

# Curriculum Vitae

## Prof. Arafat AWAJAN

*President*

*Mutah University*

*E-mail:* [president@mutah.edu.jo](mailto:president@mutah.edu.jo)

ORCID ID: 0000-0002-7067-5658

Scopus Author ID: 6507604793

### Personal Information and Contact Details

**Name:** Arafat Atwi Awajan  
**Nationality:** Jordanian  
**Current Positions:** Vice President  
**Work Address:** Princess Sumaya University for Technology (PSUT)  
P.O. Box 1438, Amman, Jordan  
Phone: Office + 962 – 6 - 534 84 41 - Mobile +962 777 48 57 57  
Fax: +962 6 5652326. E-mail: awajan@psut.edu.jo

### Education

- **Ph.D.** Computer Science / Artificial Intelligence: Digital Image Processing, July. 1988, University of Burgundy - Franche-Comté (Université Bourgogne Franche-Comté-UBFC) - Besancon- FRANCE. Ph.D. Dissertation: "*Detection and analysis of linear structures in biomedical and industrial images*"
- **M.Sc.** Computer Sciences / June. 1984, University of Burgundy - Franche-Comté (Université Bourgogne Franche-Comté-UBFC) - Besancon- FRANCE
- **B. Sc.** (Electronique, Electrotechnique et Automatique), June 1983, Université of Orléans, Orléans – FRANCE

### Administrative Experience

- **President, Mutah University**, 23/8/2020 – present.
- **Vice President**, Princess Sumaya University for Technology, 27/9/2017- 23/8/2020.
- **Dean of the King Hussein Faculty of Computing Sciences**, PSUT. Founding dean of the faculty from Sept 2004 to sept 2007 and from Sept. 2014 – Sept. 2017.
- **Dean of Students Affairs**, PSUT, Jordan- Sept. 2011- 2014.
- **Advisor to PSUT president for the admission and registration**, February 2011- 2015.
- **Registrar General**, PSUT, February 2011- Sept. 2012.
- **Director of the Information Technology Center**, Royal Scientific Society – Amman - Jordan. April 2009 – Sept. 2010.
- **Chairperson of Department**, Computer Graphics and Animation Department, King Hussein School for Information Technology, PSUT, Sept. 2005 – Sept. 2007
- **Chairperson of Department**, Computer Science Department, King Hussein School for Information Technology, PSUT, Sept. 2002 – Sept. 2005.
- **Head of the PSUT tender Committee** – 2017- now
- **Head of the Employee Affairs Committee** at PSUT – 2017 - now
- **Head of the Health Insurance Committee** at PSUT - 2017 – now
- **Head of the Curriculum Development Committee** at PSUT- 2017-2019

## Academic Experience

- **Professor** of computer Sciences, Mutah University, 2020 –now.
- **Professor**, Princess Sumaya University for Technology, Jordan. 2015 - present
- **Associate Professor**, Computer Science Department, King Hussein Faculty for Computing Sciences, Princess Sumaya University for Technology, Jordan. 2008- 2014.
- **Associate Professor**, School of Engineering and Technology - Department of Computer Science – New York Institute of Technology – Amman Campus. 2007-2009. (Sabbatical leave from PSUT).
- **Adjunct Professor** at New York Institute for Technology –Amman Campus – (2006 – 2007)
- **Assistant Professor**, Computer Science Department, Princess Sumaya University for Technology, Jordan. Sep, 1993- Aug, 2006.
- **Lecturer, (Assistant Associé)** Université of Franche-Comté – France (IUT De Belfort). 1985-1988.

## Teaching Experience

- **Undergraduate Courses:** Programming Languages: C, C++, Java and Prolog. Data Structures, Algorithms Analysis and Design. Artificial Intelligence. Computer Graphics. Information System Security
- **M. Sc. Courses:** Natural Language Processing. Digital Image Processing. Advanced Algorithms Analysis and design. Security Risk Management and Analysis
- **Ph. D. Courses:** Natural Language Processing. Statistical Natural Language Processing. Research Methodology and Seminar. Machine Learning
- **E-Learning Experience:**  
I had initiated the use of e-learning in PSUT since 2003 by developing the PSUT e-learning platform. I conducted lectures for PSUT staff on the use of e-learning and to introduce the MOODEL technology. I had developed and posted more than 40 different courses on the platform. More than 80% of the PSUT professors are using now this platform at different levels. Currently, I am using the e-learning for almost all my courses. Within the IVLE Tempus project, I have developed a complete online course on e-commerce for a master degree on computer science. In addition, I had been selected as the main lecturer for the e-learning Network Engineering course organized by the Japan International Cooperation Agency (JICA), Menhaj Educational Technologies and three universities: Princess Sumaya University for Technology, University of Jordan and Birzeit University (Palestine).

## Awards

- Best Researcher at the School of Computing Science. Award from PSUT - 2018
- Best Researcher of the university. Award from PSUT - 2011
- The EL-Hassan Bin Talal award for Scientific Excellency in higher education for the MEDFORIST project and the establishment of the unit of research and development in e-learning – PSUT- 2006

## Fellowships and Scholarships

- Full B.Sc. Scholarship granted by Ministry of Education (Jordan) and CROUS France (1978 – 1983).
- Full M.Sc. Scholarship granted by CNOUS France (1983-1984).

## Languages

- **Arabic** (Mother tongue)
- **English** (Fluent Reading/Writing/Speaking)
- **French** (Fluent Reading/Writing/Speaking)

## Consultations:

- **Price WaterHouse Corporation Consulting** (2013-2014). Consultant for the reengineering of processes in Saudi Universities. This work includes the assessment of current situation as related to business processes, application functionalities, quality and excellence, the documentation of the As-Is Business processes, the development of Business processes prioritization frameworks and analysis, the development of the To-Be Architectures (Business processes, application profiles, and providing technical in-depth knowledge of the universities operations and core functions)
- **LEADS Technology (American Company)**- Consultant for image processing and image compression projects from 2002 – 2011.
- **Menhaj Educational Technologies (Jordanian Company)**: Consultant for the IT Curriculum development project for Abu Dhabi Schools – United Arab Emirates from 2001- 2005
- **UNESCO**: The United Nations Educational Scientific and Cultural Organization invited me to join a committee of experts for the preparation of the DRAFT recommendation on the promotion and use of the multilingualism and universal access to cyberspace. Feb. 2002
- **Orphans Fund Development Foundation (Public Organization)**: Consultant for the implementation and automation of the financial system and other business processes. From 1996 to 2000.

