Wafa Batayneh, Ph.D.

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Jordan University of Science and Technology
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EDUCATION

2005, Rensselaer Polytechnic Institute, Troy, New York
Ph.D., Mechanical Engineering

2004, Rensselaer Polytechnic Institute, Troy, New York
M.E., Mechanical Engineering

2000, Jordan University of Science and Technology, Irbid, Jordan
Msc., Mechanical Engineering

1998, Jordan University of Science and Technology, Irbid, Jordan
Bsc., Mechanical Engineering

EMPLOYMENT

Fall 2019-Fall 2020, Iowa State University, Ames, Iowa, USA
Visiting scholar

2012-Present, Jordan University of Science and Technology, Irbid, Jordan,
Associate Professor, Mechanical Engineering Department.

2005-2012, Jordan University of Science and Technology, Irbid, Jordan,
Assistant Professor, Mechanical Engineering Department.

Summer 2010, Binghamton University, NY, USA
Visiting Professor, Watson School of Engineering and Applied Science.

2001-2005, Rensselaer Polytechnic Institute, Troy, New York,
Teaching and Research Assistant.

1998-2000, Jordan University of Science and Technology, Irbid, Jordan,
Teaching and Research Assistant.

TEACHING

Graduate Course Taught

- Sensors and Actuators
- Graduate Seminar
- Special Topics in Mechatronics

Under Graduate Course Taught

- Engineering Mechanics
- Automatic Control
- Engineering Measurement and Instrumentation
- Signal Processing
- Applied Mathematics for Engineers
- Modern Engineering Control
- Mechatronics Lab
- Instrumentation and dynamics systems Lab
- Strength of Materials Lab
- Statics

Teaching Capabilities

- Design Optimization
- Mechatronics System Design
- Control Systems
- Automation
- Strength of Materials

Academic Load

- Course work: 2 to 3 courses per semester
- Academic advising: 20 undergraduates per year
- Project supervising: 6 to 10 students per semester
- Thesis Co-advising: more than 15 students to date.

PUBLICATIONS

Journal Publications (Published)

Wafa Batayneh, Ahmad Bataineh, Mohammad A. Jaradat, "Intelligent Adaptive Fuzzy Logic Genetic Algorithm Controller for Anti-Lock Braking System", International Review on Modeling and Simulation, In Press

Wafa Batayneh, Ahmad Bataineh, Hamza Ahmad, Abdelrhman Al Olaimat, Mohammad Megdadi, 2020, "Design and Implementation of a Bio-Mimic Hexapod Robot", International Review on Modeling and Simulation Vol. 13, No 5. DOI: https://doi.org/10.15866/iremos.v13i5.19268

Wafa Batayneh, and Yusra AbuRmaileh, 2020, "Decentralized Motion Control for Omnidirectional Wheelchair Tracking Error Elimination Using PD-Fuzzy-P and GA-PID Controllers", Sensors,

20(12), 3525; doi:10.3390/s20123525

Ahmad Bataineh**, Wafa Batayneh**, Ahmad Al-Smadi, Baian Bataineh, 2019, “Ladder Heat Sink Design Using Adaptive Neuro-Fuzzy Inference System (ANFIS)”, Jordan Journal of Mechanical and Industrial Engineering, Volume 13, No.1, ISSN 1995-6665, Pp. 27-36.

Batayneh, W., Bataineh, A., Soliman, I., 2019, “Investigation of solar tracking performance using isotropic and anisotropic models”, Advances in Building Energy Research,

Batayneh, W., Bataineh, A., Soliman, I., and Abed Hafees, S., 2019. Investigation of a single-axis discrete solar tracking system for reduced actuations and maximum energy collection. Automation in Construction 98, 102-109. doi: 10.1016/j.autcon.2018.11.011

Wafa Batayneh, Mohammad Al-Nimer, Mohammad Nazzal, 2014. Fuzzy-GA inference technique to control three-input jet ejector system. International Journal of Modelling, Identification and Control Jan 2014, Vol. 21, Issue 1, pp. 101-109

Wafa Batayneh, Hala Khalaf, Bahgat G. Sammakia, 2013, "Neural Network Modeling of Parallel-Plain Fin Heat Sink", International Journal of Applied Science and Technology 3 (3).

