of Non-Stationary Signals, by Jehad A. Draidi, October 1994, (In Conjunction with Dr. Labib M. Khadra).

Stationary and Nonstationary Learning Characteristics of Newly Derived Gradient Algorithms, by Khaled A. Mayyas, June 1992.

A Comparative Study Between the Fast LMS-Sine Algorithm and A Fast Transversal RLS Algorithm, by Farooq M. Fardoos, June 1990.

Supervised: more than thirteen undergraduate senior student projects, titles include:

Echo Cancellation Using Adaptive Filters with a TMS32020 Signal Processor, by Tariq F. Haddad, December 1992.

Adaptive Filters and LPC in Speech Recognition, by Nuha M. Ghuneimi, May 1993.

A Versatile Multi-Purpose Data Security Digital Signal Processor, by Basim M. Darweish, December 1994.

Adaptive Filters with Applications to Seismic Prediction of Earthquakes, by Munther I. Haddad, May 1996.

Two-Dimensional Digital Filtering with Applications to on-line monitoring of surface roughness of Milled Metals, by Mazin M. Marji, May, 1996.

Coloration of Monochromic TV Images, by Moh'd Magableh, June 1997.

Fuzzy Logic with Applications to Detecting Surface Roughness of Milled Metals, by Mahmoud Qasaimeh, June 1997.

A Digital Hardware System for the Detection of ECG Signals, by Fouad Al-Abweh, June 1997.

Image Processing Techniques for Digital TV Image and Video Compression, by Bilal H. Al-Anani, December 1997.

Application of Recent trends in DSP algorithms to speech, by Moh'd Abu-Sharkh, June 1998

A Generalized Interactive Package for Systems Engineering and Control Applications (GIPSECA), the Filter Design Module, Wesam F. Sweidan, January 1999.

A Generalized Interactive Package for Systems Engineering and Control Applications (GIPSECA), the Fast Fourier Transform Module, Mohamed Jawarneh, January 1999.

A Generalized Interactive Package for Systems Engineering and Control Applications (GIPSECA), the Op Amp Electronic Circuit Design Module, Eyad S. Taqieddin, January 1999.

Supervised a senior capstone project, conducted by two students (Noora AlMansouri and Fatema Shekaili), at Zayed University, which won first place in capstone festival at Zayed University, 2002. Capstone title: Zayed University Organizational Corporate Structure.

Supervised a senior capstone project, "Implementation and simulation of e-frontier", Asma Al-Khouri, Seham Al-Mahri, and Zulaikha Al-Hossany, December 2003, ***An e-Biz Challenge Award Winner***

Supervised a senior capstone project, "Implementation and simulation of e-vigilance", Miser Saeed, Naila Al-Murar, and Shaikha Al-Kaabi, December 2003, ***An e-Biz Challenge Award Winner***

Supervised a Funded Project for capstone, "A Wireless Infrastructure for (Cellular) Traffic Speed Control", Mohammed Abu-Shaikha, Qusai Abdullatif, Bassam Zalloum, Wafa Badwan, and Sawsan Salameh, June 2005

Supervised a Funded Project for capstone, "An e-Voting System for Jordan's Elections", Laith M. Barakat, June 2007.

Supervised a Funded Project for capstone, "An e-Faculty System; towards full scale automation", Amer Jaradat, Rami Owais, Taqwa Quda, Rasha Jahmani, Ahlam Khatatbeh, June 2007.

Supervised a Funded Project for capstone, "An Integrated Home/Vehicle e-securtiy system", Ahmad Abu-ElHaija, Raed Hussein, & Maen Kamel, Dec 2007.

Ph. D. Research Assistant, (5/87 - 6/89)
Dept. of Electrical and Computer Engineering, NC State Univ.,
Raleigh, NC, USA.

