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Electrical Engineering Dept.
King Saud University
P.O. Box 800, Riyadh 11421
Saudi Arabia

As of January 2007

EDUCATION

- **Ph.D. in Electrical Engineering: May 1996**
Pennsylvania State University, University Park, USA
Dissertation title: "Intelligent Supervisory Control of Electric Power Plants: A Mixed Fuzzy Logic and LQG/LTR Approach"
Received the outstanding graduate research award
- **M.S. in Electrical Engineering: December 1991**
Pennsylvania State University, University Park, USA
Thesis title: "Robust Control of the Experimental Breeder Reactor II Using LQG/LTR"
- **B.S. in Electrical Engineering: August 1989**
Ohio State University, Columbus, USA

EXPERIENCE

- **Professor**, King Saud University, Department of Electrical Engineering. October 2006-present
- **Associate Professor**, King Saud University, Department of Electrical Engineering. November 2001-October 2006
- **Assistant Professor**, King Saud University, Department of Electrical Engineering. December 1996- November 2001
- **Instructor**, Pennsylvania State University, Department of Electrical Engineering. January 1995-August 1996
- **Teaching Assistant**, Pennsylvania State University, Department of Electrical Engineering. August 1992 - December 1995
- **Research Assistant**, Pennsylvania State University, Department of Nuclear Engineering. August 1990 - July 1992
- **Visiting Lecturer**, College of Arts, Science, and Technology (CAST), Kingston, Jamaica. November 1991

AWARDS

- Recipient of the IEEE Energy Delivery and Power Generation Best Paper Award, USA, July 2000.
- Recipient of the Outstanding Graduate Research Award (Electrical Engineering Department, Pennsylvania State University), USA, 1996.

- The College of Engineering Palmer's Fellowship Award for Academic Excellence, Pennsylvania State University, USA, 1995.
- The University Award for Exceptional Contributions in Furthering International Understanding at the Pennsylvania State University, USA, 1995.
- USAID Scholarship (for both the BS and MS Programs), USA, 1985-1991.

AFFILIATIONS

- Senior Member in the Institute of Electrical and Electronics Engineers (IEEE)
- Member in the American Nuclear Society (ANS), the Computer Engineering Society, the Control Engineering Society, the Tunisian Scientific Society, the Tunisian Scientific Consortium
- Member of the Founding Board and Chair of the Board of Legislators of the Tunisian Scientific Consortium (1994).
- Associate Editor of the Tunisian Scientific Magazine (1994).
- Secretary of Publications for the Tunisian Scientific Society (1993).
- Treasurer of the Tunisian Scientific Society (1988 re-elected 1989).

UNIVERSITY AND COMMUNITY SERVICES

- Member of the students' registration committee, 2006-present.
- General lecture at the College of Medicine, King Saud University: A gentle introduction to the world of Artificial Intelligence, with applications in the medical field, January 2006
- Responsible for the senior projects, Dept of Electrical Engineering, King Saud Univ. (2003-2005)
- Supervisor of the automatic control lab, redesigning the experiments and completely renewing the equipment, King Saud University (1998-present)
- Co-founder (with M. Al-Esheikh) of the Center of Elemental Analysis and Radiation Studies (CEARS), King Saud University and Chairman of its administrative and external affairs (2005)
- Co-founder (with B. Al-Mashary and M. El-Kady) of the Communication Skills Center, King Saud University (2005)
- Responsible for restructuring of the requirements and guidelines of the Electrical Engineering Senior research projects (2004)
- Training course, College of Engineering, King Saud University, titled: Applications of Artificial Intelligence in the field of Power Generation (2003)
- Training course, College of Engineering, King Saud University, titled: Using Matlab and Simulink for Engineering problems (2003)
- Co-Founder (with B. Al-Mashary and M. El-Kady) of a new course in the area of communication and presentation skills, Dept of Electrical Engineering, King Saud University (2003)
- Training course, College of Engineering, King Saud University, titled: Advanced Techniques in Operation and Control of Power Plants (2002)

