

# Dr. Wafa' H. AlAlaween

## *Curriculum Vitae*

### Address

Associate Professor  
Department of Industrial Engineering  
The University of Jordan  
Amman, 11942  
Jordan

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### Qualifications

#### **Ph.D. Automatic Control and Systems Engineering**

The University of Sheffield, UK (2018)

*Dissertation Title: "A New Framework for Right-First-Time Production of Granules and Tablets: A Systems Engineering Approach to Modelling and Optimization"*

#### **M.Sc. Industrial Engineering**

The University of Jordan, Jordan (2013)

*Dissertation Title: "Solving Dynamic systems with Multi-responses in Robust Design by Integrating Desirability Function and Data Envelopment Analysis"*

#### **B.Sc. Industrial Engineering**

The University of Jordan, Jordan (2010)

*Graduation Project Title: "New Product Development: Orange Juice"*

### Experience

#### **Associate Professor**

Jul. 2022 – Present

Department of Industrial Engineering  
The University of Jordan, Amman, Jordan

*Teaching various courses related to artificial intelligence and deterministic and stochastic optimization, and supervising undergraduate and postgraduate students.*

*Working on various projects funded from different international and national organizations.*

*Leading or being a team member in various committees and activities that support The University of Jordan at different levels and in many aspects (e.g., defining and prioritizing the national research priorities).*

**Assistant Professor**

Jan. 2018 – Jul. 2022

Department of Industrial Engineering  
The University of Jordan, Amman, Jordan

*Teaching various courses related to artificial intelligence and deterministic and stochastic optimization, and supervising undergraduate and postgraduate students.*

*Teaching all the courses online during the university closure due to COVID-19.*

*Working on various projects funded from different international and national organizations.*

*Leading or being a team member in various committees and activities at The University of Jordan and The Higher Council of Science and Technology to support the university's activities and to evaluate the current state of scientific research in Jordan and its impact on the national economy.*

**Graduate Teaching Assistant**

Mar. 2016 – Jan. 2018

Department of Automatic Control and Systems Engineering  
The University of Sheffield, UK

*Demonstrating and supporting learning activities in different laboratories related to modelling and control of different processes and applications for four different departments.*

**Teaching and Research Assistant**

Feb. 2011 – Jun. 2014

Department of Industrial Engineering  
The University of Jordan, Amman, Jordan

*Teaching various laboratories and courses related to manufacturing and advanced optimization.*

**Research Visits****Visiting Scholar**

Jan. 2023

Department of Automatic Control and Systems Engineering  
The University of Sheffield, UK

**Visiting Scholar**

Aug. 2022

Department of Industrial Engineering  
Massachusetts Institute of Technology, Cambridge,  
Massachusetts, USA

Department of Automatic Control and Systems Engineering  
The University of Sheffield, UK

## Research Interests

- Computational intelligence and artificial intelligence.
- Data mining and information fusion.
- Biologically inspired computing and optimization.
- Systems engineering approaches to modelling and optimization.
- Fuzzy and neural fuzzy systems for modelling and control.

## Professional Activates and Recognition

- DIES ProGRANT Proposal Writing for Research Grants (three-section course).
- The IIER Excellent Paper Award.
- Member of the Editorial Board of the Journal of Medicines Development Sciences.
- Associate Fellow of Higher Education Academy (AFHEA).
- Referee for a number of international journals and conferences.
- Member of Jordan Engineers Association.

## Research Grants and Contracts

- B. Gharaibeh, **W.H. AlAlaween** and Ju Li, Radiation Effects On Medical Devices Made By 3d Printing, April, 2021. The MIT-Jordan Abdul Hameed Shoman Foundation Seed Fund (\$30,000).
- **W.H. AlAlaween**, B. Gharaibeh, M. Mahfouf and A. Al Soussi, Right-First-Time Fused Deposition for Healthcare Manufacturing, October, 2020. The Royal Academy of Engineering (UK) and Industrial Scientific Research and Development Fund-The Higher Council for Science and Technology (Jordan) (£80,000).
- **W.H. AlAlaween**, A Predictive Modelling Paradigm Based on The Artificial Neural Network for COVID-19 Expansion in Jordan, December, 2020. King Abdallah II Design and Development Bureau and King Abdallah II Fund for Development (3,830 JD, Undergraduate Project- for Students)
- **W.H. AlAlaween**, M. Mahfouf, Abdallah Alalawin and Mahmoud Mustafa, Developing An International Warehouses Assessment Scheme, April, 2019. The Royal Academy of Engineering (UK) and Industrial Scientific Research and Development Fund-The Higher Council for Science and Technology (Jordan) (Grant IAAP18-19\82 (£50,000)).