Batayneh W., Owais A., Nairoukh M., 2013, "An Intelligent Fuzzy Based Tracking Controller for a Dual-Axis Solar PV System". *Automation in Construction*, 29, 100-106

Wafa Batayneh, Omar Al-Araidah, Khaled Bataineh, Adnan Al-Ghasem, 2013, " Fuzzy-based Adaptive Cruise Controller with Collision Avoidance and Warning System", Mechanical Engineering Research, 3(1), 143 - 151

Omar Al-Araidah, Khaleel Abu Shgair, **Wafa Batayneh**, Ali Diabat, 2012, "Efficient approximation of melting temperature in simulated annealing algorithms applied to Chebyshev travelling salesman problem", *Int. J. Business Performance and Supply Chain Modelling*, 4(2), 145-163

Omar Al-Araidah, **Wafa Batayneh**, Tariq Darabseh, Suleiman M. BaniHani, 2011, "Conceptual Design of a Single DOF Human-Like Eight-Bar Leg Mechanism", *Jordan Journal of Mechanical and Industrial Engineering*, 5(4), 285-289

Al-Araidah O., Jaradat M., **Batayneh W.**, 2010, “Using a Fuzzy Poka-Yoke Based Controller to Restrain Emissions in Naturally

Ventilated Environments". *Expert Systems with Applications*, 37, 4787-4795

Khaled Bataineh, Moh'd Al-Nimr, **Wafa Batayneh**, 2010, "Microscale Falling Cylinder Viscometer with Slip Boundary", *Journal of Fluids Engineering*,132(8)

Wafa Batayneh, Omar Al-Araidah, Khaled Bataineh, 2010, "Fuzzy logic Approach to Provide Safe and Comfortable Indoor Environment". *International Journal of Engineering, Science and Technology*, 2(7), 4787-4795

Messac, A., **Batayneh, W. M.**, and Ismail-Yahaya, A., 2002, "Production Planning Optimization with Physical Programming", *Engineering Optimization*, 34(4), 323-340

Wafa Batayneh, Enas Abdulhay, Mohammad Alothman, 2020, "Prediction of the Performance of Artificial Neural Networks in Mapping sEMG to Finger Joint Angles via Signal Pre-Investigation Techniques", Heliyon, Vol. 6, Issue 4, DOI:https://doi.org/10.1016/j.heliyon.2020.e03669.

Wafa Batayneh, Laith Shatnawi, Ahmad Bataineh, 2020, "Vehicle Speed Fuzzy Logic Controller System Using Surface EMG Signal, International Review of Mechanical Engineering (I.RE.M.E.), Vol. 14, 1. 2020

Patent

Wafa Batayneh, Mohammad Abdel-Kareem Jaradat, Omar Al-Araidah, 2017, Safety System Detection and Elimination of Toxic Gases. United States Patent, US 9,581,575 B2.

Conference Publications (Refereed)

Wafa Batayneh, Khaled S. Hatamleh, Amjad A. Nusayr, Rama Alquraan, Aseel Al-Khaleel, Ahmad Batainah, 2018, Low-Cost Wi-Fi Navigation of Smart Wheelchairs, Proceedings of the ASME, International Mechanical Engineering Congress & Exposition, November 9-15, Pittsburgh, PA, USA

Wafa Batayneh, Mohammad Jaradat and Ahmad Bataineh, 2018, Intelligent Adaptive Control for Anti-Lock Braking System, Proceedings of the ASME, International Mechanical Engineering Congress & Exposition, November 9-15, Pittsburgh, PA, USA

Wafa Batayneh, Nash'at Nawafleh, 2015, Comparative Study of DC Motor Speed Control Using Neural Networks and Fuzzy Logic Controller, Proceedings of the ASME, International Mechanical Engineering Congress & Exposition, November 13-19, Houston, Texas, USA

Wafa Batayneh, Eyad AL-Smadi, Abdullah Al-Zghoul and Ghaith Alshaggah, 2015, Bluetooth Based Stair Climbing Robot Control Using Cell Phone, Proceedings of the ASME, International Mechanical Engineering Congress & Exposition, November 13-19, Houston, Texas, USA

Batayneh W., Hayajneh M., and Rasras Z., 2010, Design and Implementation of Climbing Service and Maintenance Robot along Tubular Surfaces, International Science and Technology Conference, Famagusta, Turkish Republic of Northern Cyprus.