Scholarship Recipient, (1/87 - 7/89) (For the pursuit of my Ph. D.)
Dept. of Eletrical Engineering, Jordan Univ. Of Science and
Technology, Irbid, JORDAN

Teaching Assistant, (5/85 - 5/86)
Dept. of Electrical and Computer Engineering, NC State Univ.,
Raleigh, NC, USA

Electronics Engineer, (4/82 - 1/84)
Jordan Armed Forces Headquarters (JAF HQ), Amman, Jordan
Under supervision of MEMCOM International, a California-Based
Company. Was awarded a letter of appreciation from MEMCOM and a
Certificate of working experience.

ACADEMIC DISTINCTION/RECOGNITION

IEEE Senior Member

ACM Senior Member

Chancellor's Commendation for Outstanding Scholarship, spring 1979, The University of North Carolina at Charlotte, Charlotte, NC, USA.

Chancellor's Commendation for Outstanding Scholarship, fall 1979, The University of North Carolina at Charlotte.

Chancellor's Commendation for Outstanding Scholarship, spring 1980, The University of North Carolina at Charlotte.

Member of Tau Beta Pi, The National Engineering Honor Society, The Delta of North Carolina Chapter, Charlotte, NC. Inaugurated November 1980.

Member of Pi Mu Epsilon, The National Honorary Mathematics Fraternity, The North Carolina Gamma Chapter, Raleigh, NC. Joined fall 1987.

Member of the New York Academy of Sciences, April 1994.

Member of the Planetary Society, December 1994.

Listed in the Thirteenth Edition - 1996, MARQUIS Who'sWho in the World, Oct. 1994.

Listed in the Fourteenth Edition - 1997, MARQUISWho'sWho in the World.

Listed in the Fifteenth Edition - 1998, MARQUISWho'sWho in the World, Oct. 1999.

Listed in the Twenty Seventh Edition - 1998-99, MARQUISWho'sWho in Finance & Industry.

Listed in the Fourth Edition - 1998-99, MARQUISWho'sWho in Science & Engineering.

Listed in the Fifty First Edition - 1997, MARQUIS Who'sWho in the America.

Received a Certificate of Merit, Dictionary of International Biography, International Biographical Center, Cambridge, England, May 1996.

Received a Citation of Meritorious Achievement in Electrical Engineering and Applied Math, Dictionary of International Biography, International Biographical Center, Cambridge, England, July 1996.

Received a Twentieth Century Achievement Award, Five Hundred Leaders of Influence,

American Biographic Institute, Raleigh, North, Carolina, 1997.

Biographee, Five Hundred Leaders of Influence, American Biographic Institute, Raleigh, North, Carolina, 1997.

Received a Silver Medal, Twentieth Century Award of Achievement, International Biographical Center, Cambridge, England, Jan. 1998.

Member of the World Institute for Achievement, WIA, American Biographic Institute, Raleigh, North, Carolina, 1997.

Member of the Board of Advisors, American Biographic Institute, Raleigh, NC; Appointed Oct. 98.

Awarded the "20th Century Award for Achievement" for outstanding achievements in the field of education, International Biographical Center, Cambridge, England, Jan. 1998.

INDUSTRIAL INTERESTS

Availability Modeling for High Availability/Reliability Systems

Modeling and Evaluation of General Purpose Telecommunications Networks

Development and Performance Evaluation for High-Speed Algorithms for Telecommunications

Signal Integrity evaluation and treatment/conditioning for High Speed Systems

Application of DSP tools for on-line Process Management for High Availability/Reliability Monitoring and Provisioning

Material evaluation and system design for high speed information transport and processing

TEACHING INTERESTS

Both graduate and undergraduate courses in Telecommunications (Wireless & Wireline) Systems and Digital Signal Processing (Adaptive Algorithms, Multi-rate Signal Processing), and Stochastic Mathematics for Signal Processing and Telecommunications.

Undergraduate courses in Solid State Electronics, Physics of Semiconductor Devices, Electronics Circuits, Linear Systems, DSP, Telecommunications, Probability theory, Linear Algebra, and Automatic Control Systems.

