Saleem Ramadan

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Data Analyst/Business Analyst • Project Management • Six Sigma • Machine Learning

Profile

Highly accomplished professional with a comprehensive background in academia and industry, showcasing a diverse skill set and expertise in the field of Industrial Engineering. Key strengths include:

* Authored more than 30 articles in peer-reviewed journals, with a focus on Applications for Machine Learning in Industrial Engineering, Optimization, and Operations Management.
* Certified **Supply Chain Professional** from **APICS**.
* Certified **Project Management Professional** from **PMI**
* Certified **Analytics Professional** from **IMFORMS**
* Adept at using Python software in Industrial Engineering Applications.
* Adept at using Power BI in Data Analytics applications.
* Adept at using MS SQL Server in Data Analytics applications
* Collaboratively designed an Engineering Management program for MS-level students in the Department of Industrial Engineering hosted at the School of Applied Technical Sciences, German Jordanian University, Amman, Jordan.
* Lead the establishment of Industrial Engineering Department in School of Engineering Technology, Al Hussein Technical University, Amman, Jordan.
* Excellent ability to work collaboratively with academics and staff at all levels within the university.

Education

* **Ph.D., Systems Engineering,** Ohio University, OH, 2011
* **MS, Management Information Systems,** Keller Graduate School of Management, DeVry University, IL, 2004
* **BS, Computer Information Systems,** DeVry University, IL, 2002
* **BS, Industrial Engineering,** University of Jordan, Amman, Jordan, 1998

Professional Experience

* Al Hussein Technical University, Amman, Jordan, 2023 to present
  + **Associate Professor, Department of Industrial Engineering**
* Youngstown State University, Youngstown, Ohio, United States of America, 2021- 2022
  + **Associate Professor, Department of Industrial Engineering**
* German Jordanian University, Amman, Jordan, 2017 to 2021
  + **Associate Professor, Department of Industrial Engineering**
* Applied Science Private University, Amman, Jordan, 2015 to 2017
  + **Associate Professor, Department of Mechanical and Industrial Engineering**
* Applied Science Private University, Amman, Jordan, 2011 to 2015
  + **Assistant Professor, Department of Mechanical and Industrial Engineering**

Honors and Awards

* **Outstanding Research Award**
  + *Awarded by Applied Science Private University*, 2015
* **Full PhD Scholarship Award**
  + *Awarded by Applied Science Private University*, 2008

Academic Program Development

* **Head of the Industrial Engineering Curriculum Development Committee**
  + Led the development committee within the Industrial Engineering department to establish new courses and laboratories aligning with contemporary market demands.
    - **Bachelor degree***: Department of Industrial Engineering, German Jordanian University, Jordan, academic year 2019-2020*
    - **Master Degree***: Department of Industrial Engineering, German Jordanian University, Jordan, academic year 2018-2019*

Professional Organization Member

* Institute of Industrial and Systems Engineers (**IISE**)
* American Society for Quality (**ASQ**)
* Jordan Engineers Association (**JEA**)
* The Association for Operations Management (**APICS**)
* Project Management Institute (**PMI**)
* The Institute for Operations Research and the Management Sciences (**INFORMS**)

Committees & Activities

* Program Coordinator, MSc Engineering Management (GJU)
* Exchange Coordinator, IE Department (GJU)
* Committee of Quacquarelli Symonds (QS) Accreditation (ASU)
* Committee of German Accreditation (GJU)
* Committee of BTech | Pearson Qualifications (HTU)
* Committee of Curriculum and Study Plans (ASU, GJU, HTU)

Certifications

**Certified Supply Chain Professional,** APICS

**Certified Analytics Professional,** INFORMS

**Project Management Professional,** Project Management Institute

Projects Highlights

* **Developed a cost-effective, non-invasive breast cancer detection technique** using mammographic image analysis, offering an accessible diagnostic alternative.
* **Increased operating room efficiency** by creating a predictive model for intra-surgical time, supporting real-time decision-making and improving scheduling accuracy.
* **Enhanced drug delivery and patient compliance** by co-developing a nanocomposite system for fluphenazine, extending dosage intervals from multiple daily doses to once every five days.
* **Improved hospital operational performance** by identifying inefficiencies, establishing KPIs, and applying Value Stream Mapping and Six Sigma tools—resulting in measurable process enhancements.
* **Reduced Institutional Review Board (IRB) review times** from an average of 38 days to a maximum of 21 days by implementing statistical process control and root cause analysis.
* **Streamlined pediatric radiology scheduling**, consolidating five separate schedules into one unified system—leading to faster appointment processing, reduced patient wait times, and a significant drop in incoming phone inquiries.
* **Optimized radiology department workflows** across multiple modalities (CT, MRI, Nuclear Medicine, Ultrasound, Vascular Interventional) through value stream mapping and layout redesign—enhancing patient flow and service efficiency.
* **Lowered hospital-acquired infection risk** by boosting compliance with the Ventilator-Associated Pneumonia (VAP) prevention bundle to 98%, significantly reducing VAP incidence.

