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Brief:

My goal is to excel in everything I do and positively affect as many people as I can. As a faculty member at JUST, I have taught 15 different courses at all levels (from 0-level remedial courses to 700-level advanced graduate-level courses) with a total enrollment of more than 1900 students. I served as a Department Chairperson for two years before I started my position as a Vice Dean. Throughout my administrative work, I participated in numerous committees and I have been entrusted with supervising the students' innovative and extracurricular activities. I have supervised 180 students at all levels: one at the PhD-level (jointly supervised with Dr. Fumie Costen from the University of Manchester), 56 at the MSc-level (45 already graduated), 123 at the BSc-level (for their Senior/Capstone/Graduation Project). Also, I served in 39 thesis defense committees (both within and outside my institution). My main areas of interest are Artificial Intelligence (and its various application in Natural Language Processing, Image Processing, etc.) and Software-Defined Systems and other emerging computing systems (such as Cloud/Fog Computing, general-purpose computing on GPU, etc.). I published 175 papers, some of which are well-received by the community as they won or were nominated for Best Paper Awards and they are widely-read and well-cited (2645 citations on Google Scholar and 1324 on Scopus). My collaborators and I have received more than \$96K in seed funds. I was the Guest Editor for three special issues of reputable journals. I helped in organizing dozens of conferences and workshops. I served in several journal editorial boards and conference/workshop TPCs.

Education:

- State University of New York at Stony Brook, Stony Brook, NY 2010
Computer Science Department
PhD in Computer Science
Dissertation title: "Dynamic Spectrum Allocation in Cellular Networks"
<http://hdl.handle.net/1951/55350>
Advisor: Himanshu Gupta
- State University of New York at Stony Brook, Stony Brook, NY 2006
Computer Science Department
MSc in Computer Science
- Jordan University of Science and Technology, Irbid, Jordan 2004
Computer Science Department
BSc in Computer Science

Work Experience:

- External Consultant 2018 – now
Samsung R&D Institute of Jordan, Amman, Jordan

- Vice Dean, Faculty of Computer and Information Technology, 2017 – now
Jordan University of Science and Technology (JUST), Irbid, Jordan
- Department Chairperson, Computer Science Department, 2015 – 2017
Jordan University of Science and Technology (JUST), Irbid, Jordan
- Associate Professor, Computer Science Department, 2015 – now
Jordan University of Science and Technology (JUST), Irbid, Jordan
- Assistant Professor, Computer Science Department, 2010 – 2015
Jordan University of Science and Technology (JUST), Irbid, Jordan

Publications

Book Chapters:

- B1. Nawaf Abdulla, Nizar Ahmed, Mohammed Shehab, **Mahmoud Al-Ayyoub**, Mohammed Al-Kabi and Saleh Al-rifai. "Towards Improving the Lexicon-Based Approach for Arabic Sentiment Analysis." *Big Data: Concepts, Methodologies, Tools, and Applications*. IGI Global, 2016.

Journal Papers:

- J1. Ali Shatnawi, Yathrip AlZahouri, Mohammed Shehab, Yaser Jararweh and **Mahmoud Al-Ayyoub**. Toward A New Approach for Sorting Extremely Large Data Files in the Big Data Era. *Cluster Computing*. To appear.
<https://doi.org/10.1007/s10586-018-2860-1>
- J2. **Mahmoud Al-Ayyoub**, Esra'a Alawneh, Yaser Jararweh, Mohammad Al-Smadi and Brij Gupta. Collaboration Networks of Arab Biomedical Researchers. *Multimedia Tools and Applications (MTAP)*. To appear.
<https://doi.org/10.1007/s11042-018-6557-5>
- J3. **Mahmoud Al-Ayyoub**, Abed Allah Khamaiseh, Mohammed Al-Kabi and Yaser Jararweh. A Comprehensive Survey of Arabic Sentiment Analysis. *Journal of Information Processing and Management (IP&M)*. To appear.
<https://doi.org/10.1016/j.ipm.2018.07.006>
- J4. Shadi AlZu'bi, Mohammed Shehab, **Mahmoud Al-Ayyoub**, Yaser Jararweh and Brij Gupta. Parallel Implementation for 3D Medical Volume Fuzzy Segmentation. *Pattern Recognition Letters*. To appear.
<https://doi.org/10.1016/j.patrec.2018.07.026>
- J5. **Mahmoud Al-Ayyoub**, Nusaiba Mnayyis, Mohammad Alsmirat, Khaled Alawneh, Yaser Jararweh and Brij Gupta. SIFT Based ROI Extraction for Lumbar Disk Herniation CAD System from MRI Axial Scans. *Journal of Ambient Intelligence and Humanized Computing (JAIHC)*. To appear.
<https://doi.org/10.1007/s12652-018-0750-2>
- J6. Mohammad Al-Smadi, Bashar Talafha, **Mahmoud Al-Ayyoub** and Yaser Jararweh. Using Long Short-Term Memory Deep Neural Networks for Aspect-Based Sentiment Analysis of Arabic Reviews. *International Journal of Machine Learning and Cybernetics (IJMLC)*. To appear.
<https://doi.org/10.1007/s13042-018-0799-4>
- J7. Yaser Jararweh, **Mahmoud Al-Ayyoub**, Du'a Al-Zoubi and Elhadj Benkhelifa. An Experimental Framework for Future Smart Cities Using Data Fusion and Software Defined Systems: The Case of Environmental Monitoring for Smart Healthcare. *Future Generation Computer Systems (FGCS)*. To appear.
<https://doi.org/10.1016/j.future.2018.01.038>