## Projects and Funds

1. **MEDFORIST Project (from 2002-2005, Fund received by PSUT: 120000 Euro)**: I was the country manager of the MEDFORIST project. MEDFORIST is a Euro Mediterranean project for building a network of universities and professors from European and Mediterranean universities to share IT resources, expertise and know-how. The main results for PSUT were: An E-learning Platform was created, Training 4 people from PSUT in France and Morocco, the organization of the first International Conference on E-Business and E-Learning (Participants from 40 countries), Establishing the MEDFORIST lab. (Unit for research and development in E-Business and E-Learning). **Winner of the El-Hassan award of scientific Excellency in 2006.**
2. **IVLE TEMPUS Project (from 2005 – 2008, Fund Received by PSUT: 20000 Euro)**: I was the coordinator of the Tempus project (IVLE) in PSUT. IVLE (INTEGRATED VIRTUAL LEARNING ENVIRONMENT: LEARNING SUPPORT SYSTEM) is a European funded project for developing new curricula in Mediterranean countries. This project aims at producing a complete curriculum for graduate studies in computer Science. The main advantages for PSUT were providing PSUT with Hardware and software to improve the e-learning capability of the university, 8 courses of the Master degree are developed on line by the partners of the project two of them were by PSUT.
3. **PSUT-GEM MIRA Project (2006-2008)**: I was the PSUT coordinator for this project. MIRA is funded by the Rhone-Alpes region in France for supporting the collaboration between PSUT and the Grenoble School of Management (GEM). It aimed at facilitating the exchange of professors, programs between the two institutions and organizing meetings and workshops for the MIS and CS departments' students in PSUT.

- 4. SERMANTEQ Tempus Project (2009-2011, Fund received by PSUT: 140000 Euro):**  
As the PST manager of the SERMANTEQ project, I had been in charge in charge of the implementation of the different activities relate to this project as well and to participate in the steering committee. SERAMTEQ is a TEMPUS funded EU project. It main objective was to modernize academic courses through development of new trainings in Technology Management and Marketing of Services; and reinforcement of processes policies concerning the trainings' quality, the students' services capacities, as well as those concerning the Mediterranean partner institutions' management.
- 5. MEDAWL (2012-2015):** The MEDAWEL project is a Tempus project that seeks to examine and improve the current student services' approach and structure within the Southern Neighboring Area participating higher education institutions. The project includes partners from Jordan, Lebanon, Egypt and Palestine, and is underpinned by the experience of partners from Spain, Ireland and United Kingdom. As the dean of students' affairs, I am in charge of the implementation of the project in PSUT in order to improve the services provided to students and share PSUT experience with the other partners.
- 6. Creating E-portal in Arabic to Support Health care in Jordan (2014-2016, Fund allocated to PSUT 65000 JD):** This project is funded by **Novo Nordisk foundation (Switzerland)** to create medical and social networking portal in order to increase awareness and good practices among patients and their families in Jordan. It includes different activities such as developing an electronic portal and Arabic website, organizing training workshops and awareness meeting and producing publications in Arabic. Arabic Language Content Research Centre in PSUT, Jordan University-Coagulation and Haemostasis, medical experts from the different health services (Ministry of health, Royal Medical Services and University hospitals) and ICT experts will work together to improve medical services, health care and support to patients with Haemophilia in all the regions of the country and surrounded countries.
- 7. JOVITAL Project. (from 2017 to 2020, 200,000Euro).** This is an EU funded project that offers Higher Education Institutions (HEIs) in Jordan the possibility to explore, implement, and disseminate state of the art academic practices in e-learning and virtual learning to enhance teaching quality and improve learning outcomes.
- 8. FORC Project. (from 2017 to 2020, 120,000 Euro).** This project seeks to build capacities to develop an integrated curriculum in forensic computing as pathways within the undergraduate degrees of the facilities of Information Technology and Law, using a student-centered adaptive learning approach based on the bologna processes.
- 9. Developing Semantic Representation Methods for Knowledge Discovery from Arabic Text. (From 2017 to 2020, 15000 JD)** This project is funded by the Scientific Research Fund (Jordanian Ministry of Higher Education and Scientific research). It aims at allowing automatic knowledge extraction from Arabic text. The first phase will be dedicated to collect and build semantically annotated corpus of Arabic texts from different resources. As semantic distinctions are always associated with other linguistic features such as morphological features, part of speech and syntax attributes, different solutions will be developed at the level of morphological analysis, Part of speech tagging and syntax analysis. Freely available resources will be used too to enrich the proposed work such as WordNet Synsets, Wikipedia and other freely available Arabic corpora. The main contribution of this project is to prove that semantic analysis and annotation of text will establish a systematic approach which can be used with success to extract information and knowledge from Arabic text. The expected results of the project will provide researchers and organizations with tools to help them in analyzing and understanding Arabic e-content.

## **Conferences and Workshops**

### **Conference Chair:**

1. **Conference Chair** of the International Conference on new Trends in Computing Sciences (ICTCS2019). Amman, Jordan 9-11 Oct. 2019.
2. **Conference Chair** of the International Conference on new Trends in Computing Sciences (ICTCS2017). Amman, Jordan 11-13 Oct. 2017.
3. **Chair of the Local organization committee** of the 4th International Conference on Next Generation Mobile Applications, Services and Technologies (NGMAST2010) organized in Amman on 27-29 July 2010
4. **Chair of the 5th Session (Artificial Intelligence)** – 2nd Jordan International Conference on Computer Science and Engineering. 5-7 December, 2006. Al Balqa' Applied University- Jordan.
5. **Chair of the Organizing Committee** and member of the Scientific Committee. First International Conference on E-Business and E-Learning (EBEL 2005). Amman, Jordan 23-24 May 2005.
6. **Chair of the organizing committee** of the 1<sup>st</sup> National Scientific Meeting in Informatics. Jordan Computer Society. Amman- Jordan, November, 1997.

### **Committees' Member: (Some of them)**

1. Member of the Technical Program committee of the International Conference on Information and Communication Systems (ICICS 2016). April 5-7, 2016 - Irbid –Jordan.
2. Member of the Technical Program Committee of the Mediterranean Conference on Information and Communication Technologies 2015, May 7-9, Saidia, Morocco.
3. Member of the Program committee of the 5<sup>th</sup> International conference on Information and Communication Technology and Accessibility, December 21-23, 2015, Marrakech, Morocco.
4. Member of the Program Committee of the Fourth International Conference on Information and Communication Technology and Accessibility, October 24-26, 2013, Hammamet, Tunisia
5. Member of the Technical Program Committee of the International Arab Conference of e-Technology IACe-T' 2012, organized by Zarqa University, Zarqa-Jordan April 25-27, 2012.
6. Member of the Expert Meeting on ESCWA Initiative for Promoting the Digital Arabic Content Industry through Technology Incubators. 1-2 October 2012, Amman, Jordan.
7. Member of the International Program committee of the Fourth IEEE International Symposium on Innovation in Information & Communication Technology (ISIICT 2011), November 29-December 1, 2011, Philadelphia University, Amman Jordan
8. Member of the Scientific Committee of the 2011 IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies (AEECT) organized by the Faculty of Engineering and Technology - University of Jordan, 6-8 December, 2011, Amman, Jordan
9. Member of the scientific committee of the conference of l'Association Francophone de Management Electronique (AFME). March 2008 27th and 28th Grenoble – France.
10. Program committee of the first International Conference on Information and Communication Technologies and Accessibility ICTA 2007 – April 12-14, 2007, Hammamet. Tunisia.

