Abir Alharbi

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EXPERIENCE:

- Professor of Mathematics in King Saud University, Specialty: Computational Mathematics-Artificial Intelligence
- Assistant to Rector of Planning & Development, King Saud University
- Head of King Saud University Ranking committee
- Head of King Saud University Strategic plan and KPI committee
- Precipitating member in the Saudi Delegation to Morocco- ICW women in higher education 2022
- Head of Vision Realization office, 2019
- Member of the multi-disciplinary programs in science college, 2019
- Precipitating member in the Saudi Delegation to UN women 2018
- Founder member of the national observatory for Saudi Women 2018
- Head of the scientific committee of the Saudi women participation in development index
- The supervisor of the Audit section in king Saud University–girls Campus, 2017
- Member of the steering committee for actuarial and financial mathematical program
- Supervisor of support unit for lecturers and demonstrators (SUDL) in KSU Girls Campus, 2010-2016
- Vice chairman of the Mathematics department in King Saud University, 2007-2009
- Research visitor to the University of Edinburgh, UK, for Post Doc research in 2011
- Research Visitor to UCL London, UK, for post-Doc research in 2008
- Research Visitor to University of Michigan Ann Arbor, USA, for Post Doc research in 2007
- Conducted several research papers through grants by the research Centre of the science college
- Attended the Strategic Plan Training course– Adaa National Centre (The National Centre for Performance Measurement), 2017
- Attended the Setting KPI's Training course- Adaa National Centre, 2017
- organized the Strategic planning workshop-KSU-2017
- Author of the book " Matlab for College Mathematics", published 2010
- Author of more than 40 publications in highly ranked journals and specialized conferences
- A co-Author of "Algebra for Gifted Students" for Mohiba, Olympiad of Mathematics, Saudi Arabia, 2014

- A co-Author of Electronic book “Animation with Maple in College Mathematics”, KACST, 2015.

Education:

- 1994–1997, Florida Institute of Technology, Melbourne, Florida, USA.
  Doctor of Philosophy in Computational Mathematics, College of Engineering,
  Major in Artificial Neural Networks/artificial intelligence.
- 1992–1994, California State University Northridge, California, USA.
  Master of Science in mathematics, major in applied mathematics, College of Science.
- 1987–1991, King Saud University, Riyadh, Saudi Arabia.
  B.S. in Mathematics with honors, Science College, KSA.

Training and Workshops:

- The strategic plan of KSU-updated version seminar 2021
- The KSU financial plan seminar 2020
- KSU raising efficiency plan seminar 2020
- KAUST leadership training program 2018
- The Strategic planning workshop-KSU-2017
- Multidisciplinary programs in Saudi Universities workshop-KSU, 2016
- Financial and Actuarial mathematics for market needs workshop, 2016
- Institutional ranking -KPI’s role in the ranking training course– Adaa National Centre, 2015

Membership of Committees:

- Head of the committee of scholarships program in Mathematics Department
- Head of committee for raising KSU world Ranking
- Head of committee for academic specializing trends in KSU
- Head of committee for KSU optimal academic structure
- Head of the committee of the Actuarial and Financial program in the Mathematics Department, KSU girl’s Campus
- Member of the committee of the strategic plan of KSU
- Member of the committee of computational and applied mathematics in mathematics department
- Member of JSR Saudi Mathematics Association.
- Member of organizing committee for Actuarial and Financial mathematics program
- Member of organizing committee for multi-disciplinary Computational Mathematics program -Artificial intelligence
- Member of the committee to participate in the Ministry of Higher education Annual IECHE exhibition and Conference for higher education

Community Services:

- Member of the steering committee for the National Observatory for Women, 2018
- Founder Member of National Observatory for Women 2018
- Head of committee for Women Participation in Development Index
- Member of committee for KSU Institutions Performance Index

- Conducted the study: " A study of models of Women Colleges around the world" , Research with the ministry of higher education, Center of Studies and Analysis, Riyadh 2012
- Conducted the study: "The Saudi women scholarships in the king Abdullah program", Research with the ministry of higher education, Center of Studies and Analysis, Riyadh, 2014
- Preparing Tests for the National Center of Qiyas and testing, Riyadh, 2013.
- Judging the National competition of gifted inventors and researchers, 2010-2015.
- Judging the Gulf Cooperation Council (GCC) competition for scientific research

Honors and Grants

- The bachelor degree with Honors from King Saud University, College of Sciences Department of Mathematics – 1993
- Award of Achievement for academic excellence from KSU girls Campus 2013
- Grant from the British Council for post Doc Research in 2008.
- Grant from the Research Centre of science and medical studies in 2009 and 2015.
- Grant from King Abdul Aziz city for Science and Technology for research in mathematics in 2014.