RESEARCH INTERESTS

Communication Systems and Theory
Wireless Communications

RF MEMS and applications in evolving Wireless communications systems
MEMS, NEMS, and applications in nanosciences
Smart Sensors & Sensor Fusion
Nuclear and Renewable forms of Energy
Computer Technologies & Networks
Time-Frequency Signal Analysis
Statistical and Adaptive Signal Processing, and
Adaptive Filter Design
Linear & Nonlinear Circuits, Systems, & Theory; Chaotic Behaviour

CONFERENCE PUBLICATIONS

M. A. Khasawneh and W. E. Alexander, ``System Identification Using The Fast LMS-Sine Algorithm, " IEEE Int'l Symposium on Circuits and Systems, *pp. 1736 – 1739, vol. 3,* Portland, Oregon, May 1989.

M. A. Khasawneh and W. E. Alexander, ``Quantification of Whitening Effects in Adaptive Filtering, " IEEE SOUTHEASTCON'89, *pp. 1190 – 1194, vol. 3,* Columbia, South Carolina, April 1989.

M. A. Khasawneh and W. E. Alexander, ``MSE Analysis for the Fast LMS-Sine Algorithm, " Proc. IEEE Int'l Conf. Acoust. Speech, and Signal Processing, ICASSP'90, *pp. 1257 – 1260, vol. 3,* Albuquerque, New Mexico 1990.

M. A. Khasawneh, ``Finite Precision Error Analysis for the Fast LMS-Sine Algorithm, " Proceedings 1990 Bilkent Int'l Conf. on New Trends in Communication, Control, and Signal Processing, BILCON'90, Ankara, Turkey, July 1990.

K. A. Mayyas, and M. A. Khasawneh, ``Application of LMS-Order Updating in System Identification and LPC of Speech, " Proc. Of 11th European Conference on Circuit Theory and Design, Aug. 30 - Sep. 3, 1993, Davos, Switzerland.

K. A. Mayyas, and M. A. Khasawneh, ``An LMS-Based Algorithm with Better Convergence and Tracking Capabilities for Correlated Signals, " Proc. of 11th European Conference on Circuit Theory and Design, Aug. 30 - Sep. 3, 1993, Davos, Switzerland.

M. A. Khasawneh, and T. F. Haddad, ``Real-Time Echo Cancellation Using a New Fast LMS-Based Algorithm, " Proc. Of 1994 International Conference on Acoustics, Speech, & Signal Processing, *pp. III/221 - III/224 vol.*3 Adelaide, South Australia, 19 - 22 April 1994.

M. A. Khasawneh, and K. A. Mayyass, ``A Fast LMS Algorithm Using Laws of Physics, " Proc. of International Conference on Electronics, Circuits and Systems, ICECS'94, Cairo, Egypt, 19 - 22 Dec., 1994.

M. A. Khasawneh, L. M. Khadra, and J. A. Draidi, ``Implementation of the Complex LMS in Identifying WD Cross-Terms, " Proc. of International Conference on Electronics, Circuits, and Systems, ICECS'94, Cairo, Egypt, 19 - 22 Dec., 1994.

J. A. Draidi, L. M. Khadra, & M. A. Khasawneh, ``Generalized Cone-Shaped Kernels for Time-Frequency Distributions, " Proc. of 1995 IEEE International Symposium on Circuits & Systems, *pp. 1880 - 1883 vol.3,* Seattle, Washington, April 29 - May 3, 1995.

T. F. Haddad and M. A. Khasawneh, ``A Fast Robust LMS Algorithm Utilizing the Dynamics of a Damped

Pendulum, " Proc. Of 1995 International Conference on Acoustics, Speech, & Signal Processing, *pp. 953 - 956 vol.2*, Detroit, Michigan, 8-12 May 1995.

M. A. Khasawneh and K. A. Mayyas, ``A Newly Derived Variable Degree Variable Step Size LMS Algorithm, " Proc. Of European Conference on Circuit Theory & Design, Istanbul, Turkey, 27 - 31 August 1995.