## **Memberships**

- Member of the Association of Computational Linguistics (ACL)
- Member of the Association of Computing Machinery (ACM)
- Member of the Institute of Electrical and Electronics Engineers (IEEE).
- Member of the IEEE – Computer Society.
- Member of the Jordan Computers Society.
- Founder member of the Jordanian the Intellectual Property Association

## **Professional Service**

- Member of the editorial board of the Jordanian Journal of Computers and Information Technology published by PSUT and sponsored by the Ministry of Higher Education and Scientific Research. (SCOPUS)
- Scientific Research Support Fund (Ministry of Higher Education & Scientific Research):
  - a. Member of the Scientific Committee of the SRSF since 2018
  - b. Head of the Scientific committee for the IT sector since 2018
  - c. Member of the Scientific committee for the IT sector from 2016 to 2018
  - d. Reviewers of SRSF projects proposals
- Member of the first executive board of the IEEE section in Jordan (2002)
- Reviewer for the Qatar National Research Fund project (QNRF) -Qatar Foundation
- Reviewer for the following journals:
  - a. Evolutionary Intelligence (SPRINGER)
  - b. Malaysian Journal of Computer Science (MJCS)
  - c. Jordan University journal “Dirassat”.
  - d. Jordanian Journal for applied Sciences.
  - e. Al – Manara for Research and Studies.
- External Examiner for many Master Thesis in Jordanian Universities (PSUT, Jordan University, Al-Bayt University, Philadelphia University, Al-Balqa’ applied University).

## **Activities in the local society**

- Employment-Technical and Vocational Education and Training Council
  - a. Member of the National Sector Skills Council for the ICT sector since 2018
- National Center for Human Resources Development:
  - a. Member of the committee in charge of analyzing and describing the jobs in the Information and communication technology (2017)
- Ministry of Higher Education:
  - a. Member of the committee in charge of redefining unified rules for the financial and administrative regulations in the Jordanian Public Universities (2015).
  - b. Member of the National Committee in charge of evaluating the Students deanships activities in Jordanian universities (2013 – 2014).
  - c. Member of the committee in charge of redefining the rules of the Computer Science programs accreditation in the Jordanian Universities.
- Jordan Computer Society:
  - a. Appointed by Her Royal Highness Princess Sumaya to represent her in the Jordan Computer Society (JCS) activities and meetings
  - b. Member of the JCS since 1996
  - c. Member of the editorial board of the Al-Hassoub Magazine from 1996- 2002
  - d. Member of the organizing committee of the Middle-East exhibition METS from 1995-1998 and 2003

- The National Information Center
  - a. Member of the legality of electronic documents committee (2001-2002)
  - b. Member of the national ICT committee (2006-)
- The Higher Council for Science and Technology
  - a. Member of the committee for National Observatory for science and technology 2008-2009
  - b. Member of the National Committee in charge of defining the research priorities in the ICT sector 2009-2010
  - c. Member of the National e-Technology Committee – Higher Council for Science and Technology (Jordan) from August 2008
- Ministry of Education: Member of the IT curricula committees and co-Author of electronic commerce books for the IT stream in the secondary schools
- Ministry of Health: Member of the National Hemophilia Committee from 2002-now
- Institute of Public Administration: Trainer and lecturer in several workshops and training courses on the use of ITC in public administration and public sector (2004-2006).
- Member of the steering committee of the Jordan UK Get-Connected initiative (2000-2005)
- Amman Chamber of Commerce: I was invited to give lectures (a week of training courses in 2006) on e-business and e-commerce.
- The Jordanian the Intellectual Property Association:
  - a. One of the founders of JIPA.
  - b. Member of the first executive boards and Chair of the Cultural committee.
- Member of the ICT planning Committee for the Al Hussein Bin Talal University – Ma'an – Jordan (2003-2005).
- Member of the International Society for Engineering education and Coordinator of the National Monitoring Committee of the ISEG in Jordan.
- Board member and vice president of the Jordan Thalassaemia and Hemophilia Society and chair of the Hemophilia committee at the of the Jordan Thalassaemia and Hemophilia Society from 2005 - now.
- Member of the National Hemophilia Committee in the Ministry of health from 2005-2012 and from 2018 – now.

### **Curricular and extra-curricular activities**

- Head of the committee in charge of writing the proposal for implementing a Ph.D. program in computer science in King Hussein Faculty of Computing Sciences (PSUT) 2014.
- Head of ABET accreditation committee- King Hussein Faculty of Computing Sciences, Princess Sumaya University for Technology, 2014- 2017.
- Head of the curriculum committee in KHFCSS in charge of updating and developing the undergraduates' curricula (B.Sc. Computer Sciences, Software Engineering) and graduates curricula (computer Sciences, Information Systems Security and Digital Criminology).

### **Scientific Research**

- Natural Language Processing, Arabic NLP
- Computational Linguistics, Text Mining
- Image Processing
- Machine Learning