- Training course, IEEE Branch, King Saud University, titled: An Introduction to Matlab and Simulink for Engineering Students (2002)
- Training Course, Engineering Council, Riyadh, titled: Advanced Power Plant Generation and Control (2000)
- General Lecture, College of Engineering, King Saud University, titled: Artificial Intelligence Methods and their Applications in the Engineering Field (8/5/2000)
- General Lecture, College of Engineering, King Saud University, titled: Theory of Fuzzy Logic and its Applications in the Control of Power Plants (5/3/1998)
- Regular referee for the IEEE Transactions on Neural Networks
- Regular referee for the IEEE Transactions on Energy Conversion
- Regular referee for the British Journal of Engineering Systems
- Regular referee for the King Saud University Journal of Engineering Sciences.
- Regular referee for the King Abdulaziz University Journal of Engineering Sciences.
- Referee for a number of International research projects, conferences, and promotion applications

COMMITTEES AND COUNCILS

- Member of the student-registration committee, EE Dept, KSU (to start January 2006)
- Electrical Engineering Council, KSU (1997 to present)
- Sports Coordinator of the EE Dept, KSU (1997 to 2005)
- Chairman of the social and cultural committee of the EE Dept, KSU (1999 to 2003)
- Chairman of the information committee of the EE Dept, KSU (2001 to 2003)
- Member of the Students Affairs Committee, EE Dept, KSU (2000 to 2003)
- Member of the Advisory Board for Computer Facilities, College of Engineering, KSU (1999)
- Chairman of the computer committee, EE Dept, King Saud University (1997)
- Electrical Engineering Council, the Pennsylvania State University, USA (1995-1996)
- Graduate Engineering Council, the Pennsylvania State University, USA (1995-1996)

COURSES TAUGHT

- Neural Networks (graduate level)
- Fuzzy Logic (graduate level)
- Optimal Control (graduate level)
- Advanced topics in Control (graduate level)
- Simulation of Engineering Systems (graduate level)
- Digital Control Systems (graduate level)

- Expert Systems (graduate level)
- Control Systems (undergraduate level)
- Digital Analysis and Design (undergraduate level)
- Control Systems Laboratory (undergraduate level)
- Electric Circuits (undergraduate level)
- Computer Applications in Engineering (undergraduate level)
- Communication and Presentation Skills for EE students (undergraduate level)

ENGINEERING BOOKS

1. An Introduction to the World of Artificial Intelligence (111 pages in Arabic), King Abdulaziz City for Science and Technology (KACST) Press, ISBN:9960-893-49-9, 2005
2. Fundamentals of Artificial Intelligence (274 pages in Arabic), King Faisal Cultural Center Press, ISBN:9960-677-34-0, 2005
3. Professional Communication and Presentation Skills For Scientists and Engineers (co-authored with B. Al-Mashary and M. El-Kady), King Faisal Cultural Center Press, ISBN: 9960-677-38-9, 2005
4. MATLAB for the Beginner, King Faisal Cultural Center Press, ISBN: 9960-677-35-4, 2004

LITERATURE BOOKS

5. I am not my Shadow (Arabic poetry) , Press-ready

JOURNAL PUBLICATIONS

6. S. Al-Garni and A. Abdennour, “A Neural network Based Traffic Flow Evaluation System for Highways”, to be published in the *Journal of King Saud University of Engineering Science*, January 2007.
7. A. Abdennour, “VBR Video Traffic Modeling and Synthetic Data Generation Using GA-Optimized Volterra Series”, to appear in *the International Journal of Network Management*, 2007.
8. A. Abdennour and A. S. Al-Ghamdi, “Artificial Neural Networks Application to the Estimation of Vehicle Headways in Freeway Sections”, *Journal of Traffic Engineering and Control*, UK, pp. 10-14, Feb. 2006.
9. A. Abdennour, “Evaluation of Neural Network Architectures for MPEG-4 Video Traffic Prediction”, *the IEEE transactions on Broadcasting*, Vol. 52, No. 2, 2006, pp. 184-192.
10. A. Abdennour, “A Long Horizon Neuro-Fuzzy Predictor for MPEG Video Traffic”, *the Journal of King Saud University (Engineering Sciences)*, Vol. 18, No.1, 2005, pp. 161-180.

