

Curriculum Vitae



Name: Mohammed Alweshah

Academic Rank: Associate Professor of Computer Science

Department: Computer Science

Faculty: Prince Abdullah Bin Ghazi Faculty of Information Technology

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Field of Specialization:

- Major: Computer Science
- Minor: Data Mining and Optimization

Research Interest: Data Science, Data mining (Classification, Clustering, and Feature Selection), Optimization, Evolutionary Computation, Machine Learning and Artificial Intelligence.

Education	Specialization	Graduation Year	University	Country	Title of the Dissertation
<i>Ph.D.</i>	<i>Computer Science</i>	<i>2013</i>	<i>National University of Malaysia</i>	<i>Malaysia</i>	<i>Firefly Algorithms with Probabilistic Neural Network for Classification Problems</i>
<i>MSc.</i>	<i>Computer Science</i>	<i>2005</i>	<i>Al-Balqa Applied University</i>	<i>Jordan</i>	<i>Enhancements of Distance Learning Systems</i>
<i>BSc.</i>	<i>Computer Science</i>	<i>1993</i>	<i>Al-Mustansiriah University</i>	<i>Iraq</i>	

University Courses Taught:

Teaching the following bachelor's degree (BSc) courses at the Computer Science Department, BAU:

- *Data Mining –Al-Balqa Applied University*
- *Introduction to Software Engineering course–Al-Balqa Applied University*
- *Artificial Intelligence Course–Al-Balqa Applied University*
- *Advanced Software Engineering –Al-Balqa Applied University*
- *Machine Learning Course- Al-Balqa Applied University*
- *Database Systems - Al-Balqa Applied University*

Teaching the following master's degree (MSc) courses at the computer science department, BAU.

- *Advance in Data Mining (Special Topics in Computer Science)*
- *Machine learning and Optimization (Special Topics in Computer Science)*
- *Internet of Things (Special Topics in Computer Science)*
- *Advance in Database Systems*
- *Advance in Management Information System*
- *Advance in Artificial Intelligence*

Students Supervision:

Since 2013, Dr. Al-weshah has supervised 8 master students' dissertations at the computer science department, Al-Balqa Applied University:

<i>MSc thesis by</i>	<i>Thesis entitled</i>	<i>Year</i>
<i>Masoud Khraisat</i>	<i>Sentiment Analysis for Arabic Language using Machine Learning Algorithms</i>	<i>Nov, 2019</i>
<i>Esraa Asawdeh</i>	<i>Feature Selection Problems Based on Harris Hawks Optimization Algorithm</i>	<i>Nov, 2019</i>
<i>Shadi Masadeh</i>	<i>Feature Selection Problems Based on Emperor Penguins Colony</i>	<i>Nov, 2019</i>
<i>Enas Ramadan</i>	<i>Water Evaporation Algorithm with Neural Network for Solving Classification Problems</i>	<i>Sep, 2018</i>
<i>Omar Alahmed</i>	<i>Sentiment Analysis Framework on Tweets: A Case Study on Different Platforms</i>	<i>May, 2018</i>
<i>Ayat Al-Nsour</i>	<i>Galaxy-based search algorithm for training multilayer perceptron neural network to solve classification problems</i>	<i>May, 2018</i>
<i>Saleh Al-Khalaileh</i>	<i>Feature Selection Problems based on Mine Blast Algorithm</i>	<i>March, 2018</i>
<i>Maria Al-Sanadeh</i>	<i>Hybrid Water Cycle Algorithm with Neural Network to Solve Classification Problems</i>	<i>Sep, 2017</i>
<i>Aram Al-Daradkeh</i>	<i>β-Hill Climbing algorithm with probabilistic neural network for solving classification problem.</i>	<i>Feb, 2017</i>
<i>Heba Al-Nsour</i>	<i>Grey wolf optimizer algorithm with probabilistic neural network for solving classification time series problem</i>	<i>Nov, 2016</i>
<i>Moad AbuQadoura</i>	<i>Flower pollination algorithm with an artificial neural network for solving classification problems</i>	<i>Nov, 2016</i>
<i>Sharihan Alaqeel</i>	<i>Using genetic programming for solving attribute reduction problems</i>	<i>May, 2016</i>

Since 2013, Dr. Alweshah has been appointed as an External and Internal Examiner in the following Ph.D. and Master Thesis Defense Committees

Raneem Qaddoura, Thesis Title: " A Design and Implementation of a Clustering Algorithm based on the Nearest Point", Nov 2019, Ph.D. Thesis. supervised by: Dr. Ibrahim AlJarah, The University of Jordan.