## **Publications in International Journals:**

1. Al Etaiwi, **Awajan A.** 2020. Graph-based Arabic text semantic representation. *Information Processing & Management*. Volume 57, Issue 3, May 2020, doi.org /10.1016/j.ipm. 2019. 102183. Elsevier Journal. (ISI, Scopus).
2. Hriez S., **Awajan A.** 2020. Authorship Identification for Arabic Texts Using Logistic Model Tree Classification. In: Arai K., Kapoor S., Bhatia R. (eds) *Intelligent Computing*. SAI 2020. *Advances in Intelligent Systems and Computing*, Vol. 1229. Springer, Cham
3. Jusoh S., **Awajan A.**, Obeid N. 2020. The Use of Ontology in Clinical Information Extraction. *Journal of Physics: Conference Series*, Volume 1529 (2020).
4. Khader M., **Awajan A.**, Al-Naymat G., 2019. The Impact of Natural Language Preprocessing on Big Data Sentiment. *The International Arab Journal of Information Technology*, Vol. 16, No. 3A, 506-513 (ISI, Scopus).
5. Hamdan S., Hudaib A., **Awajan A.**, 2019. Detecting Sybil Attacks in Vehicular Ad Hoc Networks. *International Journal of Parallel Emergent and Distributed Systems*. TAYLOR & FRANCIS (ISI) DOI: 10.1080/17445760.2019.1617865
6. Tedmori S., **Awajan A.**, 2019. Sentiment Analysis Main Tasks and Applications: A Survey. *Journal of Information Processing Systems*. Vol.15, No.3, pp. 500-519, June 2019. DOI: 10.3745/JIPS.04.0120. (ISI, Scopus).
7. Alian M., **Awajan A.**, Ramadan B. 2019. Unsupervised Learning Blocking Keys Technique for Indexing Arabic Entity Resolution. *International Journal of Speech Technology*, Vol. 22, Number 3. DOI 10.1007/s10772-018-9489-6 (ISI, Springer - Scopus).
8. Etaiwi W., **Awajan A.**, 2018. Graph-based Arabic NLP Techniques: A Survey. *Procedia Computer Science*, Volume 142, 2018, Pages 328-333. Elsevier.
9. Al-Saqqa S., Al-Naymat G., **Awajan A.**, 2018. A large-Scale Sentiment Data Classification for Online Reviews Under Apache Spark. *Procedia Computer Science*, Volume 141, 2018, Pages 138-189. Elsevier.
10. Alian M., **Awajan A.** (2018) Arabic Tag Sets: Review. In: Arai K., Kapoor S., Bhatia R. (eds) *Intelligent Systems and Applications*. *IntelliSys 2018*. *Advances in Intelligent Systems and Computing*, Vol. 868. Springer, Cham
11. Abdelrazaq D., Abu-Soud S., **Awajan A.** 2018. A Machine Learning System for Distinguishing Nominal and Verbal Arabic Sentences. *The International Arab Journal of Information Technology*, Vol. 15, No. 3A, Special, pages. Pages 576-584. (ISI, Scopus).
12. Biltawi M. **Awajan A.**, Tedmori S, Al-Kouz A. 2017. Exploiting Multilingual Wikipedia to Improve Arabic Named Entity Resources. *The International Arab Journal of Information Technology*, Vol. 14, No. 4A, Special, pages 598-607.
13. Etaiwi W., **Awajan A.**, Suleiman D., 2017. Statistical Arabic Name Entity Recognition Approaches: A Survey. *Procedia Computer Science* 113 (2017) 57-64. Elsevier.
14. Suleiman D., **Awajan A.**, Etaiwi A., 2017. The Use of Hidden Markov Model in Natural Arabic Language Processing: a survey. *Procedia Computer Science* 113 (2017) 240-247. Elsevier
15. Alian M., **Awajan A.**, Al-Kouz A. 2016. Word sense disambiguation for Arabic text using Wikipedia and Vector Space Model. *International Journal of Speech Technology* (Springer). pp 1–11. DOI 10.1007/s10772-016-9376-y
16. **Awajan A.** 2016. Semantic Similarity Based Approach for Reducing Arabic Texts Dimensionality. *International Journal of Speech Technology* (Springer). June 2016, Volume 19, Issue 2, pp 191–201. DOI. 10.1007/s10772-015-9284-6. 13 Pages
17. Hudaib A., Suleiman D. **Awajan A.** 2016. A Fast Pattern Matching Algorithm Using Changing Consecutive Characters. *Journal of Software Engineering and*

- Applications, Volume 9, Number 8, 399-411. doi: 10.4236/jsea.2016.98026.
18. Dakroub H., Shaout A., **Awajan A.** "Connected Car Architecture and Virtualization," SAE International Journal of Passenger Cars – Electronic and Electrical Systems. Volume 9, Issue 1, May 2016, doi:10.4271/2016-01-0081.
  19. **Awajan A.** 2015. Keyword Extraction from Arabic Documents using Term Equivalence classes. ACM Transactions on Asian and Low-Resource Language Information Processing. Volume 14, Issue 2, Article 7 (March 2015), 18 pages. (ISI)
  20. **Awajan A.**, Abu Jrai E. 2015. Hybrid Technique for Arabic Text Compression. Global Journal of Computer Science and Technology, GJCST Volume 15 Issue 1. Pages 1-6.
  21. Sedki E., Alzaqah A., **Awajan A.** 2015. Arabic Text Dimensionality Reduction Using Semantic Analysis. WSEAS Transactions on Information Science and Applications. Volume 12, 2015, Art. #21. Pages 209-218.
  22. Sawalha S., **Awajan A.** 2014. Blank Background Image lossless Compression Technique, International Journal of Image Processing (IJIP), Vol. 8, Issue 1, Pages 9-16.
  23. Kasasbeh R., Al-Majali S., **Awajan A.** 2014. Expanding Aspect-Oriented Programming Toward Advanced Dynamic Network Level Aspects in C++, International Journal of Computer Science and Engineering (IJCSE), Vol. 3, Issue 1, Pages 105-112.
  24. Al-Doghmi A., AL-Shalabi H., Jwaifell M., Swidan A., **Awajan A.**, Alrabea A. 2013. The Academic Use of Social Networks among University Students in Jordan, IJCSI International Journal of Computer Science Issues, Vol. 10, Issue 5, Pages 134-141.
  25. **Awajan A.**, Al-Shalabi H., Awajan A. W., El-Omari N. 2013. E-Business Readiness in the SMEs in Jordan. International Journal of Management & Information Technology, Vol.4, No. 3, pp. 334-341.
  26. Jwaifell M., Al-Shalabi H., Swidan A., **Awajan A.**, Alrabea A. 2013. The Intensity of Social Networks Group Use among the Students of Jordanian Universities, GlobalJournal of computer Science and Technology (E). Vol.13, Issue 2, Pages 11-17.
  27. Swidan A., Al-Shalabi H., Jwaifell M., **Awajan A.**, Alrabea A. 2013. The Intensity and the Factors Affecting the Use of Social Network Sites Among the Students of Jordanian Universities, IJCSI International Journal of Computer Science Issues, Vol. 10, Issue 1.
  28. **Awajan A.** 2011. Multilayer Model for Arabic Text Compression. The International Arab Journal of Information Technology, Vol. 8, No. 2, Pages 188-196. (ISI)
  29. Aldasouqi I., **Awajan A.** 2011. Black Box Backup System. International Journal of Computer Science and Security (IJCSS), Vol. 5, Issue 3, Pages 368-375.
  30. Albalas F., Abu-Alhaija B., Awajan A. W., **Awajan A.**, Al-Begain K. 2010. Quality of Service for Multimedia and Real-Time Services, International Journal of Information Technology and Web Engineering Vol. 5, Issue 4, Pages 1-22.
  31. Atoum J., Bader D., **Awajan A.** 2008. Mining Functional Dependency from Relational Databases Using Equivalent Classes and Minimal Cover, Journal of Computer Science, Vol. 4, No. 5, Pages 421-426.
  32. El-Seoud S., **Awajan A.**, Al-Khasawneh B. 2008. Evaluating Quality and Student Acceptance of Web-Based Courses at a Jordanian University, International Journal of Computing and Information Sciences, Vol. 5, No. 3, Pages 95-103.
  33. **Awajan A.** 2007. Arabic Text Preprocessing for the Natural Language Processing Applications, Arab Gulf Journal of Scientific Research, Vol. 25, No. 4, Pages 179-189.
  34. **Awajan A.** 2003. A Rule-Based Morphological Analyzer of Arabic Word, WSEAS Transactions on Computers, Vol. 2, No. 2, Pages 493-502.
  35. **Awajan A.** 2001. Low-level Natural Language Technique for Arabic Text Processing, Proceedings of the ISCA 16th International Conference Computers and Their Applications, March 28-30, 2001, Seattle, Washington, USA. ISCA 2001, Pages 387-390.