11. W. Al-Masry and A. Abdennour, "Gas Holdup Estimation in Bubble Columns Using Passive Acoustic Waveforms with Neural Networks ", *to be published in the Journal of Chemical Technology and Biotechnology*, 2006.
12. S. Al-Osaimi, A. Abdennour, and A. Al-Suliman, "Hardware Implementation of a Fuzzy Logic Stabilizer on a Laboratory Scale Power System", *the International Journal of Electric Power Systems Research*, Vol. 74, No.1, pp. 9-15, April 2005.
13. A. Abdennour, R. Hammouda, and N. Al-Haider, "Suppression of Torsional Oscillations in Turbo-Generators Using Genetic Algorithm Optimized Compensators", *The International Journal of Power and Energy Systems*, Vol. 25, No. 3, pp. 211-216, 2005.
14. A. Abdennour, "Short-Term MPEG-4 Video Traffic Prediction Using ANFIS", Accepted in the *International Journal of Network Management*, Vol. 15 pp. 377-392, 2005.
15. A. Abdennour, "Multi-Objective Optimal Tuning of Power Plant Controls Using Genetic Algorithms", the *Journal of Control and Intelligent Systems*, Vol. 32, No.2, pp 80-88, 2004.
16. A. Abdennour, "Adaptive Optimal Gain Scheduling for the Load Frequency Control Problem", *Electric Power Components and Systems Journal*, Vol. 30, no. 1, Jan. 2002, pp. 45-56.
17. M. Al-Esheikh, A. Abdennour, and A. Kadachi, "Energy Resolution of CsI(TL) Crystal Coupled with PIN Photodiode", the *Journal of King Abdulaziz University*, Vol. 13, No.2, pp 35-42, 2001.
18. A. Abdennour, "An Intelligent Supervisory System for Drum Type Boilers During Severe Disturbances", *International Journal of Electric Power and Energy Systems*, Vol. 22, No. 5, 2000, pp. 381-387.
19. F. Alturki and A. Abdennour, "Medium to Long-Term Load Forecasting for Riyadh City Using Artificial Neural Networks," *Journal of King Saud University*, Vol. 12, No.2, 2000, pp. 269-283.
20. A. Abdennour, R. M. Hamouda, and A. Al-Ohaly, "Countermeasures for Self-Excited Torsional Oscillations Using Reduced-Order Robust Control Approach," *IEEE Trans. on Power Systems*, Vol. 15, No. 2, 2000, pp. 779-784.
21. F. Alturki and A. Abdennour, "Design and Simplification of Adaptive Neurofuzzy Inference Controllers for Power Plants", the *International Journal of Electric Power and Energy Systems*, Vol. 21, No. 7, 1999, pp. 465-474.
22. A. Abdennour and F. Alturki, "A Rule-Base Reduction Method for Sugeno-Type Fuzzy Systems," *Control and Intelligent Systems*, Vol. 27, No. 3, 1999, pp. 140-146.
23. A. Ben-Abdennour and K. Y. Lee, "An autonomous Control System for Boiler-Turbine Units", *IEEE Transactions on Energy Conversion*, Vol. 11, no. 2, pp. 401-406, June 1996. **The IEEE ED&PGC best paper Award on August 2000.**
24. A. Ben-Abdennour and K. Y. Lee, "A Decentralized Controller Design for a Power Plant Using Robust Local Controllers and Functional Mapping", *IEEE Transactions on Energy Conversion*, Vol. 11, No. 2, pp. 394-400, June 1996.
25. A. Ben-Abdennour and R. H. Mohtar, "Towards Self-Sufficiency in Food Production: A Simplified Food Equation and Regulation System", *the Tunisian Scientific Magazine*, Vol. 10, No. 1, July 1996.
26. A. Ben-Abdennour, "Fuzzy Logic: The Philosophy of Partial Truth", *the Tunisian Scientific Magazine*, Vol. 8, No. 1, December 1994.

27. A. Ben-Abdennour, K. Y. Lee, and R. M. Edwards, "Multivariable Robust Control of a Power Plant Deaerator", *IEEE Transactions on Energy Conversion*, Vol. 8, pp. 123-129, March 1993.
28. A. Ben-Abdennour, R. M. Edwards, and K. Y. Lee, "LQG/LTR Robust Control of Nuclear Reactors with Improved Temperature Performance", *IEEE Transactions on Nuclear Science*, Vol. 39, pp. 2286-2294, 1992.

