

Mohammad Omar Alhawarat,

Associate Professor of Artificial Intelligence

General Information

Personal Information

- **Name:** Mohammad Omar Ibrahim Alhawarat, **Phone No.:** +962 788893969
- **POB:** Jordan, **DOB:** 1975, **Nationality:** Jordanian.
- Web pages:
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- **Email:** mhawarat@gmail.com / mhawarat@meu.edu.jo
- **Head of the CS Department, Vice Dean for Quality Assurance, IT Faculty, MEU. Amman, Jordan.**

Education

- 2001–2007: Oxford Brookes University – United Kingdom, **MPhil, PhD**, Computer Science, Majoring in Artificial Intelligence / Neural Networks.
- 1993–1997: University of Mu'tah – Jordan, **Bachelor**, Majoring in Computer Science. Distinction 85.48%

Some Achievements

- Was responsible for administering and preparing the NCAAA forms for the Applied Artificial Intelligence master program (2021).
- Was one of the speakers in the “Arabic Language and Artificial Intelligence (AI)” workshop held in Prince Sattam bin Abdulaziz University (PSAU) in Feb 2020.
- Developed an assessment and evaluation system for both PLOs and PEOs for the Applied Artificial Intelligence master program according to both ABET and NCAAA standards (2021).
- Served as the assistant for the vice dean for graduate studies, scientific research, and quality assurance (2019-2021).
- Proposed the strategic plan for quality issues for College of Computer Engineering and Sciences (CCES) (2019).
- Was responsible for administering and executing two Programming Contests at CCES (ACM CPC style) in the years 2019 and 2020.
- Was the team coach for the programming teams who participated in the first and third NCCC programming events in King Abdulaziz University and King Khalid University.
- Served as the head of quality assurance unit at the department of computer science (2012-2019).
- Participated in preparing and reviewing the self-study report for ABET and NCAAA accreditation for the CS, IS, and Computer Engineering (CE) programs. (2009-2021)
- Developed an Assessment and evaluation system for both Program Learning Outcomes (PLOs) and Program Educational Objectives (PEOs) for the CS program according to both ABET and NCAAA standards.
- Attended various workshops relating to NCAAA, ABET, Quality assurance in higher education, teaching in higher education, assessment and learning in higher education, mission-based quality systems, outcome-based quality systems, ... etc. (2008-2021).
- Participated in preparing required procedures, processes, and forms for Quality Assurance in teaching and learning (2009-2021).
- As a head of quality assurance and accreditation committee at CCES, I have participated in designing plans to accredit CCES programs from internal and external bodies, namely, NCAAA and ABET (2009-2021).
- Was the head of the IS department. (2008-2010).
- Was the team leader for designing the whole curricula for CCES (2008-2010).
- Analyzed and designed the curriculum for both Computer science (CS) and Information Systems (IS) programs at CCES according to the IEEE/ACM, NCAAA, and ABET requirements (2008-2010).

Summary

Glance

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Mohammad Alhawarat

An associate professor of computer science with more than 15 years of experience in teaching. I have a definite line of research, mainly in Arabic Natural Language Processing (NLP), Machine Learning (ML), and Deep Learning (DL). I have secured several funds for research projects at PSAU and seek to secure more. I have a wide range of expertise in administrative tasks, mainly in Quality Assurance and Accreditation. I have such an experience for more than 15 years with internal and external bodies such as NCAAA and ABET. I can establish or ensure high levels of quality in teaching and learning in higher education. This includes building and maintaining both short- and long-term assessment and evaluation systems of PEOs and PLOs for CS programs or related fields, both for undergraduate and postgraduate programs.

I have been working with quality assurance days and nights for more than a decade, about nearly 15 years. I managed to attend several workshops, seminars, and training programs on quality assurance, assessment, and accreditation in higher education. I managed to develop several systems for assessing and evaluating PLOs and PEOs. I participated in preparing self-study reports for NCAAA and ABET. Also, I supervised and led the implementation and evaluation of the whole quality system for the CS program, including short and long-term quality cycles. Moreover, I participated in committees at the university level regarding two of the NCAAA 11 criteria for Institutional accreditation process. One of the most important training programs I attended was "Internal Assessors" which was about "Education Performance Excellence". It was for four weeks, and one of the main aims of the training program is to become internal Assessors to maintain NCAAA accreditation requirements during the 7-year accreditation cycle. Notwithstanding, being a member of the quality assurance committee at the university level, allowed me to participate in several venues and opportunities to gain expertise in this important field.

I have led the team who developed the curriculum for four programs at CCES: CS, IS, CE, and Software Engineering (SE). Myself, I developed the whole curriculum for both CS and IS programs. These are designed according to ACM/IEEE recommendations and standards, besides NCAAA and ABET requirements.