T. F. Haddad and M. A. Khasawneh, ``A New Burst-Free Leaky-Type Fast LMS Algorithm, " Proc. of European Conference on Circuit Theory & Design, Istanbul, Turkey, 27 - 31 August 1995.

M. A. Khasawneh, L. M. Khadra, and J. M. Abu-Ghalune, ``A New Plant-Noise-Immune Variable Step Size LMS Algorithm, " Proc. Of European Conference on Circuit Theory & Design, Istanbul, Turkey, 27 - 31 August 1995.

M. A. Khasawneh and T. F. Haddad, ``Burst-Free Adaptive Hybrids, " Proc. of Sixth International Conference on Signal Processing Applications and Technology, ICSPAT'95, Oct. 24 - 26, 1995, Boston, MA, USA.

J. M. Abu-Ghalune and M. A. Khasawneh, ``Analysis of An LMS-Based Algorithm Using Reduced Number of Computations, " Proc. Of 1996 IEEE International Symposium on Circuits & Systems, *pp. 25 – 28, vol. 2*, May 12 - 15, 1996, Atlanta, Ga, USA.

J. A. Draidi, M. A. Khasawneh, J. M. Abu-Ghalune, and N. M. Ghueimi, ``Two-Dimensional Chirp z-transform and Its Application to Zoom Wigner Bispectrum, " Proc. of 1996 IEEE International Symposium on Circuits & Systems, pp. 540 - 543 vol.2, May 12 - 15, 1996, Atlanta, Ga, USA.

M. A. Khasawneh and J. M. Abu-Ghalune, ``A Plant-Noise-Immune Variable Step Size LMS Algorithm for Correlated Inputs, " Proc. of the IASTED International Conference on Signal and Image Prcessing And Applications - SIPA'96, *pp. 41 - 44*, June 12 - 14, 1996, Annecy, France.

T. J. Maayah, M. A. Khasawneh, and L. M. Khadra, ``A Novel Statistical Approach for Chaos Detection in Chua's Circuit, " Proc. of the Third IEEE International Conference on Electronics, Circuits, and Systems, *pp. 808 - 811*, October 13 - 16, 1996, Rodos, Greece.

T. F. Haddad, M. A. Khasawneh, and T. J. Maayah, ``An LMS-Based Adaptive Local Linear Predictor For Chaos Detection In Time Series, " Proc. of 1996 IEEE Region Ten Conference on Digital Signal Processing Applications, TENCON'96, November 27 - 29, 1996, Perth, Western Australia.

M. I. Haddad, and M. A. Khasawneh, "A New Variable Degree Variable Step-Size LMS Algorithm, " 1998 MidWest Symposium on Circuits and Systems, *pp. 506 – 509*, Aug. 9 - 12, 98, Notre Dame, IN, USA.

M. I. Haddad, K. A. Mayyas, and M. A. Khasawneh, "Analytical Development of the MMAXNLMS Algorithm, " IEEE 1999 International Conference on Acoustics, Speech, and Signal Processing, Phoenix, Arizona, Mar. 1999.

M. I. Haddad, M. A. Khasawneh, and K. A. Mayyas, "Stationary and NonStationary Learning Characteristics of the MMAXNLMS Algorithm" IEEE 42nd MidWest Symposium on Circuits and Systems, *pp. 1853 - 1856 vol.4* , Las Cruces, NM, Aug. 9 – 12, 99

W. F. Swedan, M. A. Khasawneh, A. M. Zalzala, "A New Theme in Distance Learning Using MATLAB in a Software-Independent Environment" 5th International Symposium on Signal Processing and Its Applications, *pp. 543 - 546 vol.2*, Brisbane, Australia, Aug. 22 – 25, 1999.

