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# Dr. Bushra Alhijawi

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<b>Nationality</b>	Jordanian	<b>E-mail</b>	<a href="mailto:b.alhijawi@psut.edu.jo">b.alhijawi@psut.edu.jo</a>
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<b>Date of Birth</b>	11/6/1993	<b>Scopus Author ID</b>	57191223804
<b>Linkedin</b>	Bushra Alhijawi	<b>Research Interests</b>	- Artificial Intelligence - Web Intelligence. - Recommender System. - Optimization. - Natural Language Processing - Machine Learning

## Education

- [2017]–[2021] • PH.D. Degree in computer sciences • Princess Sumaya University for Technology • GPA: 93 with 3rd class honor
  - Title of Dissertation: Multi-Objective Personalized Collaborative Filtering Recommender Systems using Inheritance and Graph-based Models
- [2015]–[2017] • MS.C Degree in information systems and innovation • The Hashemite University • GPA: 4.00 with 1st class honor
  - Title of Dissertation: The Use of Genetic Algorithms in Recommender Systems
- [2011]–[2015] • BS.C Degree in computer information systems • Al-Albaysat University • GPA: 93.13 with 1st class honor
- [2010]–[2014] • Secondary education • GPA: 86.8

## Academic Experience

- [2025]–[Present] • Associate Professor (Data Science Department) • Princess Sumaya University For Technology
- [2021]–[2025] • Assistant Professor (Data Science Department) • Princess Sumaya University For Technology.
- [2020]–[2021] • Lecturer (Data Science Department) • Princess Sumaya University For Technology
- [2017]–[2020] • Part-Time Lecturer (Computer Science Department) • Princess Sumaya University For Technology

## Non- Academic Experience

- [Sep 2025]–[Present] • Manages graduation projects and connects them with entrepreneurship and industry opportunities • Princess Sumaya University for Technology
- [Sep 2024]–[Sep 2025] • Dean Assistant • King Hussein School of Computing Sciences • Princess Sumaya University for Technology
- [May 2024]–[Oct 2024] • Artificial Intelligence Instructor • Jordan Cybersecurity Youth Academy • Princess Sumaya University for Technology and Purdue University
- [Apr 2024]–[Nov 2024] • Artificial Intelligence Consultant • ESCWA
- [2021]–[2024] • Instructor and Consultant • Orange AI Incubator • Granting Organization: Orange.

## Teaching Experience

- **Undergraduate Courses:**
  - Computer Science Courses: Systems Analysis and Design, Programming language Labs including C, C++, Webpage Design and Internet Programming Lab, and Computer Skills course.
  - Data Science Courses: Introduction to Data Science, Introduction to Data Science Lab (Python), Data Engineering, Data Engineering Lab, and High-Performance Computing for Big Data.
  - Artificial Intelligence Courses: Artificial Intelligence, Information Retrieval, Artificial Intelligence Lab.
- **Graduate Courses:** Data Engineering course, Big Data and Cloud Computing course, and AI in Cybersecurity course.
- **E-Learning Experience:** Currently, I use e-learning (MOODEL technology) for all my courses. Due to the Covid-19 pandemic, I am also using the Zoom platform for giving all lectures.

During my teaching experience, I developed the course outline, material, additional online materials, hands-on practices, lab assignments, and lab manuals of the Data Engineering course, Artificial Intelligence Lab, Introduction to Data Science Lab, and Data Engineering Lab. In addition, I updated the course material for Artificial Intelligence and Systems Analysis and Design courses to include recent technologies and tools, such as cloud-based services.

## **Research And Development Projects**

- Using Deep Learning for Detecting Large Language Models-Generated Scientific Content.
  - Develop and implement a deep learning-based detection method for LLM-generated scientific content.
  - Develop and implement a T5-CNN-based detection method for LLM-generated scientific content.
  - Develop and implement a dual-branch approach for AI-generated scientific content detection.
  - Collect an AI-generated text dataset to enhance AI-generated text detection tools.