- J8. Mohammad Al-Smadi, **Mahmoud Al-Ayyoub**, Yaser Jararweh and Omar Qawasmeh. Enhancing Aspect-Based Sentiment Analysis of Arabic Hotels' Reviews using Morphological, Syntactic and Semantic Features. *Journal of Information Processing and Management (IP&M)*. To appear.
<https://doi.org/10.1016/j.ipm.2018.01.006>
- J9. Mohammad Alsmirat, Fatimah Al-Alem, **Mahmoud Al-Ayyoub**, Yaser Jararweh and Brij Gupta. Impact of Digital Fingerprint Image Quality on the Fingerprint Recognition Accuracy. *Multimedia Tools and Applications (MTAP)*. To appear.
<https://doi.org/10.1007/s11042-017-5537-5>
- J10. **Mahmoud Al-Ayyoub**, Mohammed Alandoli, Yaser Jararweh, Mohammad Al-Smadi and Brij Gupta. Improving Fuzzy C-Mean-Based Community Detection in Social Networks Using Dynamic Parallelism. *Computers and Electrical Engineering*. To appear.
<https://doi.org/10.1016/j.compeleceng.2018.01.003>
- J11. Mohammad Alsmirat, Khaled Alawneh, **Mahmoud Al-Ayyoub** and Mays Al-Dwiekat. Building a Simulated Educational Environment for the Diagnosis of Lumbar Disk Herniation Using Axial View MRI Scans. *International Journal of Advanced Intelligence Paradigms (IJAIP)*. To appear.
- J12. Yaser Jararweh, **Mahmoud Al-Ayyoub**, Maged Fakirah, Luay Alawneh and Brij Gupta. Improving the Performance of the Needleman-Wunsch Algorithm Using Parallelization and Vectorization Techniques. *Multimedia Tools and Applications (MTAP)*. To appear.
<https://doi.org/10.1007/s11042-017-5092-0>
<https://github.com/M12Shehab/Needleman-Wunsch-Global-Alignment-Algorithm>
- J13. Jafar Al-Badarneh, Yaser Jararweh, **Mahmoud Al-Ayyoub**, Ramon Fontes, Mohammad Al-Smadi and Christian Rothenberg. Cooperative Mobile Edge Computing System for VANET-Based Software Defined Content Delivery. *Computers and Electrical Engineering* 71: 388-397, October 2018.
<https://doi.org/10.1016/j.compeleceng.2018.07.021>
- J14. **Mahmoud Al-Ayyoub**, Muneera Al-Quraan, Yaser Jararweh, Elhadj Benkhelifa and Salim Hariri. Resilient Service Provisioning in Cloud based Data Centers. *Future Generation Computer Systems (FGCS)* 86: 765-774, September 2018.
<https://doi.org/10.1016/j.future.2017.07.005>
- J15. Yaser Jararweh, Manar Bani Issa, Mustafa Daraghme, **Mahmoud Al-Ayyoub** and Mohammad Alsmirat. Energy Efficient Dynamic Resource Management in Cloud Computing Based on Logistic Regression Model and Median Absolute Deviation. *Sustainable Computing, Informatics and Systems* 19: 262-274, September 2018.
<https://doi.org/10.1016/j.suscom.2018.07.005>
- J16. Luay Alawneh, Emad Rawashdeh, **Mahmoud Al-Ayyoub** and Yaser Jararweh. GPU Parallelization of Sequence Segmentation Using Information Theoretic Models. *Simulation Modelling Practice and Theory* 86: 11-24, August 2018.
<https://doi.org/10.1016/j.simpat.2018.04.007>
- J17. Qussai Yaseen, Monther AlDwairi, Yaser Jararweh, **Mahmoud Al-Ayyoub** and Brij Gupta. Collusion Attacks Mitigation in Internet of Things: A Fog Based Model. *Multimedia Tools and Applications (MTAP)* 77(14): 18249-18268, July 2018.
<https://doi.org/10.1007/s11042-017-5288-3>
- J18. Ziad A. Al-Sharif, Attaa Y. Al-Khaleel, Mohammed Al-Saleh and **Mahmoud Al-Ayyoub**. Carving and Clustering Files in RAM for Memory Forensics. *Far East Journal of Electronics and Communications (FJEC)* 18(5): 695-722, July 2018.
<http://doi.org/10.17654/EC018050695>
- J19. Mohammad Al-Smadi, Omar Qawasmeh, **Mahmoud Al-Ayyoub**, Yaser Jararweh and Brij Gupta. Deep Recurrent Neural Network vs. Support Vector Machine for Aspect-Based Sentiment Analysis of Arabic Hotels' Reviews. *Journal of Computational Science* 27: 386-