CONFERENCE PUBLICATIONS

29. S. Al-Garni and A. Abdennour, "Real-Time Vehicle Detection and Traffic Parameters Extraction for Highway Surveillance", to be presented at *SSS '07*, Hammamet, Tunisia, February 2007.
30. S. Al-Garni and A. Abdennour, "Intelligent Video-Based Monitoring of Freeway Traffic", *Transactions of Enformatika*, Vol. 14, 2006, pp. 279-285.
31. A. Abdennour and W. Al-Masry, "A Neuro-Fuzzy Modeling of Gas Holdup in Bubble Columns Operating in the Homogeneous Flow Regime", *the 11th Asian Pacific Confederation of Chemical Engineering*, Malaysia August 27-30, 2006.
32. N. Al-Haider, A. Abdennour, and A. Al-Ghamdi, "Modelling freeway Traffic Flow Using Neural Networks", accepted in the *Third Gulf Conference on Roads*, Muscat, March 2006.
33. N. Al-Haider, A. Al-Ghamdi, and A. Abdennour, "ALINEA Ramp Metering Optimization Using Genetic Algorithms", accepted in the *Third Gulf Conference on Roads*, Muscat, March 2006.
34. A. Alheraish and A. Abdennour, "Assessment and Comparisons of Neural Network Techniques for MPEG-4 Video Traffic Prediction", *Proceedings of the International Conference on Modelling, Simulation and Applied Optimization*, Sharjah, UAE, February 2004, pp. ICMSA0/05 - 1 to 6
35. A. Abdennour, "Optimal Power-Pressure Trade-Off for Different Power Plant Operating Conditions", *International Conference on Communication, Computer, and Power*, Muscat, Sultanate of Oman, February 2001, pp. 368-373.
36. A. Abdennour, R.M. Hamouda, and N. M. Al-Haider, "Damping Torsional Oscillations Using Genetic Algorithm Optimized Lead/Lag Compensators", *International Conference on Communication, Computer, and Power*, Muscat, Sultanate of Oman, February 2001, pp. 159-164.
37. F. Alturki and A. Abdennour, "Neurofuzzy Control of a Steam Boiler-Turbine Unit", *IEEE International Conference on Control Applications*, Hawaii, USA, August 1999, pp. CCA1050-1055.
38. A. Ben-Abdennour and K. Y. Lee, "Improving Boiler Performance During Load Rejections Using a Mixed Fuzzy Logic and LQG/LTR Approach", *proceedings of Intelligent Systems Applications to Power Systems (ISAP'96) Conference*, pp. 304-308, Orlando, FL, January 1996.
39. A. Ben-Abdennour and K. Y. Lee, "Supervisory Control with Fault Detection and Accommodation for Power Plants: A Mixed Fuzzy Logic and LQG/LTR Approach", *Nuclear Plant Instrumentation, Control and Human Machine Interface Technologies (NPIC&HMIT'96)*, May 1996.
40. A. Ben-Abdennour and R. Mohtar, "An Insightful Fuzzy Logic System for Preventing Food Shortage Crisis: A Tutorial and a Case Study", *ASAE Annual International Meeting*, Phoenix, Arizona July 14-18, 1996.