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K. A. Mayyas, R. M. Shalabi, and M. A. Khasawneh, "A Lattice Weighted Subband Adaptive Algorithm for Stereophonic Acoustic Echo Cancellation", Proc. of the IASTED International Conference on Signal and Image Prcessing And Applications - SIPA'2000, Las Vegas, USA, Nov. 2000

Azzedine Lansari, Faouzi Bouslama, Mohammed Khasawneh, Akram Al-Rawi, "A Novel Electromyography Based Classification Approach for Arabic Handwriting", Proc. International Joint Conference on Neural Networks, *pp. 2193 - 2196 vol.3*, July 20 – 24, 2003

M. Khasawneh, K. Assaleh, W. Sweidan, and M. Haddad, "The Application of Polynomial Discriminant Function Classifiers to Isolated Arabic Speech Recognition", *pp. 3077 - 3081 vol.4*, Proc. International Joint Conference on Neural Networks, Budapest, Hungary, July 2004

M. I. Malkawi, M. A. Khasawneh, & A. I. Malkawi, "A Wireless Infrastructure for Traffic Speed Control", Conference on Information Technology and Organizations in the 21st Century, Amman, Jordan, July 2004.

M. Khasawneh, K. Mayyas, R. Shalabi, and M. Haddad, "A Combined TDA/FDA Algorithm for Stereophonic Acoustic Echo Cancellation", IEEE ISCAS 2005, *pp. 1686 - 1689 Vol. 2,* Kobe, Japan, March 2005.

F. Bouslama, M. Khasawneh, A. Al-Rawi, M. Haddad, A. Lansari, "Analysis of Human Handwriting Dynamics Using the Recursive Least Squares Algorithm, " 2nd ACIDCA-ICMI conference, Tunisia, November 5-7, 2005.

M. Khasawneh, A. Malkawi, A. Lansari, M. Malkawi, & O. AlJarrah, "Towards Optimizing Engineering Education in Arab Universities – Producing industry-oriented outcomes, " Proceedings of IFEE 2006, Sharjah, United Arab Emirates, April 2006.

M. Malkawi, and M. Khasawneh, "Technology Education Using a Novel Approach in e-Learning – Towards Optimizing the Quality of Learning Outcomes, "Proceedings of IFEE 2006, Sharjah, United Arab Emirates, April 2006.

A. Lansari, M. Khasawneh, M. Malkawi, and A. AlRawi, "Emerging Trends in Biomedical Informatics: Designing a Curriculum to Address the Current Job Market, " Proceedings, International Informatics and Biomedical Engineering Conference; the first Jordanian-European Symposium, Amman, Jordan, March 2006.

M. A. Khasawneh, W. M. Owais, & A. I. Malkawi, "Gearing Academic Research Endeavours Towards Achieving Sustainable Development in 3rd World Countries," **UNESCO Forum on Higher Education, Research & Knowledge, Colloquium on Research and Higher Education Policy**: *Universities as Centers of Research & Knowledge Creation: An Endangered Species?*, Nov. 28 – Dec. 2, 2006, Paris, France.

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M. A. Khasawneh, and Rizwan-Uddin, "A Novel Sensor Fusion Architecture for Nuclear Applications," 5th *International Symposium on Mechatronics and Its Applications,* May 27 – 29, 2008, Amman, Jordan.

M. Khasawneh, M. H. Almalkawi, "Performability Study of a Mission-Critical System Using Reliability-Analytic Formalism," 5th *International Symposium on Mechatronics and Its Applications,* May 27 – 29, 2008, Amman, Jordan.

M. Khasawneh and M. Malkawi, "A Graph-Coloring-Based Navigational Algorithm for Personnel Safety in Nuclear Applications, "*6th International Symposium on Mechatronics and Its Applications,* Mar. 23 – 26, 2009, Sharjah, United Arab Emirates.

Chen Xi, Mohammed Khasawneh, Rizwan-uddin, **Innovative Training Tools for Improved Human Performance,** in the Proc. of ANS/ENS CONTE - The Conference on Nuclear Training and Education, FL, 2009.