36. **Awajan A.**, Atoum J., and Salameh W. 2000. A Fast Arabic Text Compression Technique, *Journal of the Institute of Mathematics and Computer Sciences (Computer Science Series)*, Vol. 11, No. 1.
37. **Awajan A.**, Rondot D., and Mignot J., Quick method of measuring the furrows distribution skin surface replicas, *Medical and Biological Engineering and Computing*, Vol. 27, No. 4, pp. 379-389. 1989.
38. **Awajan A.** , Rondot D., Mignot J., Agache P., Detection et quantification des plis par traitement d'image (Furrows detection and quantification by image processing). *Innovation et Technologie en Biologie et Médecine: ITBM Journal*, Vol. 10, No. 1, 1989. (In French)
39. **Awajan A.**, Rondot D., Mignot J., Détection et quantification des plis principaux et secondaires de la peau par traitement et analyse d'images vidéo, *Innovation et technologie en biologie et médecine : ITBM*, Vol. 10, No. 1, pp. 53-67, 1989. (In French)

### **Publications in International Conferences**

1. Sawalha S. **Awajan A.** 2020. Recent News Recommender Using Browser's History. Accepted as full paper in the Intelligent Systems Conference (IntelliSys) 2020. 3-4 September 2020 - Amsterdam, The Netherlands.
2. Alian M. **Awajan A.** 2020. Paraphrasing Identification Techniques in English and Arabic Texts. The 11th International Conference on Information & Communication Systems April 7– 9 2020, Irbid, Jordan. Pages 155-160
3. Alian M. **Awajan A.** 2020. Evaluating Factors Affecting Sentences Similarity And Paraphrasing Identification Using K-Means Clustering. Proceeding of the 35th IBIMA conference. 1-2 April, Seville, Spain.
4. Al-Saqqa S., **Awajan A.** 2019. The Use of Word2vec Model in Sentiment Analysis: A Survey. AIRC '19: Proceedings of the 2019 International Conference on Artificial Intelligence, Robotics and Control, December 2019, Pages 39–43, <https://doi.org/10.1145/3388218.3388229>
5. Hriez S., Obeid N., **Awajan A.** 2019. User Authentication on Smartphones Using Keystroke Dynamics. Proceedings of DATA'19, December 2–5, 2019, Dubai, United Arab Emirates. Copyright 2019 Association for Computing Machinery. ACM ISBN 978-1-4503-7284-8/19/12. DOI: <http://doi.org/10.1145/3368691.3368725>.
6. Alian M. **Awajan A.**, Al-Hasan A., Akuzhia R. 2019. Towards Building Arabic Paraphrasing Benchmark. Proceedings of DATA'19, December 2–5, 2019, Dubai, United Arab Emirates. Copyright 2019 Association for Computing Machinery. ACM ISBN 978-1-4503-7284-8/19/12. DOI: <http://doi.org/10.1145/3368691.3368708>.
7. Suleiman D., **Awajan A.** 2019. Deep Learning Based Extractive Text Summarization: Approaches, Datasets and Evaluation Measures. Proceedings of Sixth International Conference on Social Networks Analysis, Management and Security (SNAMS). Granada, Spain. October 22-25, 2019. 10.1109/SNAMS.2019.8931813. Pages 204-210.
8. Al-Saqqa S., **Awajan A.**, Ghouli S. 2019. Stemming Effects on Sentiment Analysis using Large Arabic Multi-Domain Resources. Proceedings of Sixth International Conference on Social Networks Analysis, Management and Security (SNAMS). Granada, Spain. October 22-25, 2019. 10.1109/SNAMS.2019.8931812. Pages 211-216.
9. Al Etaiwi, **Awajan A.**, Suleiman D. 2019. Keywords Extraction from Arabic Documents Using Centrality Measures. Proceedings of Sixth International Conference on Social Networks Analysis, Management and Security (SNAMS). Granada, Spain. October 22-25, 2019. 10.1109/SNAMS.2019.8931808. Pages 237-241.
10. Alhijawi B., Al-Naymat G., Obeid N., **Awajan A.** 2019. Mitigating the Effect of Data

- Sparsity: A Case Study on Collaborative Filtering Recommender System. Proceedings of the 2nd International Conference on new Trends in Computing Science (ICTCS'19). 9-11 October 2019, Amman- Jordan. Pages 136-141.
11. Abdel-Nabi H., Al-Naymat G., **Awajan A.** 2019. Content Based Image Retrieval Approach using Deep Learning. Proceedings of the 2nd International Conference on new Trends in Computing Science (ICTCS'19). 9-11 October 2019, Amman- Jordan. Pages 170-177.
  12. Hamdan S., **Awajan A.**, Almajali S. 2019. Compression Techniques Used in IoT: A Comparative Study. Proceedings of the 2nd International Conference on new Trends in Computing Science (ICTCS'19). 9-11 October 2019, Amman- Jordan. Pages 2018-212.
  13. Halabi D., **Awajan A.** 2019. Graph-Based Arabic Key-Phrases Extraction. Proceedings of the 2nd International Conference on new Trends in Computing Science (ICTCS'19). 9-11 October 2019, Amman- Jordan. Pages 244-250.
  14. Suleiman D., **Awajan A.** 2019. Using Part of Speech Tagging for Improving Word2vec Model. Proceedings of the 2nd International Conference on new Trends in Computing Science (ICTCS'19). 9-11 October 2019, Amman- Jordan.
  15. Biltawi M., **Awajan A.**, Tedmori S. 2019. Evaluation of Question Classification. Proceedings of the 2nd International Conference on new Trends in Computing Science (ICTCS'19). 9-11 October 2019, Amman- Jordan.
  16. Suleiman D., **Awajan A.**, Al Etaiwi W. 2019. Arabic Text Keywords Extraction using Word2vec. Proceedings of the 2nd International Conference on new Trends in Computing Science (ICTCS'19). 9-11 October 2019, Amman- Jordan. Pages 251-257.
  17. Al Etaiwi W., **Awajan A.** 2019. Arabic Text Semantic Graph Representation. Proceedings of the 2nd International Conference on new Trends in Computing Science (ICTCS'19). 9-11 October 2019, Amman- Jordan. Pages 265-271.
  18. Alsadi M., Ghnemat R., **Awajan A.** 2019. Accelerating Stochastic Gradient Descent using Adaptive Mini-Batch Size. Proceedings of the 2nd International Conference on new Trends in Computing Science (ICTCS'19). 9-11 October 2019, Amman- Jordan. Pages 293-300.
  19. Hamdan S., **Awajan A.**, Al-Kouz A. 2019. Using Minimum Distance to Classify Uttered Arabic Words into Subject-Object Name. Proceedings of the 6th International Conference on Information Technology, Computer, and Electrical Engineering (ICITACEE), Sep 26-27, 2019, Semarang, Indonesia
  20. Khader M., **Awajan A.** Al-Naymat G., 2018. Sentiment Analysis based on MapReducer: A Survey. Proceedings of the 10<sup>th</sup> International Conference on Advances in Information Technology. 10-13 December 2018, Bangkok, Thailand.
  21. Etaiwi W., **Awajan A.**, 2018. Learning Graph Representation: A Comparative Study. Proceedings of the 19th International Arab Conference on Information Technology (ACIT'2018). 28-30 November 2018. Beirut, Lebanon.
  22. Suleiman D., **Awajan A.**, 2018. Comparative study of word embedding models and their usage in Arabic language applications. Proceedings of the 19th International Arab Conference on Information Technology (ACIT'2018). 28-30 November 2018. Beirut, Lebanon.
  23. Alian M., **Awajan A.**, 2018. Arabic Semantic Similarity Approaches – Review. Proceedings of the 19th International Arab Conference on Information Technology (ACIT'2018). 28-30 November 2018. Beirut, Lebanon.
  24. Khader M., **Awajan A.** Al-Naymat G., 2018. The Effects of Natural Language Processing on Big Data Analysis. Proceedings of the 19th International Arab Conference on Information Technology (ACIT'2018). 28-30 November 2018. Beirut, Lebanon.
  25. Etaiwi W., **Awajan A.**, 2018. Graph-based Arabic NLP Techniques: A Survey. The 4th International Conference on Arabic Computational Linguistics (ACLing 2018), November 17-19 2018, Dubai, United Arab Emirates. Procedia Computer Science, Volume 142, 2018, Pages 328-333. Elsevier.