41. A. Ben-Abdennour, "Integrating Intelligent Methods with Conventional Techniques in Power Systems: A Case Study", *TSS/ASTA Conference*, Tunis, July 22-24, 1996.
42. A. Ben-Abdennour and R. Mohtar, "Allocating Resources in the Tunisian Food Security Model Using Artificial Intelligence", *TSS/ASTA Conference*, Tunis, July 22-24, 1996.
43. A. Ben-Abdennour and K. Y. Lee, "Power Plant Fault Diagnosis and Accommodation Using Analytical Redundancy and Artificial Intelligence", *Proceedings of the 9th Power Plant Dynamics, Control, and Testing Symposium*, pp. 57.01-57.12, Knoxville, Tennessee, May 1995.
44. A. Ben-Abdennour and K. Y. Lee, "Coordinated Intelligent Control for Normal and Faulty Power Plant Operation", *Proceedings of the 2nd IFAC Symposium on Control of Power Plants and Power Systems*, pp. 101-106, Cancun, Mexico, December 1995.
45. R. M. Edwards, K. Y. Lee, A. Ben-Abdennour, C. C. Ku, P. Ramaswamy, "A Comparative Study for Nuclear Reactor Controller Design Using Optimal Control, Robust Control, Neural Networks, and Fuzzy Logic Control", *Proceedings of the 1993 American Nuclear Society Topical Meeting: Nuclear Plant Instrumentation, Control, and Man-Machine Interface Technologies*, pp. 153-160, Oak Ridge, Tennessee, 1993.
46. R. M. Edwards, H. E. Garcia, J. A. Turso, C. M. Chavez, A. Ben-Abdennour, C. K. Weng, C. C. Ku, A. Ray, K. Y. Lee, "Advanced Control Research at the Pennsylvania State University", *Proceedings of the EPRI Conference on Advanced Digital Computers, Controls, and Automation Technologies*, San Diego, California, 1992.
47. A. Ben-Abdennour, K. Y. Lee, and R. M. Edwards, "Feedwater System Fault Accommodation Using LQG/LTR Robust Control", *Proceedings of the 8th Power Plant Dynamics, Control, and Testing Symposium*, pp. 83.01-83.14, Knoxville, Tennessee, 1992.
48. R. M. Edwards, A. Ben-Abdennour, and K. Y. Lee, "Robust Control Design Verification Using the Modular Modeling System", *Proceedings of the EPRI 1991 International Conference on Power Plant and Power System Training, Simulators, and Modeling*, Miami Beach, Florida, 1991.
49. A. Ben-Abdennour, R. M. Edwards, and K. Y. Lee, "MIMOML Robust Control for Accommodating EBR-II Feedwater System Faults", *Proceedings of the AI91: Frontiers in Innovative Computing for the Nuclear Industry*, pp. 899-907, Jackson, Wyoming, 1991.

FUNDED PROJECTS

(Total King Saud University Funds= SR 836,600 = US\$ 230,000)

50. M. Al-Esheikh and A. Abdennour, "Development of a Nuclear Engineering-Based and Commercially-Oriented Elemental Analysis and Radiation Studies Center", Deanship of Research, King Saud University (10/2005-10/2006 budget: SR 392,400).
51. B. Al-Mashary, A. Abdennour, and M. El-Kady, "Design of Comprehensive Educational Modules for Communication and Presentation Skills for Engineering Students", Research Center, King Saud University (2/2004 to 2/2006 budget: SR 60,000).
52. M. El-Kady, A. Abdennour, and N. Al-Haider, "Improvement of Power Supply Quality and Performance in SABIC", SABIC grant through the Research Center of King Saud University (8/2004 to 8/2006 budget: SR 40,000).

53. H. Talaat, A. Al-Suliman, and A. Abdennour, "Design and Implementation of Fuzzy Logic Stabilizer for Improving Power System Stability", National Project funded by the Deanship of Research, King Saud University (3/2003 to 6/2006 budget: SR 177,000).
54. A. Abdennour and A. Alheraish, "Neural Network Architectures for MPEG Video Traffic Prediction", Research Center, College of Engineering, King Saud University (2/2004 to 8/2004 budget: SR 30,000).
55. A. Abdennour, "Introduction to the World of Artificial Intelligence", a Book in Arabic, funded by the College of Engineering Research Center, King Saud University (1/2002 to 1/2003 budget: SR 17,000).
56. A. Abdennour, B. Al-Mashary, and M. El-Kady, "Designing and Equipping a Pilot Classroom for Communication Skills", Department of Electrical Engineering, King Saud University (8/2003 to 12/2003 budget: SR 30,000).
57. A. Al-Suliman and A. Abdennour, "A Fuzzy Logic-Based Stabilizer for Power Systems", Research Center, King Saud University (6/2000 to 6/2002 budget: SR 19,900).
58. A. Abdennour, M. El-Kady, and F. Alturki, "Development of and Advanced Fault Diagnosis System for Power Plants: A Feasibility Study", Research Center, College of Eng., King Saud University (5/99 to 5/2001 budget: SR 19,200).
59. F. Alturki and A. Abdennour, "Medium to Long-Term Peak Load Forecasting for Riyadh City Using Artificial Neural Networks," Research Center, College of Eng., King Saud University (1/99 to 1/2000 budget: SR 14,700).
60. M. Al-Esheikh and A. Abdennour, "Combination of Scintillation Crystals with Photodiodes for Photon Spectroscopy", Research Center, College of Eng., King Saud University (9/98 to 9/2000 budget: SR 20,000).
61. A. Abdennour and F. Alturki, "Intelligent Decision Making for Nonlinear processes Using Fuzzy Logic and a Bank of Linear Controllers: A Practical Approach", Research Center, College of Engineering, King Saud University (3/97 to 3/98 budget: SR 16,400).
62. K. Y. Lee, A. Ben-Abdennour, Hamid Ghezel, and M. Lukas, "Intelligent Control and Dynamic Simulation of Molten Carbonate Fuel Cell Power Plants as Distributed Generation Systems," a report for Fuel Cell Engineering Corporation Subcontract No. C58084, NSF Grant No. DMI-9460694, July 1996.
63. A. Ben-Abdennour and K. Y. Lee, "Distributed Simulation of Local Controllers for a Boiler-Turbine-Generator Unit", a report for NSF project, "Research and Curriculum Development for Power Plant Intelligent Distributed Control," NSF EID-9212132, May 1994.

