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Department of Electrical Engineering

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**EDUCATION:**

- **Wichita State University**, Wichita, KS, USA  
Ph.D., Electrical Engineering, December 1999  
Dissertation Title: *Suboptimal Control of Decentralized Singularly Perturbed Systems*  
GPA: 3.85/4
- **Tennessee State University**, Nashville, TN, USA  
Master of Engineering, Electrical Engineering, December 1995  
Thesis Title: *Design of an Intelligent Neuro-Estimator for Complex Dynamic Systems*  
GPA: 3.91/4
- **Tennessee State University**, Nashville, TN, USA  
Bachelor of Science, Electrical Engineering, December 1993  
GPA: 3.39/4

**EXPERIENCE:**

- **Sep 2016 – Present: Philadelphia University**, Jordan.  
**Professor (Sabbatical)**, Department of Electrical Engineering.
- **Oct 2015 – Sep 2016: The University of Jordan**, Amman, Jordan.  
**Professor**, Department of Electrical Engineering.
- **Sep 2014 – Sep 2015: Yarmouk University**, Irbid, Jordan.  
**Associate Professor (Sabbatical)**, Dept. of Electrical Power Engineering.
- **Sep 2012 – Sep 2014: The University of Jordan**, Amman, Jordan.  
**Chairman**, Department of Electrical Engineering.
- **Oct 2011 – Sep 2012: The University of Jordan**, Amman, Jordan.  
**Associate Professor**, Department of Electrical Engineering.
- **Sep 2002 – Oct 2011: The University of Jordan**, Amman, Jordan.  
**Assistant Professor**, Department of Electrical Engineering.
- **Feb 2002 – June 2002: Yarmouk University**, Irbid, Jordan.  
**Adjunct Instructor**, Department of Computer Engineering.
- **Jan 2001 – Dec 2001: Caterpillar Inc.**, Peoria, IL, USA.  
**Senior Research Engineer**.

*I worked as a member of the control system research group. The research involved several duties, from project planning to technical problem resolution. I was also involved in directing and performing tests, formulating conclusions and recommendations, and providing technical guidance to support engineers and technicians in assigned area of responsibility.*

- **Mar 2000 – Jan 2001: Aerotek, Peoria, IL, USA**  
**Research Engineer.**

*I was assigned by the Aerotek agency to work for Caterpillar as a member of the control system research group, which ended by getting hired directly by caterpillar in January of 2001. The research involved development of embedded controller software, development of wiring harness, generating controller codes which are flashed into an Electronic Control Machine (ECM) found in different wheel loader machine types.*

- **Sep 1998 – Mar 2000: CCH Inc., Wichita, KS, USA**  
**Software Inspector.**

*I worked as a member of the Release Team for Tax software inspection at the CCH Inc. I was involved in testing and reporting tax software problems using different operating systems such as Windows 95/98/2000/NT4, Citrix, Lantastic, and Windows 95/98/2000 peer-to-peer.*

- **Jan 1997 – Dec 1999: Wichita State University, Wichita, KS, USA**  
**Graduate Teaching Assistant, Department of Electrical and Computer Engineering.**

*I was involved in teaching undergraduate Electrical Engineering students a variety of laboratories such as Digital Logic Design, Communication Systems, Electric Machines and Transformers, Distributed parameter circuits, Electronic Circuits II, engineering Computing in C.*

- **Jan 1996 – May 1996: Tennessee State University, Nashville, TN, USA**  
**Adjunct Instructor, Department of Aeronautical and Industrial Engineering.**

*I taught Digital Logic design and the course of Circuits and Devices.*

- **Sep 1994 – Dec 1995: Tennessee State University, Nashville, TN, USA**  
**Research Engineer.**

*I have worked as a member of the research group for an F-15 aircraft NASA project. Objective of the research was to design a neural-network controller that will estimate a failed system for the purpose of online system stabilization.*

- **Jan 1993 – Dec 1995: Tennessee State University, Nashville, TN, USA**  
**Sight Supervisor.**

*I was involved in handling a Sight Supervisor position for the Academic Intervention Center (AIC). Responsibilities of this position involved coordinating other tutors in addition to teaching mathematics to college students in one-to-one or group sessions.*

- **Sep 1991 – Dec 1992: Tennessee State University, Nashville, TN, USA**  
**Counselor/Tutor.**

*As a counselor/tutor for the Talent Search Program (TSP), the job involved helping and counseling high school and college students with different subjects such as mathematics, physics, and chemistry.*