## Recent Key Publications

### Journal Papers

- [1] **W.H. AlAlaween**, O.A. Abueed, B.M.Y. Gharaibeh, A.H. AlAlawin, M. Mahfouf, A. Alsoussi and N.T. Albashabsheh, The development of a radial based integrated network for the modelling of 3D fused deposition, *Rapid Prototyping Journal*, 2022.
- [2] A.H. Alalawin, A.M. Qamar, **W.H. AlAlaween**, Y. Bentahar, T. Al-Halaybeh, S. Al-Jundi and Moayad Tanash, Aligning key performance indicators with lean management in the service sector: A case study for a Jordanian telecommunication company, *Cogent Engineering*, 2022.
- [3] **W.H. AlAlaween**, O.A. Abueed, A.H. AlAlawin, O.H. Abdallah, N.T. Albashabsheh, E.S. AbdelAll and Y.A. Al-Abdallat, Artificial neural networks for predicting the demand and price of the hybrid electric vehicle spare parts, *Cogent Engineering*, 2022.
- [4] A.H. AlAlawin, **W.H. AlAlaween**, M.A. Shbool, O.H. AlAlaween and L. Al-Qatawneh, An interpretable predictive modelling framework for the turning process by the use of a compensated fuzzy logic system, *Production & Manufacturing Research*, 2022.
- [5] A.H. AlAlawin, **W.H. AlAlaween**, M.A. Salem, M. Mahfouf, N.T. Albashabsheh and C. He, A fuzzy logic based assessment algorithm for developing a warehouse assessment scheme, *Computers & Industrial Engineering*, 2022.
- [6] **W.H. AlAlaween**, N.M. Fa'ouri, S.H. Al-Omar, E.M. Hendaileh, A.S. Almousa, A.H. AlAlawin, O.H. Abdallah, N.T. Albashabsheh, B. Khorsheed, and O.A. Abueed, A Dynamic Nonlinear Autoregressive Exogenous Model for the Prediction of COVID-19 Cases in Jordan, *Cogent Engineering*, 2022.
- [7] L.M. Al-Durgham, **W.H. AlAlaween** and N.T. Albashabsheh, Optimizing the Turning Operation via Using the Grey Relational Grade, *International Journal of Mechanical Engineering and Robotics Research*, 2022.
- [8] **W.H. AlAlaween**, A.H. AlAlawin, M. Mahfouf, O.H. Abdallah, M.A. Shbool and M.F. Mustafa, A New Framework for Warehouse Assessment Using a Genetic-Algorithm Driven Analytic Network Process, *PLOS ONE*, 2021.
- [9] **W.H. AlAlaween**, A.H. AlAlawin, L. Al-Durgham and N.T. Albashabsheh, A New Integrated Modelling Architecture Based on the Concept of the Fuzzy Logic for the Turning Process, *Journal of Intelligent & Fuzzy Systems*, 2021.
- [10] M. Shbool, A. AlBazi and **W.H. AlAlaween**, An Integrated Multi-Criteria Decision-Making Framework for a Medical Device Selection in the Healthcare Industry, *Cogent Engineering*, 2021.
- [11] **W.H. AlAlaween**, A.H. Alalawin, Mahdi Mahfouf and Omar H. Abdallah, A Dynamic Type-1 Fuzzy Logic System for the Development of a New Warehouse Assessment Scheme, *IEEE Access*, 2021.
- [12] **W.H. AlAlaween**, M. Mahfouf and A.D. Salman, When swarm meets fuzzy logic: Batch optimisation for the production of pharmaceuticals, *Powder Technology*, 2021.
- [13] A. Alalawin, L. Arabiyat, **W.H. AlAlaween**, A. Qamar and A. Mukattash, Forecasting vehicle's spare parts price and demand, *Journal of Quality in Maintenance Engineering*, 2020.