Chen Xi and Hsingtzu Wu, Arwa Joher, Leo Kirsch, Cheng Luo, Mohammed Khasawneh and Rizwan-uddin, **3D Virtual Reality for Education, Training and Improved Human Performance in Nuclear Engineering**, presented at the *ANS NPIC HMIT 2009*

Abdallah Malkawi, M. Abu Arabi, and M. Khasawneh, "The Red-Dead Sea Conveyance System; bridging the water shortage and prospects for desalination, *" 2010 1st International Nuclear and Renewable Energy Conference, March 21 – 24, 2010, Amman, Jordan.*

M. Ragheb and M. Khasawneh, "Uranium fuel as a byproduct of phosphate fertilizer production, "*2010 1st International Nuclear and Renewable Energy Conference, March 21 – 24, 2010, Amman, Jordan.*

M. Khasawneh, M. Malkawi, and R. Uddin, "Technologies that can enforce the nuclear safeguard regime, "*2010 1st International Nuclear and Renewable Energy Conference, March 21 – 24, 2010, Amman, Jordan.*

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Abeer Albashiti, Mohammad Malkawi, and Mohammed Khasawneh, "***A Novel Optimization Algorithm To Detect Human Emotions Using Artificial Intelligence Techniques,*** 25th IBIMA Conference, ***Innovation Vision 2020:*** *From Regional Development Sustainability to Global Economic Growth,* May 7 – 8, 2015, Amsterdam, The Netherlands.

JOURNAL PUBLICATIONS

M. A. Khasawneh and K. A. Mayyas, ``A Newly Derived Variable Degree Variable Step Size LMS Algorithm, " International Journal of Electronics, pp. 255 - 264, Vol. 79, No. 3, September 1995.

M. A. Khasawneh and T. F. Haddad, ``An Algorithm-Independent Burst-Free Adaptive Hybrid, " Journal

of the Franklin Institute, pp. 687 - 705, Vol. 333(B), No. 5, September 1996.

T. F. Haddad and M. A. Khasawneh, ``A Fast Robust LMS Algorithm Utilizing the Dynamics of a Damped Pendulum, " Journal of the Franklin Institute, *Volume 335, Issue 3, April 1998, Pages 563-577.*

L. M. Khadra, J. A. Draidi, M. A. Khasawneh, and M. M. Ibrahim, ``Time-Frequency Distributions Based on Generalized Cone-Shaped Kernels for the Representation of Nonstationary Signals, "Journal of the Franklin Institute, *Volume 335, Issue 5, July 1998, Pages 915-928.*

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T. F. Haddad and M. A. Khasawneh, ``A New Forced LMS-Based Adaptive Algorithm Utilizing the Principle of Potential Energy, " Journal of the Franklin Institute, *Volume 337, Issue 5, August 2000, Pages 515-542.*

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M. Malkawi, M. A. Khasawneh, O. Al-Jarrah, & Laith Barakat, "Modeling and simulation of a robust e-voting system " Communications of the IBIMA, *Volume 8, pp. 198 - 206, 2009*.

Khasawneh, M.A., Al-Shboul, Z. A., and Jaradat, M. A., A localized navigation algorithm for radiation evasion for nuclear facilities: Optimizing the "Radiation Evasion" criterion: Part I. *Nuclear Engineering and Design, Volume 259, June 2013, Pages 240-257.*

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Atheer Al-Shaggah, Abdoul Rjoub, and Mohammed Khasawneh, Impacts of Parameter Scaling for Low-Power Applications Using Carbon Nanotube Field Effect Transistor (CNTFET) Models:A Comparative Assessment, *Accepted for publication*, Journal of Energy and Power Engineering ISSN 1934-8975, February 2014, *David Publishing Company*, USA

ORGANIZATION & INSTRUCTION IN INTENSIVE SHORT COURSES HELD IN COOPERATION WITH INTERNATIONAL INSTITUTIONS (Training and Community Education)

Coordinated Seven Intensive short courses held at JUST in cooperation with the University of Ottawa in the areas of Computer communications & Multimedia Applications, Secure Communications, Optical Fiber Communications, Microwave Radio Communications, and others.