I taught several courses in several universities: Oxford Brookes (UK), Petra University (Jordan), KSU (SA), PSAU (SA), Middle East University (MEU), Jordan. I supervised many graduation projects related to my field of research, viz., ANLP, ML and DL. I love teaching where I used to establish an encouraging environment that students enjoy and provide them with the necessary knowledge, as well as cognitive, technical, and soft skills.

I supervised graduation projects for many computer science students at PSAU and MEU. To name a few:

- Categorize Arabic documents using machine learning and deep learning.
- Design a new algorithm to automatically extract roots for Arabic words.
- Study the Assaneed of prophetic hadiths automatically.
- Identify and discover sensations for tweets in Arabic.
- Categorize Arabic tweets based on the feelings of the tweeter.
- Automatic multi-modal Evaluation for presenters using AI and ML.
- Traffic signs automatic detection using AI techniques.
- Automatic Extraction of structured data from CV documents using AI and NLP.

I have a distinguished relationship with my students; this allows for a friendly teaching and learning environment, and in turn they enjoy my classes. This is allowing students to interact in lectures in a way that achieves the course's educational objectives. I pay attention to the personal differences between students to promote Equality and Diversity in classrooms.

I have secured several research funds at PSAU through the deanship of scientific research. Although I was terribly busy with the quality assurance issues at the college and at the department levels during the last decade; still I managed to publish some papers in the recent years in respected journals (ISI and Scopus) with excellent impact factor (Q1 and Q2). These are mainly touching on ANLP, ML, and DL fields of study.

Work Experience

Experience	<ul style="list-style-type: none"> 2022 – present Department of Computer Science/Artificial Intelligence, Faculty of IT, Middle East University, Jordan
Responsibilities	<ul style="list-style-type: none"> Associate Professor Head of Computer Science Department Vice dean for quality assurance.
Experience	<ul style="list-style-type: none"> 2019 – 2021 Department of Computer Science, College of Computer Engineering & Sciences, Prince Sattam Bin Abdulaziz University, Kingdom of Saudi Arabia
Responsibilities	<p>Associate Professor</p> <ul style="list-style-type: none"> Teaching, Administration Assistant of the vice dean for graduate studies, scientific research, and quality assurance.
Experience	<ul style="list-style-type: none"> 2011 – 2019 Department of Computer Science, College of Computer Engineering & Sciences, Prince Sattam Bin Abdulaziz University, Kingdom of Saudi Arabia
Responsibilities	<p>Associate Professor</p> <ul style="list-style-type: none"> Teaching, Administration Quality Assurance representative @ the department of computer science. <p>ABET accreditation executive Steering Committee.</p>
Experience	<ul style="list-style-type: none"> 2010 – 2011 Department of Computer Science, College of Computer Engineering & Sciences, Prince Sattam Bin Abdulaziz University, Kingdom of Saudi Arabia
Responsibilities	<p>Assistant Professor</p> <ul style="list-style-type: none"> Teaching, Administration Head of Quality Assurance & Accreditation Unit. (Mainly working on both NCAAA & ABET Accreditation projects) Head of Academic Advising unit at the college. Member of the College Council, Member of the University Quality Committee, Member of the ABET accreditation executive Steering Committee. <p>Dean Assistant for Quality Assurance and Accreditation.</p>
Experience	<ul style="list-style-type: none"> 2008 – 2010 Department of Computer Science, College of Computer Engineering & Sciences, King Saud University Kingdom of Saudi Arabia
Responsibilities	<p>Assistant Professor</p> <ul style="list-style-type: none"> Teaching, Administration Head of the Information Systems department. Member of the College Council. Head of Quality Assurance & Accreditation Unit. <p>Dean Assistant for Quality Assurance and Accreditation.</p>
Experience	<ul style="list-style-type: none"> 2007 – 2008 University of Petra Amman-Jordan
Responsibilities	<p>Assistant Professor</p> <ul style="list-style-type: none"> Teaching Representative of the computer science department at the IT faculty board.
Experience	<ul style="list-style-type: none"> 2005 – 2007 Oxford Brookes University Oxford-England
Responsibilities	<p>Teaching Assistant/PhD Candidate</p> <ul style="list-style-type: none"> Teaching During the PhD study period I have effectively contributed to the research of the Chaotic spiking neural networks group at the University of Oxford Brookes.
Experience	<ul style="list-style-type: none"> 2004 – 2005 University of Petra Amman-Jordan
Responsibilities	<p>Director of Computer Center</p> <ul style="list-style-type: none"> Managed the computer center which provides technical solutions and computer services for the University of Petra.
Experience	<ul style="list-style-type: none"> 2001 – 2004 University of Petra Amman-Jordan
Responsibilities	<p>Systems Analyst and Programmer</p> <ul style="list-style-type: none"> I was responsible to lead a team of programmers to develop full functioning system (Admission & Registration systems) using Oracle 8i.
Experience	<ul style="list-style-type: none"> 1999 – 2001 Jeddah National Hospital Jeddah-KSA
Responsibilities	<p>Computer Programmer</p> <ul style="list-style-type: none"> Carried out solving the problem of the year 2k in more than 6 subsystems in Jeddah National Hospital using Oracle.
Experience	<ul style="list-style-type: none"> 1997 – 1999 University of Mu'tah Karak-Jordan
Responsibilities	<p>Web Developer/Training Department Director</p> <ul style="list-style-type: none"> Developed a full bilingual web site for the University of Mu'tah. The director of department of training at computer center.