Associations and Seminars

- Member of the Saudi Association of Mathematics
- Attended all annual Saudi Association of Mathematics Seminars
- Attended many seminars and workshops in ADAA on Strategic Plan, KPIs, Institution KPIs, 2017-2018.
- Attended many seminars given by the Ministry of Higher education on Leadership, University Ranking, Annual IECHE exhibition and Conference of higher education 2014-2017.
- Developed a software to encourage employee high attendance performance, by the "Gamification" KPI program for employee attendance 2017.
- Co-developed a software on automated institution performance, comparing KPI's for institution sectors 2015-2018.
- Presented many workshops on how to apply for graduate studies in high world ranking universities 2012-2015.
- Attended many Seminars and Top Mathematics conferences around the world.
- Attended many seminars and workshops in KSU on Leadership, Strategic Plan, Active Learning, Active Classes, Using Technology in teaching, Blackboard.

Areas of research:

- Artificial Intelligence/ Artificial Neural Networks
- Machine learning
- Genetic algorithms
- Simulating models from biology and medicine
- Advanced Numerical methods
- KPI construction and index formation
- Women index measurements and computations
- Using Technology in Teaching Mathematics

Publications:

- Satam Alkharaiji, Abir Alharbi, 2025, Using NARX Neural Networks to Advance Passive Radar target detection, submitted to Aip Advances, AIP publishing,
- Reem Alotaibi, Abir Alharbi , 2024, " Artificial neural network methods for the COVID-19 early diagnosis by CNN convolutional neural network" International Journal of computer Mathematics, vol 3,pp.34-56.
- Noura Alotaibi, Abir Alharbi, 2023, " GA-ELM for assessing drinking water quality, Green sustainable future in Saudi Arabia conference proceeding, KFUPM, pp.14-26.
- Abir Alharbi, Sabyasachi Saha, 2020, G20 leadership and relevance of the global pilot programme on science, technology, and innovation for SDGs roadmaps-task force7 G20 support for SDGs and development cooperation. 2030 Agenda and Development Cooperation.
- Maha Omair, Abir Alharbi, Arwa Alshangiti, YusraTashkandy, Sara Alzaid, Reem Almahmud, Maha Almousa, Eidah Alenazi, Fatima H Aldooha, Sumaya H Binhazza. 2020, The Saudi women participation in development index, Journal of King Saud University–Science, Volume 32, Issue 1, pp. 1233-1245.
- Abir Alharbi , 2019, " Genetic-ELM neural network as a diagnosis system for the Parkinson's Disease Gait dataset" International Journal of computer Mathematics, vol. 97, 2020,pp.1087-1099.
- Abir Alharbi, Munirah Alghahtani, 2019, "Using Genetic Algorithm and ELM Neural Networks for Feature Extraction and Classification of Type 2-Diabetes Mellitus", Applied Artificial Intelligence, 33:4, pp.311-328.
- Abir Alharbi , 2018,"An Automated Computer System based on Genetic Algorithm and Fuzzy systems for lung Cancer Diagnosis" International Journal of Nonlinear Sciences and Numerical Simulation (IJNSNS),9(16),pp. 583-594.
- Abir Alharbi , 2018 " A Genetic-LVQ Neural Networks Approach for Handwritten Arabic Character Recognition " Artificial intelligence research, vol7, pp.45-54 .
- Abir Alharbi, Kholood Alqahtani, 2017 "An Evolutionary Intelligent Algorithm Approach for the Doctor Scheduling Problem", international journal for software development, vol 10, no 3&4, pp. 180 –190.
- Abir Alharbi, F. Tchier,2017, "Using a Genetic-Fuzzy Algorithm as a Computer Aided Diagnosis Tool on Saudi Arabian Breast Cancer Database", Mathematical Biosciences, Vol. 286, 2017, pp. 39-48.
- Abir Alharbi, F. Tchier, M. Siddique ,2016,"A Mathematics E-book Application Using Maple Animations", Proceedings of the International Conference on Frontiers in Education: Computer Science and Computer Engineering, (FECS'16).
- Abir Alharbi, Kholood AlQahtani, 2016, "The A Genetic Algorithm solution for the Doctor Scheduling Problem", ADVCOMP 5 / COMARA: Computational Mathematics in Real-life Applications The Tenth International Conference on Advanced Engineering Computing and Applications in Sciences, Venice, Italy.
- Fairouz Tchier , Abir Alharbi, 2015, "Fuzzy relational model and genetic algorithms for early detection and diagnosis of breast cancer in Saudi Arabia", Filomat, Published by Faculty of Sciences and Mathematics in University of Serbia
- Abir Alharbi and Fairouz Tchier,2015," A Genetic-Fuzzy Algorithm for breast cancer", Advance Mathematics conference (ADVOCM 2015), Nice, France,2015.