## **PUBLICATIONS:**

### **Journal Papers (refereed)**

- M. Hawa, D. Abu-Al-Nadi, **O. Alsmadi**, & I. Jafar, On Using Spectrum History to Manage Opportunistic Access in Cognitive Radio Networks, *IEEE Access*, Vol. 4, (2016) 5293-5308.
- A. Al-Smadi, **O. Alsmadi**, & M. Marji, Dominant-Dynamics-Based Reduced Order Modeling Using Genetic Algorithm, *International Journal of Control Systems and Robotics*, (2016), 96-100.
- **O. Alsmadi**, Z. Abo-Hammour, D. Abu-Al-Nadi & S. Saraireh, Soft Computing Techniques for Reduced Order Modelling: Review and Application, *Intelligent Automation & Soft Computing*, Vol. 22, No. 1, (2016) 125-142.
- S. Momani, S. Abo-Hammour, **O. Alsmadi**, Solution of Inverse Kinematics Problem using Genetic Algorithms, *Applied Mathematics and Information Science*, Vol. 10, No. 1, (2016) 1-9.
- **O. Alsmadi** and Z. Abo-Hammour, A Robust Computational Technique for Model Order Reduction of Two-Time-Scale Discrete Systems via Genetic Algorithms, *Computational Intelligence and Neuroscience*, Vol. 2015 (2015), Article ID 615079.
- **O. Alsmadi** and Z. Abo-Hammour, Substructure Preservation Model Order Reduction with Power System Model Investigation, *Wulfenia Journal*, Vol. 22, No. 3, (2015), 44-55.
- **O. Alsmadi**, S. Saraireh, Z. Abo-Hammour, and Ali H. Al-Marzouq, Substructure Preservation Sylvester-Based MOR with Application to Power Systems, *Electric Power Components and Systems*, Vol. 42, No. 9, (2014), 1-15.
- Z. Abo-Hammour, O. Abu Arqub, **O. Alsmadi**, and S. Momani, An Optimization Algorithm for Solving Systems of Singular Boundary Value Problems, *Applied Mathematics and Information Science*, Vol. 8, No. 6, (2014), 2809-2821.
- **O. Alsmadi**, D. Abu-Alnadi, and Z. Abo-Hammour, Particle Swarm Optimization for MOR of Singularly Perturbed Systems with Critical Frequency Preservation and Application to Power Systems Simplified Modeling, *Journal of Circuits, Systems, and Computers*, Vol. 23, No. 5, (2014), 1450073 (20 pages).
- S. Saraireh, Y. Al-Sbou, J. Al-Sarairah, **O. Alsmadi**, Image Encryption Scheme Based on Filter Bank and Lifting, *Int. J. Communications, Network and System Sciences*, Vol. 7, (2014), 43-52.
- Z. Abo-Hammour, **O. Alsmadi**, S. Momani, and O. Abu Arqub, A Genetic Algorithm Approach for Prediction of Linear Dynamical Systems, *Mathematical Problems in Engineering*, Vol. (2013), 12 pages.