## **Master Level Supervision**

- Title of Thesis: Leveraging Transformers for Detecting Large Language Model-Generated Scientific Text, Role: Main supervisor
- Title of Thesis: Topic-Aware Abstractive Text Summarization (TAATS), Role: Main supervisor
- Title of Thesis: Personalized Graph-Based Deep Learning Recommendation System for Accuracy-Diversity Trade-off, Role: Main supervisor
- Title of Thesis: Optimizing Bioequivalence Study Workflow Through Design Automation, Role: Co-supervisor
- Topic of Thesis: Enhancing Long Context Processing in Large Language Models, Role: Main supervisor

## **Bachelor Level Supervision (Selected Projects)**

- Spinal AI: Cervical Disk Herniation Diagnosis using Deep Learning.
- ض: An Arabic Diacritizer using RNN.
- PSUTBot: A GPT-based Chatbot for Answering PSUT Students' inquiries.
- AcetabulaVision: Automated detection of Developmental Hip Dysplasia using YOLOv8.
- NeuroSight: Temporal Brain Tumor Progression Tracking using Deep Learning and 3D MRI Volume Analysis.
- EchoFace: Face Recognition For Image Retrieval.

## **Awards**

- [2019] • The best oral presentation award of ICAAI 2019.
- [2010] • An award in the website design and development competition at jubilee school.
- [2009] • An award in the website design and development competition at jubilee school.
- [2009] • An award in the website design and development competition at the Arab academy for banking and financial sciences.
- [2008] • The first award in the best software competition in the Pioneering center for outstanding students/Al-Ramtha.

## **Fellowships and Scholarship**

- [2015]–[2017] • Full M.Sc. Scholarship granted by the Ministry of Higher Education and Scientific Research (Jordan).
- [2017]–[2020] • Full Ph.D. Scholarship granted by the Ministry of Higher Education and Scientific Research (Jordan).

## **Funded Projects**

- [2021/9]–[present] • Orange AI Incubator • Granting Organization: Orange.

## **Languages**

- Arabic (Mother's tongue).
- English (Excellent Reading/Writing/Speaking).

## **Social impact**

- Launched the AI-Ability Initiative to train school students in Jordan on fundamental artificial intelligence and data science hands-on.
- One of the initiators and active mentors in the PSUT Data Science Club.
- Mentored PSUT teams during WiDS Datathon in 2021-2024 and Climathon 2022.
- Invited speaker to the Career Week Meetings at National Orthodox School.
- Invited speaker to the Tenth Pharmacy Students Research Training Program.
- Invited speaker to the largest tech community event and tech-focused job fair in the Middle East & Africa, JobStack\_2022.
- An active instructor and consultant in the Orange- AI Incubator.

## **Committees' Member**

- [2025] • Member of the Technical Committee of the International Conference on New Trends in Computing Sciences (ICTCS'25).
- [2025] • Member of the Organizing Committee of the International Conference on New Trends in Computing Sciences (ICTCS'25).
- [2025] • Chair of AI track of the International Conference on New Trends in Computing Sciences (ICTCS'25).
- [2022]–[2023] • Head of the scientific activities and conferences committee of the Data Science department at Princess Sumaya University For Technology.
- [2020]–[present] • Member of the quality and accreditation committee of the Data Science department at Princess Sumaya University For Technology.
- [2021]–[2024] • Member of the graduation project committee of the Data Science department at Princess Sumaya University For Technology.
- [2020]–[2025] • Member of the course syllabus committee of the Data Science department at Princess Sumaya University For Technology.
- [2020]–[2022] • Member of the scientific activities and conferences committee of the Data Science department at Princess Sumaya University For Technology.
- [2019] • Member of the Technical Committee of the International Conference on New Trends in Computing Sciences (ICTCS2019). Amman, Jordan 9-11 Oct.

## **Publication**

### **2026**

- 1) B. Alhijawi, S. Fraihat, and A. Awajan. "Adaptive collaborative filtering for multi-objective Top-N recommendations with implicit feedback." *Journal of Computational Mathematics and Data Science* (2026): 100131.
- 2) H. Hussein, S. Bshoukhaj, R. Banihani, T. N. Alhosanie, B. Alhijawi, B. Haddad, S. Atiani et al. Diagnosing Developmental Dysplasia of the Hip Using Deep Transfer Learning. *International Journal of Imaging Systems and Technology* 36, no. 2 (2026): e70332.
- 3) B. Alhijawi. Deep temporal CNN-BiLSTM method for predicting movie success from social media reviews. *Multimedia Tools and Applications* 85.2 (2026): 165.
- 4) B. Alhijawi, R. Jarrar, S. Awajan, and A. AbuAlRub. "Dual-Branch Approach for AI-Generated Scientific Content Detection." *Knowledge-Based Systems* (2026): 115440.