- 393, July 2018.
<https://doi.org/10.1016/j.jocs.2017.11.006>
- J20. Raddad Abooraig, Shadi AlZu'bi, Tarek Kanan, Bilal Hawashin, **Mahmoud Al-Ayyoub** and Ismail Hmeidi. Automatic Categorization of Arabic Articles Based on Their Political Orientation. *Digital Investigation* 25: 24-41, June 2018.
<https://doi.org/10.1016/j.diin.2018.04.003>
<https://github.com/malayyoub/Arabic-Articles-Political-Orientation>
<https://www.researchgate.net/publication/324686071>
- J21. **Mahmoud Al-Ayyoub**, Aya Nuseir, Kholoud Alsmearat, Yaser Jararweh and Brij Gupta. Deep Learning for Arabic NLP: A Survey. *Journal of Computational Science* 26: 522-531, May 2018.
<https://doi.org/10.1016/j.jocs.2017.11.011>
- J22. **Mahmoud Al-Ayyoub**, Nour Alhuda Damer and Ismail Hmeidi. Using Deep Learning for Automatically Determining Correct Application of Basic Quranic Recitation Rules. *The International Arab Journal of Information Technology (IAJIT)* 15(3A): 620-625, May 2018.
<https://github.com/malayyoub/Ahkam-Al-Tajweed>
<https://www.researchgate.net/publication/327869102>
- J23. **Mahmoud Al-Ayyoub**, Abdullateef Rabab'ah, Yaser Jararweh, Mohammed Al-Kabi and Brij Gupta. Studying the Controversy in Online Crowds' Interactions. *Applied Soft Computing (ASoC)* 66: 557-563, May 2018.
<https://doi.org/10.1016/j.asoc.2017.03.022>
- J24. Qussai Yaseen, Firas Albalas, Yaser Jararwah and **Mahmoud Al-Ayyoub**. Leveraging Fog Computing and Software Defined Systems for Selective Forwarding Attacks Detection in Mobile Wireless Sensor Networks. *Transactions on Emerging Telecommunications Technologies* 29(4), April 2018.
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- J25. **Mahmoud Al-Ayyoub**, Shadi AlZu'bi, Yaser Jararweh, Mohammed Shehab, Brij Gupta. Accelerating 3D Medical Volume Segmentation Using GPUs. *Multimedia Tools and Applications (MTAP)* 77 (4): 4939-4958, February 2018.
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- J26. **Mahmoud Al-Ayyoub**, Bassam Arkok and Yaser Jararweh. An Extended Study of Collaboration Networks of Levantine Biomedical Researchers. *Journal of Ambient Intelligence and Humanized Computing (JAIHC)* 9 (1): 3-18, February 2018.
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- J27. Yaser Jararweh, **Mahmoud Al-Ayyoub**, Muneera Al-Quraan, Lo'ai Tawalbeh and Elhadj Benkhelifa. Delay-Aware Power Optimization Model in Mobile Edge Computing Systems. *Journal of Personal and Ubiquitous Computing (JPUC)* 21 (6): 1067-1077, December 2017.
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- J28. Yaser Jararweh, Mohammad Alsmirat, **Mahmoud Al-Ayyoub**, Elhadj Benkhelifa, Ala' Darabseh, Brij Gupta and Ahmad Doulat. Software-Defined System Support for Enabling Ubiquitous Mobile Edge Computing. *The Computer Journal* 60 (10): 1443-1457, October 2017.
<https://doi.org/10.1093/comjnl/bxx019>
- J29. Ala' Darabseh, **Mahmoud Al-Ayyoub**, Yaser Jararweh, Elhadj Benkhelifa, Mladen Vouk and Andrew Rindos. A Novel Framework for Software Defined Based Secure Storage Systems. *Simulation Modelling Practice and Theory* 77: 407-423, September 2017.
<https://doi.org/10.1016/j.simpat.2016.05.003>
- J30. Kholoud Alsmearat, **Mahmoud Al-Ayyoub**, Riyadh Al-Shalabi and Ghassan Kanaan. Author Gender Identification from Arabic Text. *Journal of Information Security and Applications (JISA)* 35: 85-95, August 2017.
<https://doi.org/10.1016/j.jisa.2017.06.003>