- D. Abu-Alnadi, **O. Alsmadi**, Z. Abo-Hammour, M. Hawa, and J. Rahahhal, Invasive Weed Optimization for Model Order Reduction of Linear MIMO Systems, *Applied Mathematical Modelling*, Vol. 37, No. 6 (2013), 4570–4577.
- **O. Alsmadi**, Z. Abo-Hammour, A. Al-Smadi and M. Saraireh, A Robust And Efficient Genetic Algorithm For Solving A Chemical Reactor Problem: Theory, Application and Convergence Analysis, *Transactions of the Institute of Measurement and Control*, Vol. 34, No. 5 (2012), 594–603.
- Z. Abo-Hammour, **O. Alsmadi**, A. Al-Smadi , M. Zaqout and M. Saraireh, ARMA Model Order And Parameter Estimation Using Genetic Algorithms, *Mathematical and Computer Modelling of Dynamical Systems*, Vol. 18, No. 2 (2012), 201–221
- **O. Alsmadi**, Z. Abo-Hammour, and A. Al-Smadi, "Robust model order reduction technique for MIMO systems via ANN-LMI-based state residualization", *International Journal of Circuit Theory and Applications*, Vol. 40, (2012) 341-354.
- **O. Alsmadi**, Z. Abo-Hammour, A. Al-Smadi, and D. Abu-Al-Nadi, Genetic algorithm approach with frequency selectivity for model order reduction of MIMO systems, *Mathematical and Computer Modelling of Dynamical Systems*, Vol. 17, No. 2 (2011) 163–181.
- Z. Abo-Hammour, **O. Alsmadi**, and A. Al-Smadi, Multi-Time-Scale Systems Model Order Reduction Via Genetic Algorithms with Eigenvalue Preservation, *Journal of Circuits, Systems, and Computers*, Vol. 20, No. 7 (2011) 1403-1418.
- **O. Alsmadi**, Z. Abo-Hammour, and A. Al-Smadi, Artificial Neural Network for Discrete Model Order Reduction With Substructure Preservation, *Applied Mathematical Modelling* 35 (2011) 4620–4629.
- Z. Abo-Hammour, **O. Alsmadi**, Sofian I. Bataineh, Muhannad A. Al-Omari, and Nafee' Affach, Continuous Genetic Algorithms for Collision-Free Cartesian Path Planning of Robot Manipulators, *International Journal of Advanced Robotic Systems*, Vol. 8, No. 6 ( 2011) 14-36
- Z. Abo-Hammour, A. Asasfeh, A. Al-Smadi, and **O. Alsmadi**, "A novel continuous genetic algorithm for the solution of optimal control problems", *Optimal Control Applications and Methods*, Vol. 32 (2011) 414-432.
- A. Alrabadi and **O. Alsmadi**, "Supervised Neural Computing and LMI Optimization for Order Model Reduction-Based Control of the Buck Switching-Mode Power Supply", *International Journal of System Science*, 42, No. 1 (2011) 91-106.
- N. Dar-Odeh, **O. Alsmadi**, F. Bakri, Z. Abu-Hammour, A. Shehabi, M. Al-Omiri, S. Abu-Hammad, H. Al-Mashni, M. Saeed, W. Muqbil, O. Abu-Hammad, "Predicting recurrent aphthous ulceration using genetic algorithms-optimized neural networks", *Advances and Applications in Bioinformatics and Chemistry*, 3 (2010) 7–13.

## Conference Papers

- **O. Alsmadi**, Z. S. Abo-Hammoud, and Saleh Saraireh, Ant Colony Optimization For Model Order Reduction with Substructure Preservation, Proceedings of The IRES International Conference, Mecca, Saudi Arabia, 23rd-24th April 2017.
- **O. Alsmadi**, Z. S. Abo-Hammoud, and Esra Gharaibeh, Design of Reduced Order Models for Multi-Time-Scale Systems Via Firefly Optimization, 14th International Multi-Conference on Systems, Signals & Devices, Marrakech, Morocco, March 28 - 31, 2017.
- A. Al-Smadi, **O. Alsmadi**, and M. Marji, Model Order Reduction Using Genetic Algorithm, 15<sup>th</sup> International Conference on Circuits, Systems, Electronics, Control & Signal Processing (CSECS '16) Istanbul, Turkey April 15-17, 2016.
- **O. Alsmadi**, A. A. Al Jallad, Z. S. Abo-Hammoud, and F. Al-Majali, Arduino-Based Automatic Safety Vehicle Control, 2nd International Conference on Research in Science, Engineering and Technology, Dubai (UAE) , March 21-22, 2014.
- **O. Alsmadi**, Z. Abo-Hammour, and A. Al-Smadi, Intelligent Computational Technique with CGA Approach for Optimal Solutions, IEEE 20th International Conference on Electronics, Circuits, and Systems, Abu Dhabi, (UAE), Dec. 2013.
- **O. Alsmadi**, Z. Abo-Hammour, and A. Al-Smadi, Artificial Neural Network For Discrete Model Order Reduction With Frequency Selectivity, Proceedings of the 10<sup>th</sup> international FLINS Conference, Istanbul, Turkey, 1011-1016, August 26-29, 2012.
- **O. Alsmadi**, Z. Abo-Hammour, D. Abu-Al-Nadi, A. Algsoon, A Novel Genetic Algorithm Technique For Solving University Course Timetabling Problems, 7th International Workshop on Systems, Signal Processing and their Applications, IEEE Xplore, Tipaza, Algeria, 195-198, May 09-11, 2011.
- Z. Abo-Hammour, **O. Alsmadi**, and A. Al-Smadi, Frequency-Based Model Order Reduction Via Genetic Algorithm Approach, 7th International Workshop on Systems, Signal Processing and their Applications, IEEE Xplore, Tipaza, Algeria, 191-194, May 09-11, 2011.
- D. Abu-Al-Nadi, **O. Alsmadi**, and Z. Abo-Hammour, Reduced Order Modeling of Linear MIMO Systems Using Particle Swarm Optimization, ICAS 2011: The Seventh International Conference on Autonomic and Autonomous Systems, Venice, Italy, 62-66, May 22-27, 2011.
- **O. Alsmadi**, Z. Abo-Hammour, and A. Al-Smadi, Efficient Substructure Preserving MOR Using Real-Time Temporal Supervised Neural Network, 2<sup>nd</sup> International Conference, NDT 2010 Proceedings, Part II, Prague, Czech Republic, July 7-9, 2010.