## 2025

- 1) K. Salameh, T. Suboh, R. ElAmayreh, and B. Alhijawi. Deep linguistic analysis for depression in social media using RoBERTa and CNN." *International Journal of Speech Technology* 28.4 (2025): 825-836.
- 2) W. Etaiwi, and B. Alhijawi. "Comparative evaluation of ChatGPT and DeepSeek across key NLP tasks: Strengths, weaknesses, and domain-specific performance." *Array* (2025): 100478.
- 3) A. Bader, and B. Alhijawi. "Transformer-Based Approach for Detecting LLM-Generated Scientific Text." 2025 International Conference on New Trends in Computing Sciences (ICTCS). IEEE, 2025.
- 4) G. Alhyasat, and B. Alhijawi. "Experimental Evaluation of Resampling Techniques for Imbalanced Stroke Data." In 2025 International Conference on New Trends in Computing Sciences (ICTCS), pp. 233-238. IEEE, 2025.
- 5) B. Alhijawi, R. Jarrar, A. AbuAlRub, and A. Bader. Deep learning detection method for large language models-generated scientific content. *Neural Computing and Applications*, 37, 91–104, 2025.

## 2024

- 6) M. Azzeh, B. Alhijawi, A. Tabbaza, O. Alabboshi, N. Hamdan, and D. Jaser. Arabic cyberbullying detection system using convolutional neural network and multi-head attention. *International Journal of Speech Technology*, 27(3), 521-537, 2024.
- 7) M. Al-Fayoumi, B. Alhijawi, Q. A. Al-Haija, and R. Armoush. XAI-PhD: Fortifying Trust of Phishing URL Detection Empowered by Shapley Additive Explanations. *International Journal of Online & Biomedical Engineering*, 20(11), 2024.
- 8) B. Alhijawi and A. Awajan. Genetic algorithms: Theory, genetic operators, solutions, and applications. *Evolutionary Intelligence* 17(3), 1245-1256, 2024.
- 9) M. Abu Maizer and B. Alhijawi. "Temporal brain tumor progression tracking using deep learning and 3D MRI volume analysis." *International Journal of Information Technology*. 1-6, 2024.

## 2023

- 10) B. Alhijawi, M. Abo Alrub and M. Al-Fayoumi. Generalized Ethereum Blockchain-based recommender system framework. *Information Systems*. 2023.
- 11) S. Fraihat, B. Abu Tahon, B. Alhijawi, and A. Awajan. Deep encoder–decoder-based shared learning for multi-criteria recommendation systems. *Neural Computing and Applications*. 35 (34), 2023.
- 12) A. Bader, Y. Suhweil, and B. Alhijawi, Saleh Abu-Soud. Detecting ChatGPT Generated Fake Reviews Using Supervised Machine Learning. 14th International Conference on Information and Communication Systems. pp. 1-5, 2023.
- 13) H. Zureigat, O. Al-Qudah, and B. Alhijawi. Predicting the Helpfulness of Online Customer Reviews. *International Conference on Information Technology*. pp. 686-689, 2023.
- 14) M. Ali, H. Abdel-Nabi, R. Alazrai, B. Alhijawi, M. Alwadi, and A. Al-Badarneh, Ponnuthurai N Suganthan, Mohammad I Daoud, Robert G Reynolds. A cultural evolution with a modified selection function and adaptive  $\alpha$ -cognition procedure for numerical optimization. *Applied Soft Computing*. 2023
- 15) B. Alhijawi, S. Fraihat, and A. Awajan. Adaptable inheritance-based prediction model for multi-criteria recommender system. *Multimedia Tools and Applications*. 2023.

- 16) B. Alhijawi, S. Fraihat, and A. Awajan. Multi-factor ranking method for trading-off accuracy, diversity, novelty, and coverage of recommender systems. *International Journal of Information Technology*. 15 (3), 2023.

## 2022

- 17) B. Alhijawi, A. Awajan and S. Fraihat. Survey on the Objectives of Recommender System: Measures, Solutions, Evaluation Methodology, and New Perspectives. *ACM Computing Surveys*, 2022.
- 18) B. Alhijawi, S. Almajali, H. Elgala, H. B. Salameh, M. Ayyash. A survey on DoS/DDoS mitigation techniques in SDNs: Classification, comparison, solutions, testing tools, and datasets. *Computers & Electrical Engineering*. 99, 2022.
- 19) B. Alhijawi and A. Awajan. Prediction of Movie Success Using Twitter Temporal Mining. In: *Proceedings of 6th International Congress on Information and communication technology*. pp. 105-116. Springer.
- 20) B. Alhijawi and G. Al-Naymat. Novel Positive Multi-Layer Graph-based Method for Collaborative Filtering Recommender System. *Journal of Computer Science and Technology*. 37, 2022.
- 21) B. Alhijawi, N. Obeid, A. Awajan, and S. Tedmori. New hybrid semantic-based collaborative filtering recommender systems. *International Journal of Information Technology*. 14 (7), 2022.