- <https://github.com/malayyoub/Arabic-Articles-Author-Gender-Identification/>
- J31. Aya Nuseir, **Mahmoud Al-Ayyoub**, Mohammed Al-Kabi, Ghasan Kanaan and Riyadh Al-Shalabi. Improved Hierarchical Classifiers for Multi-Way Sentiment Analysis. *The International Arab Journal of Information Technology (IAJIT)* 14(4A): 654-661, July 2017.
- J32. **Mahmoud Al-Ayyoub**, Yaser Jararweh, Abdullateef Rabab'ah and Monther Aldwairi. Feature Extraction and Selection for Tweets Authorship Authentication. *Journal of Ambient Intelligence and Humanized Computing (JAIHC)* 8(3): 383-393, June 2017.
<https://doi.org/10.1007/s12652-017-0452-1>
- J33. Yaser Jararweh, **Mahmoud Al-Ayyoub**, Lo'ai Tawalbeh, Ala' Darabseh and Houbing Song. Software-Defined Systems Support for Secure Cloud Computing based on Data Classification. *Annals of Telecommunications* 72(5): 335-345, June 2017.
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- J34. Mohammad Al-Smadi, Zain Jaradat, **Mahmoud Al-Ayyoub** and Yaser Jararweh. Paraphrase Identification and Semantic Text Similarity Analysis in Arabic News Tweets using Lexical, Syntactic, and Semantic Features. *Journal of Information Processing and Management (IP&M)* 53(3): 640-652, May 2017.
<https://doi.org/10.1016/j.ipm.2017.01.002>
- J35. Mohammed Shehab, **Mahmoud Al-Ayyoub**, Yaser Jararweh and Moath Jarrah. Accelerating compute-intensive image segmentation algorithms using GPUs. *Journal of Supercomputing* 73(5): 1929-1951, May 2017.
<https://doi.org/10.1007/s11227-016-1897-2>
- J36. **Mahmoud Al-Ayyoub**, Huda Al-Sarhan, Majd Al-So'ud, Mohammad Al-Smadi and Yaser Jararweh. Framework for Affective News Analysis of Arabic News: 2014 Gaza Attacks Case Study. *Journal of Universal Computer Science (JUCS)* 23(3): 327-351, March 2017.
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- J37. Mohammad Alsmirat, Yaser Jararweh, **Mahmoud Al-Ayyoub**, Mohammed Shehab and Brij Gupta. Accelerating compute intensive medical imaging segmentation algorithms using hybrid CPU-GPU implementations. *Multimedia Tools and Applications (MTAP)* 76(3): 3537-3555, February 2017.
<https://doi.org/10.1007/s11042-016-3884-2>
- J38. Moath Jarrah, Muneera Al-Quraan, Yaser Jararweh and **Mahmoud Al-Ayyoub**. MedGraph: A Graph-Based Representation and Computation to Handle Large Sets of Images. *Multimedia Tools and Applications (MTAP)* 76(2): 2769-2786, January 2017.
<https://doi.org/10.1007/s11042-016-3262-0>
- J39. **Mahmoud Al-Ayyoub**, Ahmed Alwajeih and Ismail Hmeidi. An extensive study of authorship authentication of Arabic articles. *International Journal of Web Information Systems (IJWIS)* 13(1): 85-104, January 2017.
<https://doi.org/10.1108/IJWIS-03-2016-0011>
<https://github.com/AAlwajeih/ArabicSF>
- J40. Ismail Hmeidi, **Mahmoud Al-Ayyoub**, Nizar Mahyoub and Mohammed Shehab. A Lexicon Based Approach for Classifying Arabic Multi-Labeled Text. *International Journal of Web Information Systems (IJWIS)* 12(4): 504-532, October 2016.
<https://doi.org/10.1108/IJWIS-01-2016-0002>
<https://www.researchgate.net/publication/301495171>
- J41. Qutaibah Althebyan, Qussai Yaseen, Yaser Jararweh and **Mahmoud Al-Ayyoub**. Cloud Support for Large Scale E-Healthcare Systems. *Annals of Telecommunications* 71(9): 503-515, October 2016.
<https://doi.org/10.1007/s12243-016-0496-9>
- J42. Mohammad Al-Smadi, Islam Obaidat, **Mahmoud Al-Ayyoub**, Rami Mohawesh and Yaser Jararweh. Using Enhanced Lexicon-Based Approaches for the Determination of Aspect