Research Interests

My research focuses on developing innovative methodologies in **Machine Learning and Operations Management**, with applications in **Industrial Engineering, Healthcare, and Production Systems**. The primary goals of my research program are to:

* Establish a **diverse and productive** research framework for **descriptive, diagnostic, predictive, and prescriptive modeling**.
* Leverage **machine learning techniques** to address **emerging challenges in Industrial Engineering**.
* Actively engage **graduate students** in research projects.

**Machine Learning in Industrial Engineering**

I explore advanced **machine learning algorithms** to improve decision-making and automation in Industrial Engineering applications. Key contributions include:

* **Deep Learning for Medical Imaging**: Developed convolutional neural networks (CNNs) and deep learning models for **breast cancer detection** in mammograms, integrating data augmentation techniques to improve diagnostic accuracy.
* **AI-Driven Predictive Models**: Applied **Artificial Neural Networks (ANNs)** for impurity concentration prediction in industrial processes under **limited input conditions**.
* **Hybrid Machine Learning Techniques**: Implemented **SVM, KNN, and CNN** to enhance **computer-aided diagnosis systems** for medical imaging applications.

**Operations Management and Optimization**

I apply **metaheuristic optimization, genetic algorithms, and statistical modeling** to improve **production planning, scheduling, and quality control**. Notable contributions include:

* **Production Planning & Scheduling**: Designed **heuristic-guided genetic algorithms (DAS/GA)** for optimizing **large-scale parallel machine scheduling** and minimizing total tardiness in **lot-sizing problems**.
* **Design of Experiments (DOE)**: Utilized **multi-objective optimization (NSGA-II)** for optimizing **pharmaceutical nanocomposite formulations** and industrial process parameters.
* **Quality Control & Statistical Process Monitoring**: Developed **optimal control chart designs** using **genetic algorithms** to enhance **industrial quality assurance**.
* **Logistics & Transportation Optimization**: Applied **evolutionary computing methods** to improve **transportation routing problems**, including reducing premature convergence in **genetic algorithms for the traveling salesman problem (TSP)**.

My ongoing research integrates **machine learning, optimization, and industrial engineering** to develop **data-driven, intelligent decision-making systems** that enhance operational efficiency across various domains.

