BAHAA I. K. ANSAF

ASSOCIATE PROFESSOR
BSE-MECHATRONICS DIRECTOR
DEPARTMENT OF ENGINEERING
COLORADO STATE UNIVERSITY- PUEBLO

ASME/ABET Program Evaluator

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SOLIDWORKS Simulation Professional

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EDUCATION

- Ph.D., Applied Mechanics, University of Baghdad, Baghdad, Iraq, 1999.
  Dissertation: "New approach for nondestructive defect detection and location in structures using vibration technology."
- MSc, Applied Mechanics, University of Baghdad, Baghdad, Iraq, 1996.
  Theses: "Nondestructive defect detection and location in plate structures using vibration technology."
- B.Sc., Mechanical Engineering, University of Baghdad, Baghdad, Iraq, 1992.
  Area of concentration: Aeronautics.

ACADEMIC APPOINTMENTS

2020 (Augast)-	Associate Professor, Director of BSE- Mechatronics, Colorado State University-Pueblo, CO, USA.
2016-2020	Assistant Professor, Director of BSE- Mechatronics, Colorado State University-Pueblo, CO, USA.
2014-2016(August)	Visiting Professor, graduate faculty, Mechanical & Aerospace Engineering, University of Missouri- Columbia. Adjunct faculty starting at 2016 (August)
2011-2014	Professor,Mechatronics Engineering, Baghdad University. Currenttly Adjunct.
2010 (July-Sep.)	Visiting Scholar, Electrical and Computer Science Engineering, Michigan State University
2008 (Jan-June)	Visiting Associate Professor, Mechanical Engineering, MIT
2005-2011	Assistance Professor Mechatronics Engineering Baghdad University
2001-2005	Lecturer, Mechatronics Engineering Baghdad University

INDUSTRIAL, BUSINESS, AND GOVERNMENTAL POSITIONS

- Director-General –Scholarships and Cultural Affairs –MHOESR, 2012-2014.
- Senior advisor for academic and scholarship affairs - the Higher Committee for Education Development in Iraq, 2009-2014, Prime Minister Office, Baghdad, Iraq.
- Director of Development and Continuing Education Center - Baghdad University. Jan 2007-2012.
- Team Leader for Iraqi Solar Research Group. www.solar-iraq.com
- Dean Assistant For Scientific And Students Affairs– Al-Khwarizmi College Of Engineering – University Of Baghdad –Iraq- June 2003 – January 2007
- Head of Mechatronics Engineering Department – Al-Khwarizmi College of Engineering - University Of Baghdad –Iraq-September 2003 - June 2004.

AWARDS AND HONORS

- Faculty Excellence Award for Scholarship/Creative Activity, Colorado State University-Pueblo, 2018-2019.
- Faculty Excellence Award for Scholarship/Creative Activity, CEEPS, 2018-2019.

- Prime Ministers of Iraq appreciation and thank letter for successful management of the HCED Scholarship program in Iraq, Baghdad, 2014.
- Minister of Higher Education in Iraq, six appreciations, and thank letters for successful management of Scholarship program in Iraq, Baghdad, 2012-2014.
- Minister of Higher Education in Iraq and President of Baghdad University, five appreciation and thank letters for scholarly scientific achievements, Baghdad, 2004-2014.
- President of Baghdad University, six appreciations, and thank letters for excellent performance activities at Baghdad University, Baghdad, 2007-2014.