- Categories and Their Polarities in Arabic Reviews. *International Journal of Information Technology and Web Engineering (IJITWE)* 11(3): 15-30, July-September 2016.
<https://doi.org/10.4018/IJITWE.2016070102>
- J43. **Mahmoud Al-Ayyoub**, Yaser Jararweh, Ahmad Doulat, Haythem Bany Salameh, Ahmad Al Abed Al Aziz, Mohammad Alsmirat and Abdallah Khreishah. Virtualization-Based Cognitive Radio Networks. *Journal of Systems and Software (JSS)* 117: 15-29, July 2016.
<https://doi.org/10.1016/j.jss.2016.02.014>
- J44. Khalid Alkhatib, Abdullateef Rabab'ah, **Mahmoud Al-Ayyoub** and Yaser Jararweh. On the Use of Arabic Tweets to Predict Stock Market Changes in the Arab World. *International Journal of Advanced Computer Science and Applications (IJACSA)* 7(5): 560-566, May 2016.
<http://dx.doi.org/10.14569/IJACSA.2016.070574>
- J45. Mohammad Al-Smadi, **Mahmoud Al-Ayyoub**, Huda Al-Sarhan and Yaser Jararweh. An Aspect-Based Sentiment Analysis Approach to Evaluating Arabic News Affect on Readers. *Journal of Universal Computer Science (JUCCS)* 22(5): 630-649, May 2016.
<http://doi.org/10.3217/jucs-022-05-0630>
- J46. Yaser Jararweh, **Mahmoud Al-Ayyoub**, Ala' Darabseh, Elhadj Benkhelifa, Mladen Vouk and Andrew Rindos. Software Defined Cloud: Survey, System and Evaluation. *Future Generation Computer Systems (FGCS)* 58: 56-74, May 2016.
<https://doi.org/10.1016/j.future.2015.10.015>
- J47. **Mahmoud Al-Ayyoub**, Ala'a Oqaily, Mohammad Jarrah and Huda Karajeh. Automatically Determining the Location and Length of Coronary Artery Thrombosis Using Coronary Angiography. *International Journal of Computer Science and Information Security (IJCSIS)* 14(3): 10-19, March 2016.
- J48. **Mahmoud Al-Ayyoub**, Ghaith Husari and Wail Mardini. Improving Vertical Handoffs Using Mobility Prediction. *International Journal of Advanced Computer Science and Applications (IJACSA)* 7(3): 413-419, March 2016.
<http://dx.doi.org/10.14569/IJACSA.2016.070356>
- J49. **Mahmoud Al-Ayyoub**, Aya Nuseir, Ghassan Kanaan and Riyadh Al-Shalabi. Hierarchical Classifiers for Multi-Way Sentiment Analysis of Arabic Reviews. *International Journal of Advanced Computer Science and Applications (IJACSA)* 7(2): 531-539, February 2016.
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- J50. **Mahmoud Al-Ayyoub**, Mustafa Daraghme, Yaser Jararweh and Qutaibah Althebyan. Towards Improving Resource Management in Cloud Systems using a Multi-Agent Framework. *International Journal of Cloud Computing (IJCC)* 5(1/2): 112-133, 2016.
<https://doi.org/10.1504/IJCC.2016.075112>
- J51. Mohammed Al-Kabi, **Mahmoud Al-Ayyoub**, Izzat M. Alsmadi and Heider A. Wahsheh. A Prototype for a Standard Arabic Sentiment Analysis Corpus. *The International Arab Journal of Information Technology (IAJIT)* 13(1A): 163-170, 2015.
<https://goo.gl/X8SmAO>
- J52. Qutaibah Althebyan, Yaser Jararweh, Qussai Yaseen, Omar Alqudah and **Mahmoud Al-Ayyoub**. Evaluating Map Reduce Tasks Scheduling Algorithms over Cloud Computing Infrastructure. *Concurrency and Computation: Practice and Experience (CPE)* 27(18): 5686-5699, 2015.
<https://doi.org/10.1002/cpe.3595>
- J53. **Mahmoud Al-Ayyoub**, Mohammad Wardat, Yaser Jararweh and Abdallah Khreishah. Optimizing Expansion Strategies for Ultrascale Cloud Computing Data Centers. *Simulation Modelling Practice and Theory* 58, Part 1: 15-29, November 2015.
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- J54. **Mahmoud Al-Ayyoub**, Safa Bani Essa and Izzat Alsmadi. Lexicon-Based Sentiment Analysis of Arabic Tweets. *International Journal of Social Network Mining (IJSNM)* 2(2):