Maria Habib, Thesis Title: " Multi-objective Intelligent Computational Algorithms: An Approach toward Intrusion Detection in Internet of Things Era ", June 2019 M.Sc. Thesis. supervised by: Prof. Hossam Faris, The University of Jordan.

Ziyad khaleel, Thesis Title: "Extracting Information from Semantic Web Using Machine Learning" Jul 2018, supervised by: Dr.Khalaf- Khatatneh, Computer Science Department, Al-Balqa Applied University.

Almonther Al-Khalafat, Thesis Title: "Violence detection over online social networks: An arabic Sentiment Analysis approach", March 2018, M.Sc. Thesis. supervised by: Prof. Rizik Al-Sayyed, Computer Science Department, The Jordan University.

Ahmad Mansor, Thesis Title: "The impact of supply chain systems agility on the performance of Jordainian logistics companies ", Jan 2018, M.Sc. Thesis. supervised by: Dr.Haitham Alali, Computer Information System Department, Amman Arab University.

Mo'ath Alrefa'I, , Thesis Title: " Building a Hybrid Sentiment Analysis System for Arabic

<i>Language", Oct 2017, M.Sc. Thesis. supervised by: Dr.Hossam Faris, Computer Science Department, The Jordan University.</i>
<i>Ahmad Sawai, Thesis Title: "Web Text Document Clustering using Meta-Heuristic Optimization Algorithm", Oct 2017, M.Sc. Thesis. supervised by: Dr. Hasan Rashaideh, Computer Science Department, Al-Balqa Applied University.</i>
<i>Hadeel-Abo-Romman, Thesis Title: "A semantic-based approach to enhance the process of E-learning assessment", April 2017, M.Sc. Thesis. supervised by: Dr. Abdalsalam Arabiat, Computer Science Department, Al-Balqa Applied University.</i>
<i>Ayad Naser, Thesis Title: "Analyzing and Detecting Malicious content: DOCX Files ", March 2016, M.Sc. Thesis. supervised by: Dr Mohammed Al-Hjoj, Computer Science Department, Al-Balqa Applied University.</i>
<i>Manal-Allawi, Thesis Title: "Automated Testing Methodology for Multi-Agent System", April 2016, M.Sc. Thesis. supervised by: Dr. Abdalsalam Arabiat, Computer Science Department, Al-Balqa Applied University.</i>
<i>Ziyad khaleel, Thesis Title: "Extracting Information from Semantic Web Using Machine Learning" May 2016, M.Sc. Thesis. supervised by: Dr.Khalaf- Khatatneh, Computer Science Department, Al-Balqa Applied University.</i>
<i>Mohammed-Al-sayed, Thesis Title: "Cryptosystem Design based on Hermitian Curves", Oct 2016, M.Sc. Thesis. supervised by: Dr. Mohammed Al-Hjoj, Computer Science Department, Al-Balqa Applied University</i>
<i>Al-Shami, Sara, Thesis Title: An Optimal Pruning Algorithm of Classifier Ensembles Using Dynamic Programming Approach, December 2016, M.Sc. Thesis. supervised by: Dr. Omar Alzubi, Computer Science Department, Al-Balqa Applied University.</i>
<i>Hanadi- Al tayeb, Thesis Title: "Solving time series classification problem using support victor machine and neural networks", July 2015, supervised by: Prof. Mohammed Ababneh, Computer Science Department, Al-Balqa Applied University.</i>
<i>Wafaa-Al-kharabsheh, Thesis Title: "Developing an Interaction protocol for multi agent's systems", April 2015, M.Sc. Thesis. supervised by: Dr. Abdalsalam Arabiat, Computer Science Department, Al-Balqa Applied University.</i>

In addition, during the last 4 years Dr. Alweshah has supervised 2 Master degree (MSc) graduation projects (Comprehensive track) at the computer science department, Al-Balqa Applied University:

<i>MSc Project by</i>	<i>Project title</i>	<i>Year</i>
<i>Hussein Al-hawamdeh</i>	<i>Digital Image Segmentation using African Buffalo Algorithm</i>	<i>2019</i>
<i>Ahmad Alkloub</i>	<i>Modelling Airborne particulate matter (PM) using Machine Learning approaches.</i>	<i>2019</i>
<i>Hiba Abu Rumman</i>	<i>Multi-Gene Genetic Programming for Solving Classification Rainfall Problem.</i>	<i>2015</i>
<i>Roula Shamasneh</i>	<i>Modeling Airborne particulate matter (PM) using ANN, Multi-Gene Genetic Programming and SVM.</i>	<i>2015</i>

During the last 6 years Dr. Alweshah has also supervised many groups of students in their graduation projects, and has supported and supervised many students in their Field Training

Honors, Academics Awards and Patent:

- Received a full scholarship to study the Ph.D. from The Malaysian Technical Cooperation Programmed (MTCP) / July 2010.
- Distinguished Researcher award at Al-Balqa Applied University, August 2017.

Funded Projects

- The researcher is the leader of a funded project titled: “Monarch Butterfly Optimization Algorithm for Feature Selection Problems”. Funded By: Al-Balqa Applied University. Budget: 4,500 JD (6,000 USD). Duration: 1 years 2018 2019.
- The researcher is the leader of a funded project titled: “Emperor Penguins Colony: towards Intrusion Detection in internet of Things”. Funded By: Al-Balqa Applied University. Budget: 7800 JD (11000 USD). Duration: 1 years 2020- Ongoing.
- The researcher applies for a funded project titled: “Sentiment Analysis for Arabic Language based on Machine Learning and Natural-Inspired Algorithm”. Funded By: Scientific Research Support Fund in Jordan / Ministry of Higher Education. Budget: 60000 JD (75000 USD). Duration: 2 years, in process.
- The researcher is the coordinator of a funded project titled: “FOXTEX”, the project is co-financed by the European Commission's ERASMUS + program under the Capacity Building for higher education program with the Grant Agreement number 598347-EPP-1-2018-1-ES-EPPKA2-CBHE-JP. The project started on January 15th 2019, it has a duration of 3 years and a total budget of 999.901€. The project coordinator is the Universitat Politècnica de Catalunya (UPC) and it counts with the participation of AEI TÈXTILS, the Catalan cluster of technical textiles, also established in Terrassa. Five additional partners complete the European part of the consortium: The University of West Attica (UNIWA) and CRE.THI.DEV in Greece, Materials Connexion and CIAPE in Italy, and the INCOTP research center in Romania. The partnership is completed with six partners from Jordan (the Jordan University of Science and Technology, the Al-Balqa Applied University and the Amman Chamber of Commerce) and from Morocco (ESITH from Casablanca, University Hassan II of Casablanca and AMITH, the largest Moroccan textile association).
- The researcher is the coordinator of a funded project titled: “Enhancing Teaching, Learning and Graduate Employability through University-Enterprise Cooperation – ELEGANT” (2020 - 2023) This project aims to enhance university enterprise cooperation in JO and LB in order to improve teaching and learning experience of students and enhance the employability of graduate. The project responds to the widely recognized problem that university graduates often lack the employability skills needed by employers and, in addition, their knowledge in the field of ICT is behind the state of the art and below that of companies they want to work in. 610265-EPP-1-2019-1-HR-EPPKA2-CBHE-JP. it has a duration of 3 years and a total budget of 999.901€.

Publications:

- Alweshah, M.**, Khalaileh, S. A., Gupta, B. B., Almomani, A., Hammouri, A. I., & Al-Betar, M. A. The monarch butterfly optimization algorithm for solving feature selection problems. *Neural Computing and Applications* <https://doi.org/10.1007/s00521-020-05210-0> (2020).
- Alweshah, M.**, Rababa, L., Ryalat, M. H., Al Momani, A., & Ababneh, M. F. African buffalo algorithm: Training the probabilistic neural network to solve classification problems. *Journal of King Saud University - Computer and Information Sciences*. doi: <https://doi.org/10.1016/j.jksuci.2020.07.004>, (2020).
- Alweshah, M.**, Saleh Alkhalaileh, Dheeb Albashish, Majdi Mafarja, Qusay Bsoul, and O. Dorgham, "A Hybrid Mine Blast Algorithm for Feature Selection Problems," *Soft Computing*, Volume 11, Issue 8, pp. 5485-5497, 2020.
- Alweshah, M.**, M. Al-Sendah, O. M. Dorgham, A. Al-Momani, and S. Tedmori, "Improved water cycle algorithm with probabilistic neural network to solve classification problems," *Cluster Computing*, pp. 1-16, 2020.
- O. A. Alzubi, J. A. Alzubi, **Alweshah, M.**, I. Qiqieh, S. Al-Shami, and M. Ramachandran, "An optimal pruning algorithm of classifier ensembles: dynamic programming approach," *Neural Computing and Applications*, pp. 1-17, 2020.
- Alweshah, M.**, E. Ramadan, M. H. Ryalat, M. Almi'ani, and A. I. Hammouri, "Water Evaporation Algorithm with Probabilistic Neural Network for Solving Classification Problems, *Jordanian Journal of Computers and Information Technology (JJCIT)*, vol. 6, p. 14, 2020
- Alweshah, M.**, M. A. Qadoura, A. I. Hammouri, M. S. Azmi, and S. AlKhalaileh, "Flower Pollination Algorithm for Solving Classification Problems," *Int. J. Advance Soft Compu. Appl*, vol. 12, 2020.
- Alweshah, M.**, A. Al-Daradkeh, M. A. Al-Betar, A. Almomani, and S. Oqeili, " β -Hill climbing algorithm with probabilistic neural network for classification problems," *Journal of Ambient Intelligence and Humanized Computing*, pp. 1-12, 2019.
- Mohammad Alauthman, A.A., **Alweshah, M.**, Waleed Alomoush and Kamal Alieyan. 2019. Machine learning for phishing detection and mitigation. In. Brij B. Gupta, Q. Z. S. (ed.). *Machine Learning for Computer and Cyber Security: Principle, Algorithms, and Practices*, USA: CRC Press Taylor & Francis.
- Almomani, Ammar, Mohammad Alauthman, **Alweshah, M.**, O. Dorgham, and Firas Albalas. 2019. "A comparative study on spiking neural network encoding schema: implemented with cloud computing." *Cluster Computing*: 1-15.
- Alweshah, M.**, 2019. Construction biogeography-based optimization algorithm for solving classification problems. *Neural Computing and Applications* 31 (10), 1-12.
- H. Al Nsour, **Alweshah, M.**, A. I. Hammouri, H. Al Ofeishat, and S. Mirjalili, 2018. "A Hybrid Grey Wolf Optimiser Algorithm for Solving Time Series Classification Problems," *Journal of Intelligent Systems*.
- A. Almomani, **Alweshah, M.**, S. A. Khalayleh, M. Al-Refai, and R. Qashi, "Metaheuristic

Algorithms Based Feature Selection Approach for Intrusion Detection," in Machine Learning for Computer and Cyber Security: Principles, Algorithms, and Practices. USA.: CRC Press, Taylor & Francis, 2018, pp. 1-26.

Albashish, D., Sahran, S., Abdullah, A., **Alweshah, M.**, & A., Adam. (2018). A hierarchical classifier for multiclass prostate histopathology image gleason grading. *Journal of Information and Communication Technology*, 17 (2), 323-346.

Alweshah, M., Rashaideh, H., Hammouri, A.I., Tayyeb, H. & Ababneh, M. 2017. Solving time series classification problems using support vector machine and neural network. *International Journal of Data Analysis Techniques and Strategies* 9 (3): 237-247.

Alweshah, M., Hammouri, A.I. & Tedmori, S. 2017. Biogeography-based optimisation for data classification problems. *International Journal of Data Mining, Modelling and Management* 9 (2): 142-162.

Hammouri, A.I, **Alweshah, M.**, Issa A. Alkadasi & Asmaran, M. 2017. Biogeography Based Optimization with Guided Bed Selection Mechanism for Patient Admission Scheduling Problems. *International Journal of Soft Computing* 12 (2): 103-111.

Melhem, L.B., Azmi, M.S., Muda, A.K., Bani-Melhim, N.J. & **Alweshah, M.** 2017. Text Line Segmentation of Al-Quran Pages Using Binary Representation. *Advanced Science Letters* 23 (11): 11498-11502.

Kloub, M., Wishah, R., Alzubi, K., Alaal, S.A. & **Alweshah, M.** 2017. The impact of information and communication technologies on the application of knowledge management: an empirical study on commercial banks operating in the Jordanian capital city'Amman'. *International Journal of Technology, Policy and Management* 17 (2): 95-122.

Alweshah, M., Alzubi, O.A., Alzubi, J.A. & Alaqeel, S. 2016. Solving Attribute Reduction Problem using Wrapper Genetic Programming. *International Journal of Computer Science and Network Security (IJCSNS)* 16 (5): 77.