REFEREED JOURNAL ARTICLES (Different level of contribution)

1. Bahaa Ansaf, Nebojsa Jaksic "Using Simulation and Interactive Digital Tools to Support Teaching of Engineering Manufacturing Processes Courses,"; *Accepted for publication at to The Computers in Education Journal, 2020.*
2. Zuheng Kang, Roger C. Fales, and Bahaa Ansaf, "Uncertainty Modeling Using a Dimension Search and a Genetic Algorithm with Application to Robust Stability Analysis," *ASME J. Risk Uncertainty Part B 5(2), 021002, Apr 17, 2019.*
3. Bahaa Ansaf, Trung Duong, Nebojsa Jaksic; Jude DePalma; Brandon DeHerrera, Aiman H Al-Allaq, Boyan Li, "Influence of Temperature and Humidity on Electromechanical Characteristics of Ionic Polymer-Metal Composite Actuators," *Procedia Manufacturing 17 (2018) 960–967.*
4. Trung Duong, Nebojsa Jaksic, Jude DePalma; Bahaa Ansaf; Daniel, D. Mike; Miguel Gulvaiz "G-code Visualization and Editing Program for Inexpensive Metal 3D Printing", *Procedia Manufacturing 17 (2018) 22–28.*
5. Jasim Khawwaf, Jinchuan Zheng, Renquan Lu, Ali Al-Ghanimi, Bahaa I Kazem and Zhihong Man, "Robust tracking control of an IPMC actuator using nonsingular terminal sliding mode," *Journal of smart materials and structures, IOP Publishing Ltd, Vol. 26, No.9, 2017.*
6. Jasim Khawwaf, Bahaa I Kazem "An Artificial Neural Network Model for Estimation Bending Deflection of Ionic Polymer Metal Composite Material," *Jordanian International journal for mechanical and industrial engineering (JJMEE), Vol 10. Issue 2, 2016.*
7. "Optimal Motion Planning Approach for Mobile Robot Navigation Problem," *Applied Mechanics and Materials, Vols. 799-800, pp. 1078-1082, Oct. 2015.*
8. "Mobile Robot Motion Planning and Multi-Objective Optimization Using Improved Approach," *International Journal of Mechanical Engineering and Robotics Research Vol. 4, No. 4, October 2015*
9. "Design and Implementation of Real-Time Shared Architecture Experiment with Reliable Platforms for Different Mobile Systems," *International Journal of Online Engineering (iJOE),* Volume 11, Issue 2, (2015).
10. "A Hybrid Approach based on ACO and GA for Multi-Objective MobileRobot Path Planning," *Applied Mechanics and Materials* Vol. 527, pp. 203-212, (2014).
11. "Intelligent Hybrid Approach for Multi Robots-Multi Objectives Motion Planning Optimization," *International Journal of Enhanced Research in Science Technology & Engineering*, Vol. 3, Issue 3, pp. 539-550, (2014).
12. "Modified Genetic Algorithm based on A* algorithm of Multi-objective optimization for Path Planning," *Journal of Automation and Control Engineering, Vol. 2, No. 4, (2014).*
13. "Multi-Objective Optimization of Trajectory Planning of Non-holonomic Mobile Robot in Dynamic Environment Using Enhanced GA by Fuzzy Motion Control and A*," *Neural Networks and Artificial Intelligence Communications in Computer and Information Science*, Vol. 440, pp. 34-49, (2014)
14. "Multi-Objective Optimization of Path and Trajectory Planning for Non-holonomic Mobile Robot Using Enhanced Genetic Algorithm," *Neural Networks and Artificial Intelligence Communications in Computer and Information Science, Vol. 440, pp 50-62,* (2014).
15. "Pick-interval scallop height estimation using three types of geometrical end mill cutters on CNC milling machine," *Eng. & Tech. Journal, Vol.31, No. 8-A, 2013.*