26. Al-Saqqa S., Al-Naymat G., **Awajan A.**, 2018. A large-Scale Sentiment Data Classification for Online Reviews Under Apache Spark. The 9th International Conference on Emerging Ubiquitous Systems and Pervasive Networks (EUSPN 2018). November 5-8, 2018, Leuven, Belgium. *Procedia Computer Science*, Volume 141, 2018, Pages 138-189. Elsevier.
27. Al-Saqqa S., Nadeim N., **Awajan A.**, 2018. Sentiment Analysis for Arabic Text Using Ensemble Learning. The proceedings of 15th ACS/IEEE International Conference on Computer Systems and Applications AICCSA 2018, October 28<sup>th</sup> to November 1<sup>st</sup>, 2018. Aqaba – Jordan.
28. Hamdan S., Hudaib A., **Awajan A.**, 2018. Hybrid Algorithm to Detect the Sybil Attack in VANET. Proceedings of the The Fifth International Symposium on Innovation in Information and Communication Technology (ISIICT 2018). October 31 - November 01, 2018, Philadelphia University, Amman, Jordan.
29. Alhijawi B., Hriez S., **Awajan A.**, 2018. Text-Based Authorship Ide notification: A Survey. Proceedings of the The Fifth International Symposium on Innovation in Information and Communication Technology (ISIICT 2018). October 31 - November 01, 2018, Philadelphia University, Amman, Jordan.
30. Al-Saqqa S., Abdel-Nabi H., **Awajan A.**, 2018. A Survey of Text Emotion Detection. Proceeding of the 8<sup>th</sup> International Conference of Computer Science & Information Technology (CSIT 2018). July 11-12 2018. Amman – Jordan.
31. Abdel-Nabi H., **Awajan A.**, Obeid N., 2018, A Novel Histogram Shifting Reversible Data Hiding Scheme for Color Images. Proceeding of the 8<sup>th</sup> International Conference of Computer Science & Information Technology (CSIT 2018). July 11-12 2018. Amman – Jordan.
32. Alhijawi B., Obeid N., **Awajan A.** and Tedmori S. 2018. Improving Collaborative Filtering Recommender System Using Semantic Information. Proceedings of the International Conference on Information and Communication Systems. April 3-5 2018, Irbid. Jordan.
33. Biltawi M., **Awajan A.**, Tedmori S. (2017), Towards Building a Frame-Based Ontology for the Arabic Language. Proceedings of the International Arab Conference on Information Technology. December 22-24, 2017. Yasmine Hammamet Tunisia.
34. Abdelrazaq D., Abu-Soud S., **Awajan A.** (2017) Distinguishing Nominal and Verbal Arabic Sentences: A Machine Learning Approach. Proceedings of the International Arab Conference on Information Technology. December 22-24, 2017. Yasmine Hammamet Tunisia.
35. Hraiz R., Khader M., **Awajan A.**, Al-Kouz A. (2017) Semantic Elements Extraction based on Syntactic Structure of Arabic Sentences. Proceedings of the International Arab Conference on Information Technology. December 22-24, 2017. Yasmine Hammamet Tunisia.
36. Suleiman D., **Awajan A.**, 2017. Bag-of-Concept Based Keyword Extraction from Arabic Documents. Proceedings of the 8th International Conference on Information Technology. IEEE technically sponsored Conference, 16-18 May 2017. Amman- Jordan.
37. Etaiwi W., **Awajan A.**, Suleiman D., 2017. Statistical Arabic Name Entity Recognition Approaches: A Survey. The 8th International Conference on Emerging Ubiquitous Systems and Pervasive Networks (EUSPN-2017). September 18-20, 2017, Lund, Sweden. *Procedia Computer Science* 113 (2017) 57-64. Elsevier.
38. Suleiman D., **Awajan A.**, Etaiwi A., 2017. The Use of Hidden Markov Model in Natural Arabic Language Processing: a survey. The 8th International Conference on Emerging Ubiquitous Systems and Pervasive Networks (EUSPN-2017). September 18-20, 2017, Lund, Sweden. *Procedia Computer Science* 113 (2017) 240-247. Elsevier
39. Etaiwi W., **Awajan A.**, 2017. The Effects of Features Selection Methods on Spam Review Detection Performance. Proceedings of the International Conference on New Trends in Computing Sciences (ICTCS 2017), Amman, Jordan. 978-1-5386-0527-1/17 © 2017 IEEE. DOI 10.1109/ICTCS.2017.50. Pages 116-120