Alshareef, A.M., Bakar, A.A., Hamdan, A.R., Abdullah, S.M.S. & **Alweshah, M.** 2015. A case-based reasoning approach for pattern detection in Malaysia rainfall data. *International Journal of Big Data Intelligence* 2 (4): 285-302.

Alweshah, M., Ahmed, W. & Aldabbas, H. 2015. Evolution of Software Reliability Growth Models: A Comparison of Auto-Regression and Genetic Programming Models. *International Journal of Computer Applications* 125 (3):

Alweshah, M. & Abdullah, S. 2015. Hybridizing firefly algorithms with a probabilistic neural network for solving classification problems. *Applied Soft Computing* 35: 513-524.

Alweshah, M., AlZoubi, W.A. & Alarabeyyat, A. 2015. Cluster based data reduction method for transaction datasets. *Computer Applications & Industrial Electronics (ISCAIE)*, 2015 IEEE Symposium on, pp 78-83.

Alshareef, A., Alkilany, A., **Alweshah, M.** & Bakar, A.A. 2015. Toward a student information system for Sebha University, Libya. *Innovative Computing Technology (INTECH)*, 2015 Fifth International Conference on, pp 34-39.

Alshareef, A., Ahmida, S., Bakar, A.A., Hamdan, A.R. & **Alweshah, M.** 2015. Mining survey data on university students to determine trends in the selection of majors. *Science and Information Conference (SAI)*, 2015, pp 586-590.

Alweshah, M. 2014. Firefly Algorithm with Artificial Neural Network for Time Series Problems. Research Journal of Applied Sciences, Engineering and Technology 7 (19): 3978-3982.

Al-Gawagzeh, M.Y., Al-Zubi, N., Al-Saaidah, B. & **Alweshah, M.** 2014. Performance Analysis of EIGRP via OSPF Based on OPNET and GNS3. Research Journal of Applied Sciences, Engineering and Technology 8 (8): 989-994.

Alali, H., **Alweshah, M.** & Wishah, R. 2014. Hospital Information Systems Success: Towards an Evaluation Framework. Australian Journal of Basic & Applied Sciences 8 (9)

Ismail, A., Sheta, A. & Al-Weshah, M. 2008. A mobile robot path planning using genetic algorithm in static environment. Journal of Computer Science 4 (4): 341-344.

Research Interest:

I am able to teach advanced modules such as advanced computer algorithms, advanced data mining, advanced software engineering, computer systems, information system analysis and design, artificial intelligence and advanced database systems at both the undergraduate and graduate level. Moreover, I have extensive experience in courses such as data mining, evolutionary computation, and artificial intelligence. Furthermore, I am an active researcher in the fields of artificial intelligence including data mining and optimization, classification, clustering, and time series problems and I am currently working on many research papers on optimization algorithms, information retrieval (sentimental analysis), data sciences and data mining. In addition to the administrative experience gained in my previous jobs, I have also headed programming departments, software project management teams and computer centers.

Academic Information on the Internet

Google Scholar Profile: <https://scholar.google.com/citations?user=xp0R0ROK8usC&hl=en>

ResearchGate Profile: https://www.researchgate.net/profile/Mohammed_Alweshah2/contributions

Journals Reviewer:

- Information Sciences/ Elsevier
- Applied Soft Computing/ Elsevier
- Neural Computing and Applications/ Springer
- Knowledge-Based Systems

Managerial Experience:

- 2017– 2018: **Dean Assistant for Graduate Studies**, Prince Abdullah Bin Ghazi Faculty of Information Technology, Al-Balqa Applied University, Al Salt, Jordan.
- 2016 – 2017: **Head of Software Engineering Department**, Prince Abdullah Bin Ghazi Faculty of Information Technology, Al-Balqa Applied University, Al Salt, Jordan.

References:

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- Professor Saleh Oqili, President, Jadara University e-mail saleh_jo@yahoo.com, saleh@bau.edu.jo.
- Professor Nijad Al-Najdawi, Former Dean, Prince Abdullah Bin Ghazi Faculty of Science and Information Technology, Al-Balqa Applied University e-mail: n.al-najdawi@bau.edu.jo
- Professor Mohammad Ababneh, Prince Abdullah Bin Ghazi Faculty of Science and Information Technology, Al-Balqa Applied University e-mail: ababnahjo@yahoo.com