Instructed in two intensive short courses with University of Ottawa in Digital Signal Processing, and Image Processing.
Instructed in one intensive short course in cooperation with University of Heidelberg, Heilbronn-FH, Germany in the area of Biomedical Engineering & Medical Informatics.

Coordinated and Participated in the Instruction of a short course in cooperation with University of Victoria, Victoria, B. C., Canada, on Digital Filters; Principal Lecturer: Prof. Andreas Antoniou.

RESEARCH GRANTS

Received a research grant from the Faculty of Scientific Research to work on " the solution of the bursting problem in adaptive hybrids", (Spring 93 - Spring 1995).

Worked on a research grant on "Adaptive Automation of On-Line Monitoring & Control of Surface Textures of Milled Metals", In Joint cooperation with faculty members from Electrical and Mechanical Engineering @ JUST. Funded by Higher Council for Science & Technology, Amman, Jordan, Funding Approved March 1995.

Worked on a research grant on "Adaptive Automation of On-Line Monitoring & Control of Surface Textures of Milled Metals", (In Joint Cooperation Between Faculty Members of the Depts. of Electrical & Mechanical Engineering at JUST). Funded by the Faculty of Scientific Research at JUST, 1992 – 1996.

Participated and served as JUST coordinator on a Funded Project through the Commission of European Communities, under the INCO-DC scheme, entitled, "A Generic Interactive Package of Systems Engineering Courses and Applications, GIPSECA, 1997; project launched 1998, and has the following objectives:

- Industrial Training and Provision of Case Studies
- Distant Learning for Academia
- Continuing Education for Communities
- Conducting Regularly Scheduled Courses Online

Acquired Funding to build a prototype for a project entitled, “A Wireless Infrastructure for Traffic Speed Control” , February 2005, King Abdullah II Design and Development Bureau (KADDB) and King Abdullah II Development Fund (KAFD). Fund totalled USD20, 000.

Acquired Funding to build a prototype for a project entitled, “An e-Voting System for Jordan’s Elections” , February 2006, King Abdullah II Design and Development Bureau (KADDB) and King Abdullah II Development Fund (KAFD). Fund totalled USD7, 000.

Acquired Funding to build a prototype for a project entitled, “An Integrated Home/Vehicle e-Security

System" , January 2007, King Abdullah II Design and Development Bureau (KADDB) and King Abdullah II Development Fund (KAFD). Fund totalled USD10, 000.

Acquired Funding to build a prototype for a project entitled, "An e-Faculty System – Towards Full Scale Automationl" , January 2007, King Abdullah II Design and Development Bureau (KADDB) and King Abdullah II Development Fund (KAFD). Fund totalled USD7, 500.

Received FASTLINK's endowment for a full-fledged Wireless (Cellular) Communication lab at JUST, 2005, Grant worth USD1,500,000.00

Partner in a Euro-Med funded project, MOSAIC; funding received 2013.

Funding approved for system implementation of a project entitled, "Augmenting Radiation Evasion for Nuclear Facilities via Evolutionary Multi-Objective Optimization", Faculty of Scientific Research, Jordan University of Science & Technology, January 2014.

SERVICE RECORD (*at current academic institution (JUST)*); *at a glance*

Departmental service:

- *Membership of Graduate Studies*
- *Membership to Scientific Research*
- *Membership to Academic Curricula*
- *Membership to Accreditation & Quality Control*
- *Membership to Social Activities*
- *Membership to Assessing Progress and Quality of Work for a number of graduate students*
- *Membership to Inquisitive boards*

College service:

- *Membership to course assessment pertaining to academic curricula*
- *Membership to inquisitive boards*
- *Membership to assessing and evaluating technical college needs*
- *Membership to technology incubator*
- *Departmental representative at college board*

University service:

- *Membership to developing financial collection service*
- *Membership to formulation of nanotechnology center and policy*
- *Contribution to framing agreements (MOU's) with international academic institutions*
- *Major contribution towards formulating the founding of a nuclear engineering program/department*
- *Membership to the editorial board of "JUST Newsletter"*