## 2021

- 22) B. Alhijawi, G. Al-Naymat, N. Obeid, A. Awajan. Novel predictive model to improve the accuracy of collaborative filtering recommender systems. *Information Systems*. 96, 2021.
- 23) B. Alhijawi and A. Awajan. Novel Textual Entailment Technique for the Arabic Language Using Genetic Algorithm. *Computer Speech & Language*. 68, 2021.
- 24) B. Alhijawi. Dominion algorithm-a novel metaheuristic optimization method. *International Journal of Advanced Intelligence Paradigms*. 20(3-4), 2021, 221-242.

## 2020

- 25) B. Alhijawi and Y. Kilani. A Collaborative Filtering Recommender System Using Genetic Algorithm. *Information Processing & Management*. 57(6), 2020.
- 26) B. Alhijawi and Y. Kilani. The Recommender System: A Survey. *International Journal of Advanced Intelligence Paradigms*. 15 (3), 2020, 229-251.
- 27) B. Alhijawi, Y. Kilani And A. Alsarhan. Improving Recommendation Quality and Performance of Genetic-Based Recommender System. *International Journal of Advanced Intelligence Paradigms*. 15 (1), 2020, 77-88.

## 2019

- 28) B. Alhijawi. Improving collaborative filtering recommender system results and performance using satisfaction degree and emotions of users. *Web Intelligence*. 17(3), 2019, 229-241.
- 29) Z. Salah, A. Al-ghuwairi, A. Baarah, A. Aloqaily, B. Qadoumi, M. Alhayek and B. Alhijawi. A Systematic Review on Opinion Mining and Sentiment Analysis in Social Media. *International Journal of Business Information Systems*. 31 (4), 2019, 530-554.
- 30) B. Alhijawi. Improving Collaborative Filtering Recommender System Results using Optimization Technique. In: *Proceedings of the 3rd International Conference on Advances in Artificial Intelligence*

(ICAAI 2019), pp. 183-187, ACM, 2019, Istanbul, Turkey. Has been selected as the best oral presentation of this conference.

- 31) B. Alhijawi, G. Al-Naymat, N. Obeid, A. Awajan. Mitigating the Effect of Data Sparsity: A Case Study on Collaborative Filtering Recommender System. In: Proceedings of 2019 2nd International Conference on New Trends in Computing Sciences (ICTCS), IEEE, 2019, Amman, Jordan.

## **2018**

- 32) B. Alhijawi, N. Obeid, A. Awajan, and S. Tedmori. Improving collaborative filtering recommender systems using semantic information. In: Proceedings of the ninth International Conference on Information and Communication Systems (ICICS), pp. 127-132. IEEE, 2018, Irbid, Jordan.
- 33) Y. Kilani, B. Alhijawi and A. Alsarhan. Using Artificial Intelligence Techniques in Collaborative Filtering Recommender Systems: Survey. International Journal of Advanced Intelligence Paradigms. 11 (3-4), 2018, 378-396.
- 34) B. Alhijawi, S. Hriez and A. Awajan. Text-based Authorship Identification - A survey. In: Proceedings of the 5th International Symposium on Innovation in Information and Communication Technology. 2018.

## **2017**

- 35) B. Alhijawi and H. Douglass. A conceptual framework of e-loyalty in social-based e-commerce. International Journal of Business Information Systems 26 (4), 2017, 413-431.

## **2016**

- 36) B. Alhijawi and Y. Kilani. Using Genetic Algorithms for Measuring the Similarity Values between Users in Collaborative Filtering Recommender Systems. In: Proceedings of the 15th IEEE/ACIS International Conference on Computer and Information Science (ICIS 2016), pp. 1-6. IEEE, 2016, Okayama, Japan.

## **Courses and Workshops**

- Huawei Certification – Artificial Intelligence (HCIA- AI).
- ICDL Course from the International Information Technology center.
- ICTDAR-Talal Abo Ghazaleh for Small and Medium Enterprises.