Publications

1. Ramadan, Saleem & Abushams, Mohammad & Al-Dahidi, Sameer & Odeh, Ibrahim & Almasarwah, Najat. (2025). A Data-Driven Approach for Predicting Remaining Intra-Surgical Time and Enhancing Operating Room Efficiency. Journal of Industrial Engineering and Management, 18. 145-166. 10.3926/jiem.8543.
2. Saleem Zeyad Ramadan, Najat Almasarwah , Esraa S. Abdelall, Gursel A. Suer, Nibal T. Albashabsheh, (2023), An Accurate and Robust Genetic Algorithm to Minimize the Total Tardiness in Parallel Machine Scheduling Problems, Management and Production Engineering Review, Volume 14, Number 4, December 2023, pp. 28–40, DOI: 10.24425/mper.2023.147201.
3. Najat Almasarwah1 , Esraa Abdelall , Gursel Suer, Gokhan Egilmez, Manjeet Singh, Saleem Ramadan. (2023). Pallet Loading Optimization Considering Storage Time and Relative Humidity. Journal of Industrial Engineering and Management. 16(2): 453-471 – Online ISSN: 2013-0953 – Print ISSN: 2013-8423 <https://doi.org/10.3926/jiem.4613>
4. [Sameer Al-Dahidi](https://onlinelibrary.wiley.com/authored-by/Al%E2%80%90Dahidi/Sameer), [Mohammad Rashed](https://onlinelibrary.wiley.com/authored-by/Rashed/Mohammad), [Mohammad Abu-Shams](https://onlinelibrary.wiley.com/authored-by/Abu%E2%80%90Shams/Mohammad), [Mohamed Arezki Mellal](https://onlinelibrary.wiley.com/authored-by/Mellal/Mohamed+Arezki), [Mohammad Alrbai](https://onlinelibrary.wiley.com/authored-by/Alrbai/Mohammad), [Saleem Ramadan](https://onlinelibrary.wiley.com/authored-by/Ramadan/Saleem), [Enrico Zio](https://onlinelibrary.wiley.com/authored-by/Zio/Enrico). (2023), A novel approach for remaining useful life prediction of high-reliability equipment based on long short-term memory and multi-head self-attention mechanism. Quality and Reliability Engineering International journal,  <https://doi.org/10.1002/qre.3445>
5. Mohammad Abu-Shams , Saleem Ramadan , Sameer Al-Dahidi, Abdallah Abdallah. (2022). Scheduling Large-Size Identical Parallel Machines with Single Server Using a Novel Heuristic-Guided Genetic Algorithm (DAS/GA) Approach. *Processes* 2022, *10*(10), 2071; <https://doi.org/10.3390/pr10102071>.
6. Abu Sharar Ahmed Adnan, Ramadan Saleem Z. and Hussein-Al-Ali Samer Hasan, (2022). "Multiobjective optimization of fluphenazine nanocomposite formulation using NSGA-II method" Materials Science-Poland, vol.39, no.4, 2021, pp.517-544. <https://doi.org/10.2478/msp-2021-0042>
7. Saleem Z. Ramadan, (2020). Using Convolutional Neural Network with Cheat Sheet and Data Augmentation to Detect Breast Cancer in Mammograms. Computational and Mathematical Methods in Medicine Volume (2020) |Article ID 9523404 | <https://doi.org/10.1155/2020/9523404>
8. Saleem Z. Ramadan,(2020). Methods Used in Computer-Aided Diagnosis for Breast Cancer Detection Using Mammograms: A Review. Journal of Healthcare Engineering (2020) Volume 2020 |Article ID 9162464 | 21 pages | <https://doi.org/10.1155/2020/9162464>
9. Saleem Z. Ramadan and Mahmoud El-Banna, (2020). Breast Cancer Diagnosis in Digital Mammography Images Using Automatic Detection for Region of Interest. Current Medical Imaging (2019) 15: 1. https://doi.org/10.2174/1573405615666190717112820
10. Saleem Z. Ramadan,(2018). Joint and S2 Control Charts Optimal Design Using Genetic Algorithm. Mathematical Problems in Engineering. Volume 2018, Article ID 6516879, 10 pages
11. Saleem Z. Ramadan, (2016). Bi-objective inspection policy optimization model for finite-life repairable systems using a genetic algorithm. Advances in Production Engineering & Management Volume 11. Number 1, pp 38–48
12. S. Z. Ramadan and Adnan I. O. Zaid. (2016), Prediction of the fatigue life distribution for aluminum through its mechanical characteristics. IOP Conf. Series: Materials Science and Engineering 146. doi:10.1088/1757-899X/146/1/012014
13. Saleem Z. Ramadan, (2016). A Hybrid Global Optimization Method Based on Genetic Algorithm and Shrinking Box. Modern Applied Science; Vol. 10, No. 2.
14. Tao Y., Xi L., Saleem R., and Yue K. (2014). Bayesian Analysis for Accelerated Life Tests Using Dirichlet Process Weibull Mixture Model, IEEE Transaction on Reliability 63:58-62.
15. Tao Yuan, Saleem Z. Ramadan, and Suk Joo Bae. (2011). Yield Prediction for Integrated Circuits Manufacturing Through Hierarchical Bayesian Modeling of Spatial Defects, IEEE Transaction on Reliability, 60,4, 729-741
16. Saleem R., Gürsel S., Jing H. (2013). Dual-stage genetic algorithm approach for capacitated lot-sizing problem, Int. J. of Advanced Operations Management 5:299 - 319
17. Iyad M., Mohammad M., and Saleem R. (2011). Using an Artificial Neural Network for Predicting Impurity Concentration in Solid Diffusion Process under Insufficient Input Parameters, Advances in Mechanical Engineering 2011:1-7.
18. Saleem Ramadan. (2016). Sampling target distributions based on support alteration and discretization. Advances and Applications in Statistics, 48(6):445-471
19. Saleem Z. Ramadan, (2016). An efficient method for global optimization of black-box functions using one-dimensional interpolation and reduced design space. Advances and Applications in Statistics, Volume 48, Number 1, 2016, Pages 1-31.
20. Saleem Z. Ramadan, (2016). A Note on Planning the Simple Step-Stress Accelerated Life Test under Bayesian Method and Type I Right Censoring. Advances and Applications in Statistics, Volume 47, Number 1,
21. Saleem R. and Imad R.(2012). Hybrid Two-Stage Algorithm for Solving Transportation Problem, Modern Applied Science 6:12-22.
22. Saleem Ramadan, Mahmoud Barghash. (2016). Three-Step Parameters Tuning Model for Time-Constrained Genetic Algorithms. Modern Applied Science. 10:10,118-13
23. Saleem R. Khalid R. (2012). Bayesian Simple Step–Stress Acceleration Life Testing Plan under Progressive Type-I Right Censoring for Exponential Life Distribution, Modern Applied Science 6:91:99.
24. Saleem R.(2014). Selection of Non-Repairable Series Systems’ Components with Weibull-Life and Lognormal-Repair Distributions through Minimizing Expected Total Cost of Ownership Approach. Modern Applied Science 8:104:112.
25. Saleem R. (2014). Using the Genetic Algorithm to Find the Optimal Shopping Policy For 1-out-of-n Active-Redundancy Series Systems under Budget Constraint. Computer and Information Science 7:81-90.
26. Saleem Z. Ramadan, (2015). Optimizing the Selection of Cost Drivers in Activity-Based Costing Using Quasi-Knapsack Structure, International Journal of Business and Management; Vol. 10, No. 7.
27. Saleem R. (2013).Reducing Premature Convergence Problem in Genetic Algorithm: Application on Travel Salesman Problem, Computer and Information Science. 6:47-57.
28. Saleem Z. Ramadan & Mahmoud A. Barghash, (2015). Calculating the Departmental Credit-Hour Cost for Higher Learning Institutions Using Joint Costing and Activity-Based Costing Systems Simultaneously. International Business Research; Vol. 8, No. 5.
29. Saleem R. (2013). A Model for Optimal Design of Mixed Renewable Warranty Policy for Non-Repairable Weibull Life Products under Conflict between Customer and Manufacturer Interests. World Academy of Science, Engineering, and Technology, International Science Index 74, 7: 192 - 196.
30. Saleem Z. Ramadan, (2016). Binary Programming for Manufacturing Material and Manufacturing Process Selection Using Genetic Algorithms. World Academy of Science, Engineering and Technology, International Science Index 102, International Journal of Mechanical, Aerospace, Industrial, Mechatronic, and Manufacturing Engineering Vol:10 No: 2.
31. Ramadan, S. (2015). Estimating the Life-Distribution Parameters of Weibull-Life PV Systems Utilizing Non-Parametric Analysis. World Academy of Science, Engineering and Technology, International Science Index 102, International Journal of Mechanical, Aerospace, Industrial, Mechatronic and Manufacturing Engineering, 9(6), 948 - 952.
32. Saleem R. and Gürsel S. (2014). A Dual Fitness Function Genetic Algorithm: Application on Deterministic Identical Machine Scheduling. World Academy of Science, Engineering and Technology, International Science Index 73, International Journal of Mechanical, Aerospace, Industrial and Mechatronics Engineering, 7: 59 - 66.
33. Saleem R. (2014). Effect of Progressive Type-I Right Censoring on Bayesian Statistical Inference of Simple Step–Stress Acceleration Life Testing Plan under Weibull Life Distribution. World Academy of Science, Engineering and Technology, International Science Index 86, International Journal of Mechanical, Aerospace, Industrial and Mechatronics Engineering 8: 337 – 341