16. "Building International Faculty-Development Collaborations: The evolving role of American Teaching Centers"; *Change: The Magazine of Higher Learning, May/June 2012; pp 24-33; USA.*
17. *"*Study the Wend-Induced Dynamics Response for Parabolic-Trough Solar Collector"*; Eng & Tech. Journal, Vol/30, No. 20, 2012.*
18. *"*Study on Wind Loads Coefficients and Flow Field Characteristics around the Parabolic Trough with Stiffeners*"; Eng. & Tech. Journal, Vol/30, No. 18, 2012.*
19. "Hybrid Controller for a Single Flexible Link Manipulator," *Journal of Engineering, Vol 18, No. 11, 2012.*
20. "Cutting forces Prediction for Ball End Milling"; *Eng. & Tech. Journal, Vol.29, No. 9, 2011, Iraq.*
21. "Experimental Investigation and Neural Network Modeling for Force System of Retraction T-Spring for Orthodontic Treatment," *Journal of Medical Devices*, *Transactions of the ASME, Vol.4, Issue No.2, June 2010.*
22. "Free Vibration Analysis of Multi-Body System"; *AJES, Vol. 3, No. 1, 2010.*
23. "The Mathematical Description of end Mill Cutters and Effective Radius of Tool Geometry on Multi-Axis Milling," *Engineering and Technology Journal,* Vol.28, No.8, *2010.*
24. "Multi-Objective Optimization for the Force System of Orthodontic Retraction Spring Using Genetic Algorithms"; *Journal of Medical Devices Vol.3, Issue No. 4, Transactions of the ASME, December 2009.*
25. "Modified Vector Field Histogram with a Neural Network Learning Model for Mobile Robot Path Planning and Obstacle Avoidance"; *International Journal of Advancements in Computing Technology Volume 2, Number 5, December 2010, DOI:10.4156, Republic of Korea*
26. "Reliability Evaluation of Electro-Mechanical System Using Artificial Intelligence"; *Journal of Engineering, University of Baghdad, 2009.*
27. "Miniature two-Fingered Robot Hand Driven By Muscle Wires Actuators"; *Al- Khwarizmi Eng. J, Vol. 4, No. 3 PP 128-137,(2008).*
28. *"*Modeling and Trajectory Control of Planner Flexible Robot Arm"; *Babel University Journal for applied sciences; Vol. 15, No. 4, PP 1818-1826, 2008.*
29. "An Artificial Neural Network Model For Stir –Friction Welding Process*" Jordan International journal for mechanical and industrial engineering (JJMIE) Volume 2, Number 3, Sep. 2008; p151-155.*
30. "Motion Planning For A Robot Arm By Using Genetic Algorithm*," Jordan International journal for mechanical and industrial engineering (JJMEE) Volume 2, Number 3, Sep. 2008;p 131 – 136.*
31. "A Neural Network Model For Real-Time Control of Turning Process," *Jordan International journal for mechanical and industrial engineering (JJMEE) Vol.1, No.1- December 2007.*
32. "The Inverse Solution of Dexterous Robot Using Neural Networks," *Al- Khwarizmi Eng. J, Vol. 3, No. 1, pp 1-11, 2007.*
33. "Mechanical Vibration Control Using Variable Stiffness Actuator" *Journal of Engineering, University of Baghdad, Vol. 13, No. 3, September 2006.*
34. "Turning Process Simulation Using Neural Network," *Journal of Engineering*, University of Baghdad, *Vol. 13 No. 8 September 2006*.
35. "Surface Finish Characteristics in Turning Cutting Process"; *Science and Engineering journal, Al – Anbar University. Vol 2B. No2, 2002.*
36. "Effectiveness of the Degenerated Shell Element with an Assumed Shear Strain Field in Free Vibration Analysis of Plate Structures," *J. Engineering, Univ. of. Baghdad, Vol.6, No. 3, 2000.*
37. "Detection and Location of Defect in Plate Structures by Vibration Technique," *J of Engineering, University of Baghdad, Vol.4 No.3, September 1998.*

OTHER REFEREED CONFERENCES ARTICLES AND POSTERS (Different level of contribution)