Membership

- ACM Professional Member since 2011, IEEE Member since 2019

Committees

- College Quality Assurance and Accreditation committee, Curriculum committee, Website committee, College Council committee, Students Affairs committee, Recruitment committee, University Quality Assurance committee.

Teaching**Taught Courses**

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|------------------------------------|-----------------------------------|------------------------------------|
| • Fund. of Artificial Intelligence | • Structured programming | • Fundamentals of Database Systems |
| • Natural Language Processing | • Object Oriented Programming | • Advanced Database Systems |
| • Neural Networks | • Data Structures | • Systems Analysis & Design |
| • Deep Learning | • Algorithms Design & Analysis | • Computation Theory |
| • Machine Learning | • Computer Graphics | • Concepts of prog. Languages |
| • Data Mining | • Mobile Applications Development | • Microcomputer Applications |
| • Applications of AI | • Programming by Components | |

Teaching Philosophy

The new trends in teaching in higher education recently are:

- Outcome-based learning,
- Constructive alignment,
- flipped learning and blended learning.

Based on these, teaching in higher education becomes more challenging and interesting.

My philosophy in teaching can be summarized as:

A. Before Teaching:

- Design your course according to a predefined Program Learning Outcomes (PLOs) and course description,
- Design a measurable set of course learning outcomes (CLOs) that maps well to the PLOs,
- These CLOs should include various level of Learning (LOL) according to a well-established taxonomy for learning such as SOLO or BLOOM.
- Find the right set of assessment methodologies that measures the designed CLOs (both formative and summative).
- Decide on the teaching and learning activities.

B. During Teaching:

- Teach according to the planned CLOs.
- Assess according to the planned assessment methodologies and based on the CLOs.
- Apply Constructive Alignment to check that Teaching & CLOs & Assessment are all aligned.
- Use planned formative assessment methods to detect problems before it is too late.
- Use planned summative assessment to measure the attainment of students on CLOs.
- Use blended learning facilities to keep in touch with students and provide them with lecture notes, quizzes, assignments, and other resources upon availability.

C. My students are my focus, and I really treat them like my children; I give them all I can afford.

However, if there is support for e-learning courses for some courses, then flipped learning might be used. But this needs a high commitment from all parties, including administration, teachers, and students.

Finally, it is important to stress that teaching and learning will not have fruitful results unless students feel comfortable in an environment that good instructor might provide according to his experience in dealing with students. Hence, the ultimate aim is to deliver courses to students in a friendly environment with fruitful results.

Languages and Technologies

Java, C, C++, C#, Python, R, Microsoft OS, Microsoft Office, Android Programming, Oracle, HTML, Adobe Photoshop, Blackboard, and Moodle.

Attended Courses & self-paced Training

Machine Learning (Coursera), several courses on deep learning in python (Udemy) including Supervised learning, unsupervised learning, NLP, Linear Regression and Logistic Regression. Fundamentals of Java (Oracle), Oracle Forms & Reports (Oracle), Database Administration (Oracle), Windows NT administration.

Research

Research Interests

- Arabic Natural Language Processing (ANLP)
- Neuronal dynamics
- Machine Learning (ML)
- Deep Learning & Deep Neural Networks (DNNs)

Research Activities

- Currently working on Semantic Search in Quran and Hadith, Emotion Detection, Sentiment Analysis, Sarcasm Detection, in summary: ANLP, ANNs and DNNs.
- Reviewer for several journals and conferences.

Research Grants

- Secured 6 research-grants from the deanship of research @ PSAU (About SR250,000) in the last eight years.