Teaching Experience

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| **BSc Level** | |
| 1. Probability and Statistics | Fall or Spring of ’11, ’12, ’13, ‘14, ‘15, ’16, '21, ’22. Summer ’11, ’12,‘14, ‘15, ’16, |
| 2. Applied Statistics | Fall and Spring of ’11, ’12, ’13, ‘14, ‘15, ’16,’17, ‘18, '19, '20, '21 |
| 3. Quality Control | Fall '21, Spring of ’13, ’14,‘15, ’16, '18, '19, '20, '21, ‘22 |
| 4. Reliability and Maintainability Engineering | Fall of ’11,’15,’16,'17 |
| 5. Operations Research(I) | Fall and Spring of ’11, ’12, ’13, ‘14, ‘15, ’16, 18’, 22’. |
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| 6. Facilities planning | Fall of ‘14, ’17, Spring’17, Summer ’16, 22 |
| 7. Production Planning | Fall of ‘13, ’15, Spring’16, Summer ’14, Spring 22’ |
| 8. Supply Chain Management and Logistics | Fall of ‘14, ’18, ‘22 Spring’14, ‘22 |
| 9. Human Factors Engineering  10. Data Analytics  11. Artificial Intelligence and Data Science | Fall,’18, ’20, Spring ‘22  Fall ’23, 24, Spring 25  Fall ’23, Spring 24, 25 |
| **MSc Level** | |
| 12. Statistics and Engineering Economics | Fall and Spring '18, '19, 20' |
| 13. Applied Data Analytics | Fall and Spring '19, 20', ’22, Fall ‘23 |
| 14. Master thesis | Summer '20, Fall and Spring '21 |

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Software

* Optimization Applications: **LINGO**, **CPlex**, **ProModel**
* Statistical Applications: **R-Language**, **MINITAB**, **Excel**
* Data Science Applications: **Python**, **Power BI**, **SQL**
* Supply Chain and Logistics: **Microsoft Dynamics 365 Supply Chain Management**
* General Engineering Applications: **MATLAB**

Reference

Available Upon Request