- Z. Abo-Hammour, **O. Alsmadi**, and A. Al-Smadi, A Novel Technique for ARMA Modelling with Order and Parameter Estimation Using Genetic Algorithms, 2<sup>nd</sup> International Conference, NDT 2010 Proceedings, Part II, Prague, Czech Republic, July 7-9, 2010.
- Z. Abo-Hammour, **O. Alsmadi**, M. Sarayreh, and H. Khasawneh, Genetic-Algorithm-Based Adaptive Tuning Method of PID Controllers, International Symposium on Innovations in Intelligent Systems and Applications, Trabson, Turkey, June 29-July 1, 2009.
- **O. Alsmadi**, Z. Abo-Hammour, and M. Sarayreh, Model-Order Reduction of Singularly Perturbed Systems based on Artificial Neural Estimation and LMI-Based Transformation, 6<sup>th</sup> International Conference on Informatics in Control, Automation and Robotics, Milan, Italy, July 2-5, 2009.
- Z. Abo-Hammour, **O. Alsmadi**, and M. Sarayreh, A Comparative Study Between Conventional and Continuous Genetic Algorithms for the Solution of Cartesian Path Generation Problems of Robot Manipulators, 6<sup>th</sup> International Conference on Informatics in Control, Automation and Robotics, Milan, Italy, July 2-5, 2009.
- A. Alrabadi and **O. Alsmadi**, Model Reduction-Based Control of the Buck Converter Using Linear Matrix Inequality and Neural Networks, Proceedings of the International MultiConference of Engineers and Computer Scientists 2009, Vol II, Hong Kong, March 18 - 20, 2009.
- O. A Abu-Hammad, N. Dar-Odeh, **O. Alsmadi**, Predicting diseases with artificial neural intelligence, 2<sup>nd</sup> Annual Congress Faculty of Dentistry University of Jordan, Amman, Jordan, June 4-6, 2009.
- **O. Alsmadi** and M. Abdalla, Order Model Reduction for Two-Time-Scale Systems Based on Neural Network Estimation, Proceedings of the 15<sup>th</sup> Mediterranean Conference on Control & Automation, Athens, Greece, July 27-29, 2007.
- **O. Alsmadi** and M. Abdalla, Reducibility Matrix Based Model Reduction via Recurrent Neural Network Tuning, Proceedings of the 26<sup>th</sup> International Conference Modelling, Identification, and Control, Innsbruck, Austria, February 12-14, 2007.
- M. Abdalla and **O. Alsmadi**, Model Reduction via Reducibility Matrix, 2006 International Conference on Intelligent Systems and Knowledge Engineering, Shanghai, China, April 6-7, 2006.
- **O. Alsmadi** and A. Al-Smadi, Eigenvalue Assignment for a Singularly Perturbed Minimum Phase System, 4<sup>th</sup> International Conference on Electrical and Electronics Engineering, Bursa, Turkey, December 7-11, 2005.
- S. Zein-Sabatto, **O. Alsmadi**, J. Kuschewski, An Intelligent Neuro-Controller Based on System Parameter Estimation, Southeastcon '96. 'Bringing Together Education, Science and Technology', Proceedings of the IEEE, Tampa, FL, April 11-14, 1996.

## **HONORS & AWOARDS:**

- An Appreciation award, Commerce Clearing House (KS), 1999.
- An outstanding performance award, Academic Intervention Center (TSU, TN), 1996.
- An Appreciation award, Academic Intervention Center (TSU, TN), 1993.
- An Excellence in Leadership award, Talent Search Program (TSU, TN), 1992.
- Undergraduate Dean's honor student awards at (TSU, TN), 1989-1993.

## **MASTER THESIS COMMITTEE MEMBER:**

- I. Gharaibeh, "Design of Reduced Order Controllers for Multi-Time-Scale Power Systems via the Firefly Optimization Technique", Yarmouk University, Department of Electrical and Power Engineering, 2016.
- M. W. Marji, "Model and Controller Order Reduction of Singularly Perturbed Systems using Genetic Algorithms", Yarmouk University, Department of Electrical and Power Engineering, 2015.
- M. O. Alsumady, "Comparative Study Between Improved Linear and Improved Switching Mode Power Supplies: An Experimental Approach", Yarmouk University, Department of Electrical Engineering, 2010.
- N T. Shbataat, "LMI Based Control of Vehicle Suspension System", The University of Jordan, Department of Mechanical Engineering, 2004.