SUPERVISED PhD DISSERTATIONS

- F. Al-Otaibi, "A Real-Time Intelligent Wireless Mobile Station Location Estimator with Application to TETRA Network", Co-advised with Professor A. Ali, Started on 28/2/2005.
- S. Al-Garni, "Real-Time Intelligent Monitoring of Freeway Traffic with Applications", Co-advisors: Professor S. Al-Ghamdi and Professor A. Al-Asmari, Started on 7/6/2004.

SUPERVISED MS THESES

- A. Ghorbal, “Prediction of Severe Accident Rates at Roundabouts Using Artificial Neural Networks”, (6/2005)
- A. Al-Ghdair, “Automatic Recognition of Facial Expressions Using Artificial Intelligence”, (1/2005)
- N. Al-Ajlan, “Automatic Face Recognition System Using Artificial Intelligence Techniques”, (4/2003)
- S. Al-Osaimi, “Design and Hardware Implementation of a Fuzzy Logic Stabilizer to Improve the Stability of Power Systems”, (6/2003)
- N. Al-Haider, “Freeway Ramp Metering Control Using Artificial Intelligence Methods: applications to Riyadh”, (6/2001)

SUPERVISED SENIOR RESEARCH PROJECTS

- Process Control Using Programmable Logic Controllers (in progress)
- A Programmable Logic Controller for Traffic Intersections, 12/2006
- Optimization Using Ant Colony Search Algorithms, 12/2005
- Ant Colony Algorithm Application to the Traveling Salesman Problem , 12/2005
- Optimization of Neural Network Design and Architectures, 12/2004
- A Web-Based Teaching Tool for Electrical Engineering, 6/2004
- Hardware Implementation of Fuzzy Logic Controllers, 6/2003
- Real-coded Genetic Algorithms with Applications, 6/2003
- Microprocessor Control of Laboratory Scale Prototypes: Application to Traffic Light and Heating Systems, 6/2002
- Computer Control of a DC Motor Using CASSY LAB and Lab-Views, 5/2002
- Experimental Modelling and Control of a Laboratory Scale Light Intensity System, 5/2002
- Modelling and Fuzzy Logic Control of Liquid Level Process of Waste Oil Collection System, 2/2001
- Hardware Implementation of Fuzzy Logic Control to a COM3LAB Process, 12/99
- Control of Nonlinear Systems Using Dynamic Linearization Feedback, 12/98
- Economic Dispatch for Power Systems, 6/98
- Development of Power Flow Program for the Matlab Environment, 12/97
- Output Feedback for a Multi-Input Multi-Output Airplane Model Using Decoupling Techniques, 12/97

PERSONAL

- Date of Birth: 21/ 5/ 1966
- Marital Status: Married and father to Ayhem (4yrs), Rafi (2.5 years), and Rifa (6 months)
- Citizen of: Tunisia
- Languages: Arabic, French, and English
- Sports: Soccer, swimming, horse-back riding, and table-tennis
- Hobbies: Reading, writing poetry, and traveling (visited 14 countries so far)