40. Halabi D., **Awajan A.**, Fayyoubi E., 2017, Arabic LFG-inspired Dependency Treebank. Proceedings of the International Conference on New Trends in Computing Sciences (ICTCS 2017), Amman, Jordan. 978-1-5386-0527-1/17 © 2017 IEEE, DOI 10.1109/ICTCS.2017.49. Pages 207- 215
41. Suleiman D., **Awajan A.**, Al-Madi N., 2017. Deep Learning Based Techniques for Plagiarism Detection in Arabic Texts. Proceedings of the International Conference on New Trends in Computing Sciences (ICTCS 2017), Amman, Jordan. 978-1-5386-0527-1/17 © 2017 IEEE, DOI 10.1109/ICTCS.2017.42. Pages 216- 222
42. Al-Zewairi m., Almajali S., **Awajan A.** Experimental Evaluation of a Multi-Layer Feed-Forward Artificial Neural Network Classifier for Network Intrusion Detection System. Proceedings of the International Conference on New Trends in Computing Sciences (ICTCS 2017), Amman, Jordan. 978-1-5386-0527-1/17 © 2017 IEEE, DOI 10.1109/ICTCS.2017.29. Pages 167-172
43. Alian M., **Awajan A.**, Al-Kouz A. 2017, Arabic Word Sense Disambiguation – Survey. Proceedings of the International Conference on New Trends in Computing Sciences (ICTCS 2017), Amman, Jordan. 978-1-5386-0527-1/17 © 2017 IEEE, DOI 10.1109/ICTCS.2017.23. Pages 236- 240
44. Alian M., **Awajan A.**, Al-Kouz A. 2016. Arabic Word Sense Disambiguation Using Wikipedia. International Conference on Computer and Applications ICCA'16, September 14-15, 2016 Dubai, United Arab Emirates
45. Khader M. **Awajan A.**, Al-Kouz A. 2016. Textual Entailment for Arabic Language based on Lexical and Semantic Matching. International Conference on Computer and Applications ICCA'16, September 14-15, 2016 Dubai, United Arab Emirates.
46. Hudaib A., Suleiman D., **Awajan A.** 2016. Dynamic Berry Ravindran Algorithm for Pattern Matching (DBR). Proceeding of the 16th International Conference on Applied Computer Science (ACS '16), Istanbul, Turkey, April 15-17, 2016
47. Biltawi M., Etaiwi W, Tedmori S., Hudaib A., **Awajan A.** 2016. Sentiment Classification Techniques for Arabic Language: A Survey. Proceedings of the International Conference on Information and Communication Systems (ICICS 2016). April 5-7, 2016, Irbid –Jordan.
48. **Awajan A.** 2015. Semantic Vector Space Model for Reducing Arabic Text Dimensionality. Proceedings of the 5<sup>th</sup> International Conference on Digital Information and Communication Technology and its Applications (DICTAP 2015). 6 Pages.
49. Abu Allawi M. A., Hadi A., **Awajan A.** 2015. Proceeding of the Fourth International Conference on Cyber Security, Cyber Warfare, and Digital Forensic (CyberSec2015) Sampoerna University, Jakarta, Indonesia. October 29-31, 2015. 6 Pages.
50. **Awajan A.** 2014. Unsupervised Approach for Automatic Keyword Extraction from Arabic Documents, Proceedings of the 26th International Conference on Computational Linguistics and Speech Processing ROCLING 2014, Pages 175-184.
51. Aldasouqi I, **Awajan A.** 2014. Intelligent Border Security Interactive Simulation Tool (IBS-IST), Proceedings of Mathematics and Computers in Science and Industry: Mathematics and Computers in Science and Engineering Series - MCSI 2014, Published by WSEAS LLC, Pages 57- 61.
52. Al-kouz A., **Awajan A.**, Jeet M., Al-Zaqqa A. 2013. Extracting Arabic Semantic Graph from Aljazeera.net, IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies AEECT, 3-5 Dec 2013, DOI: [10.1109/AEECT.2013.6716451](https://doi.org/10.1109/AEECT.2013.6716451)
53. Omari N., **Awajan A.** 2009. Document Image Segmentation and Compression Using Artificial Neural Network Based Technique, Proceedings of the International Conference on Information and Communication Systems, December 20-22, 2009. Amman – Jordan.
54. Fraij F., AlQuraan M., Winter V., **Awajan A.**, Al-Awamleh I. Software-Assisted

- Pedagogy for a Mathematics Course, Proceedings of the Annual Conference of the 2nd International Centre for Innovation in Education- Ulm-Germany, August 24- 27, 2009.
55. El-Seoud S., Al-Khasawneh B., **Awajan A.** 2007. Using Web-Based Course to Enhance Educational Process at Jordan Universities – A Case Study. in Proceedings of the International Conference of "Interactive computer aided learning" ICL2007, Villach, Austria. 26-28, 2007. 10 pages. Conference listed in Telearn open archive.
  56. Sammour G., **Awajan A.** 2005. A Proposed Quality Assurance System (QAS) for e-Learning Solutions, International E-Business Conference, June 23-25 June 2005.
  57. **Awajan A.** 2001. Low-level Natural Language Technique for Arabic Text Processing, Proceedings of the ISCA 16th International Conference Computers and Their Applications, March 28-30, 2001, Seattle, Washington, USA. ISCA 2001, Pages 387-390.
  58. **Awajan A.** 2000. A Statistical Model for Arabic Text Compression, Proceedings of the 19th IASTED International Conference on Modeling, Identification and Control. Innsbruck-Austria, February 14-17 2000, Pages 562-566.
  59. Nardin P., **Awajan A.**, Le Palec G., Rondot D., Quality Control by Infrared images treatment, 5th IASTED International Conference on Reliability and Quality Control, Lugano- Switzerland, June 20-22, 1989
  60. **Awajan A.** , Rondot D., Mignot J., Agache P., Detection et quantification des plis par Mignot J., **Awajan A.**, Nardin P., Rondot D., Analyse quantitative des elements caracteristiques de certaines images de visualization (Quantitative Analysis of image of visualization), Proceedings of the 3rd Colloque National de Visualisation et de traitement d'images, Belfort-FRANCE, May 18-20 , 1988, pp. c271-c276. (In French)
  61. Nardin P., **Awajan A.**, Rondot D., Mignot J., Description d'un logiciel pour l'analyse locale des images de phenomenes physiques evaluant au cours du temps, Proceedings of the 3<sup>rd</sup> Colloque National de Visualisation et de traitement d'images, Belfort-FRANCE, May 18-20, 1988, pp. c191-c194. (In French)
  62. Rondot D., **Awajan A.**, Mignot J., Galal T., Detection et quantification des structure lineaires d'une image (Linear structures detection and quantification), Proceedings of the 3rd Colloque National de Visualisation et de traitement d'images), Belfort-FRANCE, May 18-20 , 1988, pp. c261-c264. (In French)
  63. **Awajan A.** , Mignot J., Rondot D., Stamon G., Controle de qualite des surfaces de materiaux industriels par traitement d'images (Surface Quality Control by Image Processing), The 6<sup>th</sup> IASTED International Conference on Identification, Modeling and Simulation, Paris-France, June, 1987. (In French)
  64. **Awajan A.**, Mignot J., Rondot D., Stamon G., The Detection and Analysis Of Linear Forms Of An Image. Proceedings of the Mari 87 (Intelligent Network and Machines) Conference: Electronic Image, Paris La Villette - FRANCE, May 18-22, 1987.
  65. **Awajan A.** , Mignot J., Rondot D., Stamon G., Quantification rapide des elements caracteristiques d'une surface en biologie cutanee (Biological surfaces quantification by image processing), Proceedings of the AFCET - IASTED Conference of Identification And Pattern Recognition, Toulouse - FRANCE, June 18-20, 1986, pp. 895-912. (In French)
  66. Mignot J., **Awajan A.**, Rondot D., Stamon G., Image analysis and 3D profilometry of the human skin surface, Proceedings of the 8th Annual Conference of the IEEE Engineering in Medicine and Biology Society, Fort Worth, Dallas - USA, Nov. 7-10,1986.
  67. Galal T., **Awajan A.**, Mignot A., The distribution of EM-W scattering over cutaneous surface, Proceedings of the 8th Annual Conference of the IEEE Engineering in Medicine and Biology Society, Fort Worth, Dallas - USA, Nov. 7-10, 1986, pp. 1400-1413.