Batayneh W., Al-Araidah O., Mattson C. A., and Ismail-Yahaya A., 2008, Design and Implementation of Human-Like Biped Walking Mechanism, The Third International Conference in Mechatronics, Kuala Lumpur, Malaysia.

Messac A., **Batayneh W.**, and Ismail-Yaha A., "Physical programming for Production Planning", , AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference and Exhibit, 42nd, Seattle, WA, Apr. 16-19, 2001

Messac A., **Batayneh W.**, and Ismail-Yaha A., "Physical programming for Production Planning", , AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference and Exhibit, 42nd, Seattle, WA, Apr. 16-19, 2001

Thesis/Dissertation

Wafa Batayneh, 2005, Rotating Beam Crack Detection, Diagnosis and Prognosis Using Embedded Modeling, Mechanical, Aerospace and Nuclear Engineering, Rensselaer Polytechnic Institute, Troy, New York.

Wafa Batayneh, 2000, Modeling of Turning Process, Mechanical Engineering Department, Jordan University of Science and Technology, Irbid, Jordan.

Funded Projects

Design, Implementation, and Control of Smart Omni Directional Wheelchair

Towards Optimal Limb Kinematics Estimation from Integrated Surface Electromyography and Accelerometry Signals: A Comparative Study

Cooperative Arial-Ground team performing a coordinated landing, taking off and tracking handling different scenarios of motion

Solar Cells Tracking Sun for Perpendicular Position

Robotics Center Research Lab

Ongoing Research

Comparing the efficiency of artificial neural networks in sEMG-based simultaneous and continuous estimation of hand kinematics, Under Review

Design, Implementation, and Control of Smart Omni Directional Wheelchair, Ongoing

UNIVERSITY AND PUBLIC SERVICE

M.S. Thesis Co-Advisor:

- Mostafa Shhadih, "Control of Anti-Lock Braking System Using Fuzzy Control System", January 2008.
- Ahmad Batayneh, "Intelligent Adaptive Control for Anti-Lock Braking System", August 2008.
- Mohammad Nazal, "Fuzzy-G-Inference Technique to Control Jet Ejector System", July, 2011.
- Nash'at Nawafleh, "Comparative Study of Motor Speed Control Using Neural Networks and Fuzzy Logic Controller", August, 2015.
- Ahmad Al-Smadi, "Modeling of Ladder Heat Sink Design Using Artificial Intelligence methods". 07/2016
- Mohammad Alothman, "Investigation of the Efficiency of Artificial Neural Networks to Estimate Hand Kinematics from Surface Electromyography", January, 2018.
- Aya Khamees, "Cooperative aerial-ground robotic team controlled by an Intelligent Control Algorithm". 08/2019

M.S. Thesis Committee Member:

- Bahaaldeen Alhajhassan, "Modeling and digital control of the contact force of the hard disk driver slider", March 2008.
- Khaled Al Hammad, "Using Fuzzy Systems to Control the Heating and Cooling Rate of an Object in A Thermal Enclosure", August 2006.
- Muyad Melhem, "Fuzzy Modeling of the Whirling Motion from Input-Output Data" July 2007.

SCIENTIFIC AND PROFESSIONAL SOCIETY

- Member, Jordan Engineers Association (JEA)

MEMBERSHIPS

HONORS

- Queen Rania Al-Abdullah Award for Academic Excellence (January, 2000).
- Prince AL-Hassan Bin Talal Award for Academic Excellence (1998).
- JUST Award for first Rank student, for the B.Sc. Mechanical Engineering Program at Jordan University of Science and Technology, 1998.

REFERENCES

- **Available upon request**