Off-campus and community service:

- *Co-authoring a report on innovation and inculcating enterpreneurship spirit in higher education, Ministry of Higher Education and Scientific Research, Amman, Jordan, 2013*
- *Participating/Presenting a working document on innovation and entrepreneurship in higher education, Population Window of Opportunity Forum, Higher Population Council, Amman, Jordan, 2013*
- *Attending a number of local, regional and international forums and workshops on innovation and enterpreneurship in higher education, Jordan*

- *Writing articles and columns in the media on higher education and general national policies; more than 40 in all, Jordan*
- *Participation at TV shows on higher education and scientific research oriented matters, Amman, Jordan*
- *Participation in a number of national committees to set policy and general strategy on higher education, Amman, Jordan*
- *Chairing a number of accreditation board committees for assessment of a number of academic institutions in Jordan*
- *Reviewer for a number of research articles*
- *Chairing and co-chairing, and member of various committees for international, regional and local conferences*
- *Organizing/co-organizing a number of local, regional and internationally recognized conferences*
- *Offering consultations and counsel to the Jordanian government on matters related to moving towards a knowledge-based economy that can put Jordan closer to a viable industrial model*
- *Representation of the Jordan government to a number of international workshops on matters related to framing national nanotechnology policy*
- *Visitation to a number of regional academic institutions on venues of mutual collaboration in areas of hi-tech industrial research*

OTHER ACTIVITIES

Served as a committee member on a number of Masters Theses in the Department of Electrical Engineering, Jordan University of Science & Technology, Since 1989 (at least 20).

Reviewed a number of research papers submitted to at least three refereed Jordanian Journals, from Jordanian Scientists and others from overseas.

Served as reviewer to a number of international journals and conferences.

Served as Liaison Officer between the Faculty of Engineering @ JUST and Jordan Engineers Association, (9/92 - 9/94).

COMPUTING SKILLS

Solid experience with UNIX and C-and Java Programming, Fortran, MS-DOS, MATLAB and LATEX, and a working experience with the SUN workstations.
Solid experience with PC-based computer networking (Windows 95 and NT).
General Computer fluency in software-hardware support and administration.

PROFESSIONAL MEMBERSHIPS

The Institute of Electrical and Electronics Engineers (IEEE). Member since 1986.

JORDAN Engineers Association. Member since 1981.

Association for Computing Machinery, ACM. Member since 1995.

The International Association of Science and Technology for Development - IASTED. Member since

1996.

Mathematical Association of America. Member since 2006.

American Nuclear Society (ANS), Member since 2008 – 2009

REFERENCES

Dr. Winser E. Alexander, Professor, ECE Dept. NC State University, Box 7911, Raleigh, NC 27695-7911, USA; Phone (919)-737 2336. Email: winser@eos.ncsu.edu
- Dr. Alexander was the chairman of my Ph. D. advisory committee.

Professor Andreas Antoniou, Electrical & Computer Engineering Department, University of Victoria, Victoria, BC, V8W 3P6, Canada. Email: andreas@ece.uvic.ca, aantoniou@ieee.org, aantoniou@shaw.ca (latest email address)

Professor Sanjit Mitra, Electrical and Computer Engineering Dept., University of California – Santa Barbara, Santa Barbara, CA 93106, USA, Email: mitra@ece.ucsb.edu

Mohammed Malkawi, SUN Microsystems, Inc., USA, Tel. +1-(847) 483 4432, also +(962)-77 71 3373, E-mail: mmalkawi@aimws.com

Professor Larry Lee, former dean (currently in US), college of information systems, Zayed University, Email address: llee23@nc.rr.com or Larry.Lee@zu.ac.ae

Professor Abdallah I. Malkawi, *President of Jordan University of Science & Technology*, Irbid, Jordan, Tel. +(962)-79 666 7174, Email: mhusein@just.edu.jo