1. Aiman Al-Allaq, Nebojsa Jaksic, Bahaa Ansaf, Jude L. DePalma, Duong H. Trung "Modified Nernst-Plank-Poisson Model for IPMC With Back-Relaxation Effects," *International Mechanical Engineering Congress & Exposition, Salt Lake City, Utah, November 8 – 14, 2019.*
2. Bahaa Ansaf, Nebojsa Jaksic, "Teaching Undergraduate Manufacturing Course using a Design-based Teaching Approach," *126th Annual Conference & Exposition, American Society for Engineering Education, Tampa, Florida June 15 - 19, 2019*.
3. Bahaa Ansaf, Nebojsa Jaksic, "Teaching Mechanical Design for Mechatronics Engineering students using Project-Based Sequential Learning Approach," *125th Annual Conference & Exposition, American Society for Engineering Education, Salt Lake City, Utah June 16 - 20, 2018.*
4. Nebojsa Jaksic, Bahaa Ansaf," Inexpensive DLP 3D Printers in Undergraduate Engineering Labs", *125th Annual Conference & Exposition, American Society for Engineering Education, Salt Lake City, Utah June 16 - 20, 2018.*
5. Bahaa Ansaf; Trung Duong; Nebojsa Jaksic; Jude DePalma; Brandon DeHerrera, Aiman H Al-Allaq, Boyan Li, "Influence of Temperature and Humidity on Electromechanical Characteristics of Ionic Polymer-Metal Composite Actuators," *FAIM2018, Columbus, USA.*
6. Trung Duong, Nebojsa Jaksic, Jude DePalma; Bahaa Ansaf; Daniel, D. Mike; Miguel Gulvaiz "G-code Visualization and Editing Program for Inexpensive Metal 3D Printing", *FAIM2018, Columbus, USA*.
7. Jasim Khawwaf, Jinchuan Zheng, Renquan Lu, Ali Al-Ghanimi, Bahaa I Kazem and Zhihong Man "Robust Terminal Sliding Mode Control of IPMC Actuators," *56th IEEE Conference on Decision and Control December 12-15, 2017, Melbourne, Australia.*
8. *"*Mathematical Model Relating Metabolic Biomarker Concentrations to the Biomechanical Properties of Articular Cartilage using Genetic Programming*," Orthopedic Research Society (ORS) Annual Meeting, San Diego, California, March 19-22, 2017.*
9. "Nanotechnology electrospinning experiment" *2017 Student Symposium - CSU-Pueblo Conference Proceedings and Events Student Presentations.*
10. "Ionic polymer-metal composites used as an actuator" *2017 Student Symposium - CSU-Pueblo Conference Proceedings and Events Student Presentations*.
11. "3-D printing metal objects project" *2017 Student Symposium - CSU-Pueblo Conference Proceedings and Events Student Presentations.*
12. "Parameterized Uncertainty Model Using a Genetic Algorithm with Application to an Electro-Hydraulic Valve Control System," Dynamic Systems and Control (DSC) Conference**,** October 28-30*, Columbus, USA, 2015.*
13. *"*Mobile Robot Motion Planning and Multi-Objective Optimization using Improved Approach," *2nd International Conference on Robotics and Mechatronics, July 20-21, 2015 Madrid, Spain*.
14. "Integrated Motion Planning and Control for Multi Objectives Optimization and Multi Robots Navigation (I)," *2nd Conference on Embedded Systems, Computational Intelligence and Telematics in Control, June 22-24, 2015, Maribor, Slovenia.*
15. "Optimal Motion Planning Approach for Mobile Robot Navigation Problem" In 3rd *International Conference on Mechatronics and Computational Mechanics (ICMCM2014, 20-21st December 2014 in Shanghai, China*.
16. "Obstacle Existence Effects on Probability Recursive Function Validity in Mobile Robot Path Planning*" Accepted for Oral presentation at ICIRA 2012: International Conference on Intelligent Robotics and Applications, Paris, 27-29 June 2012, France.*
17. *"*Creating International Faculty Development Collaborations*"*; *POD-HBCUFDN conference, Atlanta, Georgia, October 26-30, 2011, USA.*
18. "E-learning technology and their applications in Training educational programs - An Ideal Healthy Environment for Learning Using Technology A case study for Development and

Continuous Education Center- Baghdad University," *MIT-LINC, 23-26 May 2010*, Boston, *USA*.