- Abir Alharbi and Fairouz Tchier, 2014,“Animation and Graphics to Understand Mathematics”, International Conference on Recent Advances in Pure and Applied Mathematics (ICRAPAM 2014) Antalya, Turkey, 6-9 November 2014.
- Abir Alharbi, “Using a Hopfield Iterative Neural Network to explain Diffusion in the Brain’s Extracellular space structure”, 6th International Joint Conference on Computational Intelligence (IJCCI 2014), Rome, Italy, Oct 2014.
- Abir Alharbi, M.S. Siddique, 2013“Geometric Functions by Maple Animations Enhance Students Learning”, Geometric Function Theory and Applications, 9th International Symposium (GFTA 2013), Istanbul, Turkey, Aug 2013.
- Abir Alharbi, 2012“A solution to Neural Field Equations by a Recurrent Neural Network Method”, (ICNAAM 2012) International Conference of Numerical Analysis and Applied Mathematics, vol 1479,772-776. AIP Publishing, Greece.
- Abir Alharbi, 2010"An Artificial neural network method for solving partial differential equations", AIP American institute of physics, (ICNAAM 2010), 11281, Greece.
- Abir Alharbi, E.S. Fahmy, 2010“ADM-Pade solutions for Generalized Burgers system Burgers-Huxley system of two coupled equations”, Journal of Computational and Applied Mathematics, vol. 233,8, pp. 2071-2080.
- Abir Alharbi, W. Rand, 2010“The Shaky Ladder Hyperplane-Defined Functions and classical Dynamic problems”, International Journal of Computational Intelligence and Applications (IJCIA), vol. 9,1,33-48.
- Abir Alharbi, Ibtesam Bajunaid, E.S. Fahmy, 2010, “Numerical and analytical study for Generalized Burgers system and Burgers-Huxley system of two coupled equations”, International Journal of Numerical methods and applications, 65-86.
- Abir Alharbi, E.S. Fahmy, 2010, “Approximate solutions for Time-Delayed Convective Fisher equation using ADM-Pade technique”, Asian-European mathematics journal, World Scientific Publishing Co., vol. 3, No. 2 pp.221-233.
- Abir Alharbi, 2009, "A Recurrent net solution to the diffusion equation in the ECS of the brain", AIPR Conference, Orlando, USA, July 13-16 ,2009.
- Abir Alharbi, E. Alahmadi, 2008, “A Neural Network method for the unsteady flow past a circular cylinder”, FEJAM, vol. 30, number 2, pp.245-264.
- Abir Alharbi, W. Rand, R. Rolio, 2007, “The Defined Cliffs variant in Dynamic Environment, A Case Study Using the Shaky Ladder Hyperplane-Defined Functions”, The Genetic and Evolutionary Computation Conference (GECCO2007), University College London, London, England, United Kingdom.
- Abir Alharbi, W. Rand, R. Rolio , 2007, “Understanding the Semantics of Genetic Algorithms in Dynamic Environments A case Study Using the Shaky Ladder Hyperplane-Defined Functions”, EvoSTOC2007, Fourth European Workshop on Evolutionary Algorithms in Stochastic and Dynamic Environments, Spain.
- Abir Alharbi, 1997, PhD Thesis “A Neuro-computing Approach for solving Partial Differential Equations", Florida institute of technology, Melbourne, Florida.

BOOKS:

- Author of “College Mathematics with MATLAB”, King Saud university, published 2011. • Author of a book “A Maple Animations companion for Calculus” LAMBERT Academic Publishing, (May 18, 2016), Germany.
- Author of e-learning book “Discovering Mathematics with Maple:An Introductory E-Book”, center of excellence in learning and teaching, 2017.
- Author of Electronic book “Animation with Maple in College Mathematics”, KACST, 2015.

- Author of “Algebra for Gifted Students” with Dr. Jwaher Almufarej, Dr. Maroof Samhan, Mohiba, Olympiad of Mathematics, Saudi Arabia, 2014.