## **Publications (In Arabic)**

1. **Awajan A.** 1999. Software Quality for the Software Industry. The Second Conference of the Jordan Quality Society Nov. 1999. (In Arabic)
2. **Awajan A.** 1997. Quality Metrics for Information Systems. Al-Hassoub - Journal of the Jordan Computer Society, No. 32, November – 1997. (In Arabic)
3. **Awajan A.** 1997. Computer Crimes. Al-Hassoub - Journal of the Jordan Computer Society, No. 30, May – 1997. (In Arabic)
4. **Awajan A.,** Artificial Intelligence and Applications. Al-Hassoub - Journal of the Jordan Computer Society, No. 29, March – 1997. (In Arabic)
5. **Awajan A.,** The Internet: Statistical Study of the WEB, Al- Hassoub - Journal of the Jordan Computer Society, No. 28, December- 1996. (In Arabic)
6. **Awajan A.,** Images Processing by computer, Al-Hassoub - Journal of the Jordan Computer Society, No. 25, July-1996. (In Arabic)
7. **Awajan A.,** Universities and the IT industry, Al-Hassoub – the Journal of the Jordan Computer Society No. 22, August 1995. (In Arabic)

### **Invited Speaker**

1. **Awajan A. et Al.** Seminar on Arabic Electronic Content Industry. Al Arab Alyoum Newspaper (Jordan). Oct 31, 2012.
2. **Awajan A.** E-environment Solution for the Knowledge Cities. The 15th general Assembly of the Arab Towns Organization: Cities of knowledge and the future of youth. Kuwait, 2-5/10/2010. Knowledge Cities: Intelligent Techniques and e-services
3. **Awajan A.** The Credit Hour System in the Jordanian Universities. International meeting on the LMD system. Ministry of Higher education in Algeria. Algeria. 30-31 May 2007.
4. **Awajan A.** Software Quality for the Software Industry. The 2nd Scientific meeting of the Jordanian Association for Quality. 1998.

### **Books**

1. Abu Ali M., Hattab E., Abu Saoud S., and **Awajan A.,** E-commerce (level III). published by the Ministry of National Education, Amman-Jordan, 2004 (in Arabic)
2. Abu Ali M., Hattab E., Abu Saoud S., and **Awajan A.,** E-commerce (level II). published by the Ministry of National Education, Amman-Jordan, 2006 (in Arabic).

### **Editors of Proceedings**

1. Editor of the Proceedings of the International Conference on new Trends in Computing Sciences (ICTCS2019). Amman, Jordan 9-11 Oct. 2019.
2. Editor of the Proceedings of the International Conference on new Trends in Computing Sciences (ICTCS2017). Amman, Jordan 11-13 Oct. 2017.
3. Co-editor of the Proceedings of the first International Conference on E-Business and E-Learning (EBEL 2005) with Prof. Bernard Chapelet from the Business School of Grenoble (Grenoble Ecole of Management– France). Amman, Jordan 23-24 May 2005

### **Supervision of PhD Thesis:**

1. Dima Sulieman: Deep Learning Based Abstractive Text Summarization 2018-2020
2. Wael Etawi: Semantic Graph Learning for Abstractive Text Summarization 2018 - 2020
3. Dana Halabi: Enhanced Arabic Dependency Parsing based on Trab theory using Machine Learning Techniques. Co-Supervised by Dr. Ebaa Fayoumi (2018 - )
4. Marwah Alian: Measuring Semantic Similarity for Arabic Sentences Using Machine Learning. (2018 - )

5. Maryam Beltawi: Neural Machine Understanding for Arabic Text. Co-Supervised by Dr. Sara Tedmori. (2018 - )
6. Bushra Hijawi: A Graph-based Collaborative Filtering Recommender System using Optimization (9 / 2020 -

### **Supervision of Master Theses Supervised:**

1. Eyad Ahmad AlDasouqi, Spring 2011-2012, Hybrid Model for Network Information Security Management System.
2. Majid Hussein, Summer 2011, New approach for Securing E-payment.
3. Sami Abdel-Hakeem Al Saady, Spring 2012-2013, Semantic Approach for Automatic Clustering of Arabic Documents.
4. Samer Fakhri Sawalha, Fall 2013-2014, Blank Background Image Compression & Storage
5. Drgham Abu Jaffal, Fall 2013-2014, Arabic Text Compression techniques.
6. Rawan Saleh Kasasbeh, Spring 2013-2014, Expanding Aspect-oriented Programming toward Advanced Dynamic Network level Aspects in C++.
7. Enas Abu Jrai, Spring 2013-2014 (Middle East University), Hybrid Technique for Arabic Text Compression
8. Maram Majali, Summer 2013-2014, Supervised Keywords Extraction and Evaluation form Arabic Texts.
9. Duaa AbdelRazzaq, Fall 2013-2014, Distinguishing nominal and verbal Arabic sentences: A machine learning approach. Co-Supervised by Dr. Saleh Abu Soud.
10. Eman Mussa, Fall 2014-2015, Arabic Named Entities recognition Using Phrase Analysis
11. Safaa Hudaib, Fall 2014-2015, Using Dynamic Bayesian Network for Arabic Part of Speech Disambiguation
12. Abdelfatah Zaqqqa, Fall 2014-2015, Arabic POS Tagging and Morphological Analyzing.
13. Heyam Abu Khalifeh, Fall 2014-2015, User-Interface Web Recommender System, Co-Supervised by Dr. Edward Jaser.
14. Enas Sedqi, Fall 2015-2016, Semantic Features Extraction for Arabic Text Classification.
15. Tareq Radaideh, Fall 2016-2017, Co-Supervised by Dr. Sab' Alaesh.
16. Maiss Nawaiseh, Fall 2016 – 2017, Co-Supervised by Dr. Firas Rejub.
17. Maroa Shoubaki, Fall 2017-2018, Semantic Based Arabic English Machine Translation.
18. Muayyad AlSadi, Fall 2017-2018, Image recognition by transferring knowledge from pre-trained start-of-art models. Co-supervised with Dr Rawan Ghnemat