19. "e-learning technology for the development of training educational programs"; *Third International Conference and Exhibition on "The Role of e-Learning in Supporting Knowledge Communities*," 6-8 April 2010, *Bahrain*.
20. "Design and Implementation of Iraqi Virtual Library"; *Technologies and Applications (EISTA 2009); the 3rd International Multi-Conference on Society, Cybernetics and Informatics (IMSCI 2009), July 2009, USA.*
21. "Impact of ICT Technology in Higher Education Development, Baghdad University Model"; *MIT-LINC 2007 Conference pp 212-223; Jordan-UAE*
22. "Education Technology for Next Generation"; *Middle East Frontiers of Science and Engineering (FOSE07), 2007 Seville; Spain.*
23. "Using E-Learning for Engineering Education and Training" *twenty-fourth Arabic engineering conferences for developing the engineering education, 2007, Amman, Jordan*.
24. "Optimal Brain Surgeon Pruning Of Neural Network Models Of Manufacturing Processes," *Jordanian International Electrical & Electronics Engineering Conference 2005, Organized by IEEE, IEE March 14 - 16, 2006.*
25. "Turning Process Simulation Using Neural Network," *Journal of Engineering*, University of Baghdad, *Vol. 13 No. 8 September 2006*.
26. "A Neural Network Model for Surface Finish Prediction In Turning Process," *First Middle East International Conference On Advances In Civil, Mechanical Engineering And Martial Engineering, 2005.*
27. "Dynamic Properties For Multi-Body Supporting System," *5P^{thP}. Sc. Conf. of Eng. The University of Baghdad. 4Pth sector, page 375-385; 2003.*
28. "The Training program for Mechatronics Engineering"; *Arabic Union for technical learning (General secretariat) with co-operation of the high institute of electrical jobs in Bengasi, 2001, Libya.*
29. "Identification Failure Position in Bi-Symmetrical Structures Using Vibration Technique"; *proceeding of the first Iraqi mechanical and industrial Eng. Conference, Al-Kufa, 2000.*
30. "A New Approach for Identification Failure Position in Plate Structures"3rd MCE, *Eng.SCI Conference 2000, April 2000.*
31. "Damage Effect on the Transient Response of Plate Structure Subjected to Sudden Applied Load," *Proceeding of the third Jordanian Mech. And Industrial Eng. The conference, 1999.*

BOOKS AND BOOK CHAPTERS:

- "The Artificial Intelligence Approach for Diagnosis, Treatment, and Modeling in Orthodontic," Book chapter in the book "Principles in Contemporary Orthodontics," ISBN 978-953-307-687-4., www.intechweb.org, 2011.

- "Baghdad university: the ideal healthy environment for techno–learning, Development and Continuous Education Center E-learning Theories and Practices Educational Training Programs"; LAP Lambert Academic Publishing
  ISBN 978-3-8433-7183-4, Germany, 2010.

- "Impact of Information and Communication Development Technology in Higher Education (Baghdad University Model)," university culture series - University of Baghdad, ISSN 2078-9866 Vol. 1 and 2, 2008.

PATENTS AND PATENT APPLICATIONS

1- Vortex-Induced Cleaning Of Surfaces

Publication number: US20130047978 A1
Publication date: Feb 28, 2013
Also published as WO2013033594A1

Inventors Alexander H. Slocum, Bahaa I. Kazem, Stacy Figueredo
Massachusetts Institute of Technology (MIT)-USA

GRANTS and CONSULTATION Works:

- Engaging high school teachers and students in artificial intelligence applications and developments, SEED grant from CSU-Pueblo,($4400, 2020-2021).
- Online Course Development grant ($1500, Summer 2020)
- A new method for manufacturing the Ionic Polymer Metal Composites (IPMC) using nanofabrication technique. (SEED grant from CSU-Pueblo,$7400, 2018-2019).
- Course redesign grant (Engineering Manufacturing Processes, Curricular redesign program CBASE-CSUP. $6000, 2018-2019).
- "modeling and control of ionic polymer metal composites with parametric uncertainty," (SEED grant from CSU-Pueblo, $8000, 2017-2018).
- Co-generation of electricity and drinking water using compound solar System; Grant from Independent Development Council- Iraq. ($10000, 2012)
- Building Faculty and Organization Development Capacities of Iraqi Universities. The project is a joint eoffoering of the University of Baghdad, the University of Duhok, and Michigan State University, and the effort is an outgrowth of faculty development experiences for Iraqi faculty at MSU in conjunction with the Fulbright Scholars Program for Iraq. ($100000, 2010).
- Special Grant from Iraqi vice president (Adel Abed Mahdi) to support the e-learning center at the University of Baghdad. ($25000, 2009).
- Design and implementation of artificial hand; Grant with MOHESR-Baghdad- Iraq. (4000 USD, 2008)
- Travel grant to participate at MIT-LINC, MIT ($1200, 2010).
- Virtual library system development and analysis; (consultancy contract with CRDF-USA – Iraq, 2009).
- Design and implementation of mechanical isolation system of an industrial computer system; consultancy contract with the ministry of the industry –Iraq, 2002)
- ICT Strategy Design for nation-wide needs assessment of Iraqi governorates; center of excellence UNDP. Iraqi Engineering organization, Baghdad. (Consultancy contract-Iraq, 2011).
- Consultation work for INMA –Agriculture –related information system (ARIS); the international center for agricultural research in the Dry Area. (ICARDA)-FAW/UN; Syria Received Grants.

PROFESSIONAL ACTIVITIES AND SERVICES

1. Active ABET-ASME Program Evaluator.
2. Active Reviewer for Scientific Journals and Conferences
    - Electronics
    - Sensors
    - Meccanica
    - Journal of Composites Science
    - Journal of Intelligent and Robotic Systems
    - Journal of Dynamic Systems, Measurement, and Control, ASME.
    - Robotica
    - IEEE/ASME Transactions on Mechatronics
    - IEEE Control Systems Society –Conferences
    - Journal of Sensors & Actuators: A. Physical
    - Scientific committee member and reviewer IV-Iraqi scholars conference ISCA 2017
    - ASEE 2018, 2019,2020
    - Frontiers in Heat and Mass Transfer (FHMT)
    - ASME/BATH Symposium on Fluid Power and Motion Control

2018,2019,2020

3. Technical Session Chair FAIM 2018. Robotics and CIM 2
4. Team leader for solar-Iraq research group (www.solar-iraq.com), 2010.
5. IT director for international scholarship program (www.hcediraq.org). Iraq Education Initiative 2009/2010 Scholarship Pilot Program PM Office.
6. Member of interview and selection committee for Fulbright Scholarships Program-Iraq, 2009-2010.
7. Coordinator and manager for the pilot project for an online English training program between the University of Baghdad and the American English Institute at the University of Oregon, 2008.
8. Project Manager For Iraqi Virtual Science Library (IVSL) -MoHE-Iraq -October 2006-2010 (https://www.ivsl.org).
9. Member of partner committee of learning international network Consortium (LINC)- MIT, http://linc.mit.edu; 2008.
10. OCW-MIT coordinator for Baghdad University, 2008. (14 OCW-MIT servers).
11. Director for e-learning program - University Of Baghdad –Iraq-June 2005 – Present**.** (Iraqi Research and Education Portal).
12. Member of the scientific committee, Babal Scientific Journal for Engineering and Technology.
13. Member of the scientific committee, Al-Khwarizmi Engineering Journal.

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

- ASME/ABET Program Evaluator
- American Society of Mechanical Engineering (ASME)- Member
- American Society of Engineering Education (ASEE)-Member
- Iraqi Society of Engineering - Senior Member

STUDENT SERVICES ACTIVITIES

- CBASE-CSUP students research mentor
- ASME students section advisor (CSU-Pueblo)