Research Perspective

Deep Learning is changing dramatically what was to be believed just theoretical dreams, where human tasks such speech recognition, object recognition, speech transcription, language translation, and many more were achieved previously in machines with high error-rates. Now, and not surprisingly, DNN with new developed architectures and learning algorithms, can carry out human brain tasks with as low as human error. My research experience since my PhD time is concentrating on ANN and learning in ANN, recently I have added to this ANLP, Text and Data Mining as well as ML. My research focus is to develop suitable learning methodologies and models that advance the field of ANLP. If this is achieved, then a great deal of research work can be applied to Arabic text such as the holy Quran and Hadith. Most of my research projects I have run so far were mostly aligned with my research focus. Some of the research projects have been financially supported by the deanship of scientific research at PSAU. Moreover, some of my research projects concerns studying, understanding, and developing learning algorithms in neuronal dynamical systems.

Publications

- **Alhawarat MO**, Abdeljaber H, Hilal A. "Effect of stemming on text similarity for Arabic language at sentence level". PeerJ Computer Science 7:e530, 2021.
- **M. Alhawarat and A. O. Aseeri**, "A Superior Arabic Text Categorization Deep Model (SATCDM)," in IEEE Access, vol. 8 (2020), pp. 24653-24661.
- **Alhawarat, M.**, and M. Hegazi. "Revisiting K-Means and Topic Modeling, a Comparison Study to Cluster Arabic Documents." IEEE Access Vol. 6 (2018): 42740-42749.
- Mohamed Hegazi, **Mohammad Alhawarat** and Anwer Hilal, "An Approach for Integrating Data Mining with Saudi Universities Database Systems: Case Study", International Journal of Advanced Computer Science and Applications (IJACSA), 7(6), 2016.
- **Mohammad Alhawarat**, "A Domain-Based Approach to Extract Arabic Person Names using N-Grams and Simple Rules", Asian Journal of Information Technology 14(8-12), 2015.
- Mohamed Hegazi, Anwer Hilal and **Mohammad Alhawarat**, "Fine-Grained Quran Dataset" International Journal of Advanced Computer Science and Applications (IJACSA), 6(12), 2015.
- **Mohammad Alhawarat**, "Extracting Topics from the Holy Quran Using Generative Models" International Journal of Advanced Computer Science and Applications (IJACSA), 6(12), 2015.
- Mohamed Hegazi and **Mohammad Alhawarat**, "Fine-Grained Quran Dataset" International Journal of Advanced Computer Science and Applications (IJACSA), 6(12), 2015.
- Mohamed Hegazi and **Mohammad Alhawarat**, "The Challenges and the Opportunities of Teaching the Introductory Computer Programming Course: Case Study", Fifth International Conference on e-Learning: Cognitively informed technology, Manama, Kingdom of Bahrain, October 2015.
- Mustafa Al-Fayoumi, M. Alnababteh, Mohammad Daoud, **Mohammad Alhawarat**, "Dynamic Authentication Protocol for Mobile Networks Using Public-Key Cryptography". International Journal of Science and Research (IJSR). Vol. 4 Issue 1, Page(s): 1608-1617, January 2015.
- **Mohammad Alhawarat**, Mohamed Hegazi and Anwer Hilal, "Processing the Text of the Holy Quran: A Text Mining Study" International Journal of Advanced Computer Science and Applications (IJACSA), 6(2), 2015.
- **M Alhawarat**, Olde T Scheper and N T Crook. Article: Investigation of a Chaotic Spiking Neuron Model. International Journal of Computer Applications 99(17):1-8, August 2014.
- **M. Alhawarat**, W. Nazih and M. Eldesouki, STUDYING A CHAOTIC SPIKING NEURAL MODEL, International Journal of Artificial Intelligence & Applications (IJAIA), Vol. 4, No. 5, September 2013.
- **M. Alhawarat**, W. Nazih and M. Eldesouki, ANALYSIS OF A CHAOTIC SPIKING NEURAL MODEL: THE NDS NEURON, Third International Conference on Advances in Computing and Information technology (ACITY 2013), Computer Science & IT Vol. 3, No. 4 July 2013, AIRCC.
- N.T. Crook, **M. Hawarat** and W.J. Goh. Pattern recall in networks of chaotic neurons. Journal of BioSystems, 87:267-274, 2007.
- Nigel Crook, Wee Jin Goh, **Mohammad Hawarat**: The Nonlinear Dynamic State neuron. ESANN 2005:37-42
- **M. O. Hawarat**, N.T. Crook and T. Olde Scheper. Adaptation in chaotic spiking neural networks. Proceedings of the 5th international conference on Recent Advances in Soft Computing, pages 624-629, Nottingham, UK, December 16-18 2004. Nottingham Trinity University.