- [14] **W.H. AlAlaween**, B. Khorsheed, M. Mahfouf, G.K. Reynolds and A.D. Salman, An interpretable fuzzy logic based data-driven model for the twin screw granulation process, *Powder Technology*, 2020.
- [15] M. Alshafiee, **W.H. AlAlaween**, D. Markl, M. Soundaranathan, A. Almajaan, K. Walton, L. Blunt and K. Asare-Addo, A predictive integrated framework based on the radial basis function for the modelling of the flow of pharmaceutical powders, *International Journal of Pharmaceutics*, 2019.
- [16] **W.H. AlAlaween**, B. Khorsheed, M. Mahfouf, I. Gabbott, G.K. Reynolds and A.D. Salman, Transparent predictive modelling of the twin screw granulation process using a compensated interval type-2 fuzzy system, *European Journal of Pharmaceutics and Biopharmaceutics*, 2017.
- [17] **W.H. AlAlaween**, M. Mahfouf and A. Salman, Integrating the physics with data analytics for the hybrid modelling of the Granulation Process, *AICHE Journal*, 2017.
- [18] **W.H. AlAlaween**, M. Mahfouf and A. Salman, Predictive modelling of the granulation process using a systems engineering approach, *Powder Technology*, 2016.
- [19] A. Al-Refaie, E. Sy, I. Rawabdeh and **W.H. AlAlaween**, Integration of SWOT and ANP for effective strategic planning in the cosmetic industry, *Advances in Production Engineering & Management*, 2016.
- [20] A. Al-Refaie, **W.H. AlAlaween**, A. Diabat and M. Li, Solving dynamic systems with multi-responses by integrating desirability function and data envelopment analysis, *Journal of Intelligent Manufacturing*, 2014.

## Conferences

- [1] **W.H. AlAlaween**, A. Alalawin, B.M.Y. Gharaibeh, M. Mahfouf and A. Alsoussi, An Interval Type-2 Fuzzy Logic System for the Simulation of Fused Deposition, *International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME)*, Maldives, 2022.
- [2] B.M.Y. Gharaibeh, A.A. Salaimah, M.W. Jararweh, A. Al-Omari, **W.H. AlAlaween** and M. Mahfouf, Correlation of Optical Properties to Mechanical Degradation of 3D Printed Thermoplastic Polyurethane Polymers Subjected to Gamma Irradiation, *International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME)*, Maldives, 2022.
- [3] **W.H. AlAlaween**, A. Alalawin, B.M.Y. Gharaibeh, M. Mahfouf and A. Alsoussi, A Type-1 Fuzzy Logic System for the Modelling of Fused Deposition, *International Conference on Research in Science, Engineering and Technology (ICRSET)*, Barcelona, Spain, 2022.
- [4] **W.H. AlAlaween**, O.A. Abueed, A.H. AlAlawin and M. Mahfouf, A Grey-Relational-Based Type-1 Fuzzy Logic Analysis for the Development of a Warehouse Assessment Scheme, *The 2nd International Conference on Advanced Research in Management, Economics, and Accounting (ARMEACONF)*, Milan, Italy, February, 2022.
- [5] **W.H. AlAlaween**, A.H. AlAlawin, M. Mahfouf, O.H. Abdallah, M. Mustafa, Integrating the genetic algorithm and analytic hierarchy process for the

development of a warehouse assessment scheme, INFORMS Virtual 2020 Annual Meeting, November, 2020.

- [6] **W.H. AlAlaween**, A. Baraka, A. AlAlawin, O. Obajemu and T. Walker, Predictive modelling of the hot rolling process using an integrated based network, Kuala Lumpur, Malaysia, 2018.
- [7] **W.H. AlAlaween**, M. Mahfouf and A.D. Salman, Development of a predictive framework for a high shear granulation process, AIChE Annual Meeting, Minneapolis, USA, 2017.
- [8] **W.H. AlAlaween**, M. Mahfouf and A.D. Salman, Data-driven deterministic and stochastic modelling of the wet granulation process, Joint IFPRI Robert Pfeffer Symposium & UK Particle Technology Forum, Guilford, UK, 2016.
- [9] **W.H. AlAlaween**, M. Mahfouf and A.D. Salman, 'Right-first time' production of granules- a systems modelling and optimization approach, The 7th International Granulation Workshop, Sheffield, UK, 2015.
- [10] **W.H. AlAlaween**, M. Mahfouf and A.D. Salman, Towards the systems modelling of the granulation process, Automatic Control and Systems Engineering Symposium, Sheffield, UK, 2015.