## **ACADEMIC / ADMINISTRATIVE EXPERIENCE:**

- Member of the committee involved in evaluating the Electrical Power Engineering program at the Al-Balqa Applied University (2015), Higher Education Accreditation commission.
- Chairman of the Electrical Engineering Department (2012-2014), The University of Jordan (JU).
- Member of the Higher Education committee (2012-2014), JU.
- Member of the Scientific Research committee (2012-2014), EE Depart., JU.
- Member of the Student Training committee (2012-2014), College of Engineering and Technology, JU.
- Student Project Director (2012-2014), Electrical Engineering Department, JU.
- Committee member of the College Building Improvement (2009-2010), College of Engineering and Technology, JU.
- Committee member of the College Quality and Approving (2009-2010), College of Engineering and Technology, JU.
- Committee member of the College Description (2009-2010), College of Engineering and Technology, JU.
- Participant member in the national conference for the development of study plans, teaching and learning, and scientific research. June 15-17, 2010.
- Participant in the jointed committee between the electrical engineering at the University of Jordan and the Jordan Engineers Association (2010).
- Committee member of the (ABET) program (2009-2010), College of Engineering and Technology, JU.
- Member of the committee responsible for welcoming new students (2007), JU.

- Chair of a committee involved in student council election (2006-2007), College of Engineering and Technology, JU.
- Member of the College of Engineering and Technology Council (2004-2005).
- Participant of a training course, Center of Human Resource (2003), JU.

### **COMMUNITY SERVICES:**

- Member of the IEEE
- Member of the Jordan Engineers Association
- Member of the Jordan Society for Scientific Research
- Chairman, EE Dept. The University of Jordan.
- Member of the Arab Robotics Association
- Reviewer for some of the national and international journals & conferences:
  - Journal "IEEE Transactions on Industrial Electronics" (ISI, IEEE Publisher)
  - Journal "Information Science" (ISI, Elsevier Publisher)
  - Journal "Transactions of the Institute of Measurement and Control" (ISI, SAGE Publisher)
  - Journal "Optimal Control Applications and Methods" (ISI, Wiley Publisher)
  - Journal "Electric Power Components and Systems" (ISI, Taylor & Frances)
  - Journal "Applied Mathematical Modelling" (ISI, Elsevier Publisher)
  - Journal "International Journal on Computers and Electrical Engineering"
  - Journal "Dirasat, University of Jordan"
  - Journal "Mu'tah Lil-Buhuth wad-Dirasat"
  - Conference "The International Conference on Computing Technology and Information Management 2014"
  - Conference "Global Conference on Renewable Energy in Desert Regions"
- Participant in the workshop for Ways of Effective Presentation (2001), Caterpillar Inc., Peoria, IL, USA.
- Participant in the workshop for Ways of Effective Teaching (1999), College of Electrical and Computer Engineering, Wichita State University, KS, USA.

### **COURSES TAUGHT:**

- **Philadelphia University:**  
(EE-332: Measurements Instrumentations)  
(EE-212: Engineering Circuit Analysis II)
- **The University of Jordan:**  
(EE-741: Linear Systems),  
(Mechatronics Eng.-541: Digital Control Systems)  
(EE-441: Control Systems)  
(EE-448: Measurements and Control Lab)  
(EE-341: Instrumentations and Measurements)  
(EE-212: Engineering Circuit Analysis II)  
(EE-211: Engineering Circuit Analysis I)  
(EE-219: Engineering Circuit Lab)

- **Yarmouk University:**
  - (CE-454: Computer Control)
  - (EPE-320: Control Systems)
  - (EPE-321L: Control Systems)
  - (EPE-220: Electrical Circuits)
  - (EPE-221L: Electrical Circuits)
  - (EPE-619: Modern Control Systems)
  
- **Wichita State University:**
  - (ECE-586: Introduction to Communication Systems (3L))
  - (ECE-582: Distributed Parameter Circuits (3L))
  - (ECE-493: Electronic Circuits II (3L))
  - (ECE-488: Electric Machines and Transformers (3L))
  - (ECE-229: Engineering Computing in C (1L))
  - (ECE-194: Introduction to Digital Design (3L))
  
- **Tennessee State University:**
  - (AIT-335: Digital Logic Systems)
  - (AIT-220: Circuits and Devices)
  - (AIT-220L: Circuits and Devices)