- 101-114, 2015.
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- J55. Moath Jarrah, Yaser Jararweh, Manar Jaradat, **Mahmoud Al-Ayyoub** and Abdelkader Bousselham. A Hierarchical Optimization Model for Energy Data Flow in Smart Grid Power Systems. *Information Systems Journal (IS)* 53: 190-200, October-November 2015.
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- J56. Yaser Jararweh, **Mahmoud Al-Ayyoub**, Ala' Darabseh, Elhadj Benkhelifa, Mladen Vouk and Andrew Rindos. SDIoT: A Software Defined based Internet of Things Framework. *Journal of Ambient Intelligence and Humanized Computing (JAIHC)* 6(4): 453-461, August 2015.
<https://doi.org/10.1007/s12652-015-0290-y>
- J57. **Mahmoud Al-Ayyoub**, Ansam Abu-Dalo, Yaser Jararweh, Moath Jarrah and Mohammad Al Sa'd. A GPU-Based Implementations of the Fuzzy C-Means Algorithms for Medical Image Segmentation. *Journal of Supercomputing* 71(8): 3149-3162, August 2015.
<https://doi.org/10.1007/s11227-015-1431-y>
- J58. **Mahmoud Al-Ayyoub**, Yaser Jararweh, Mustafa Daraghme and Qutaibah Althebyan. Multi-Agent Based Dynamic Resource Provisioning and Monitoring for Cloud Computing Systems Infrastructure. *Cluster Computing* 18(2): 919-932, June 2015.
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- J59. **Mahmoud Al-Ayyoub**, Al-hassan Abed Al-Rahman, Yazan Qadoumi, Mohammad Bani Hani, Mohammad Masadeh, Rashed Abu Al-Asal and Mahammad Bani Aboud. Mind-Controlling Green Unmanned Vehicles through the Cloud: Building a Prototype. *Journal of Advances in Information Technology (JAIT)* 6(1): 34-38, February 2015.
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- J60. Ismail Hmeidi, **Mahmoud Al-Ayyoub**, Nawaf Abdulla, Abdalrahman Almodawar, Raddad Abooraig and Nizar Mahyoub. Automatic Arabic Text Categorisation: A Comprehensive Comparative Study. *Journal of Information Science (JIS)* 41(1): 114-124, February 2015.
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- J61. Yaser Jararweh, **Mahmoud Al-Ayyoub**, Ahmad Doulat, Ahmad Al Abed Al Aziz, Haythem Bany Salameh and Abdallah Khreishah. Software Defined Cognitive Radio Network Framework: Design and Evaluation. *International Journal of Grid and High Performance Computing (IJGHPC)* 7(1): 15-31, January 2015.
<https://doi.org/10.4018/ijghpc.2015010102>
- J62. Yaser Jararweh, Moath Jarrah, Mazen Kharbutli, Zakarea Alshara, Mohammed Noraden Alsaleh and **Mahmoud Al-Ayyoub**. CloudExp: A Comprehensive Cloud Computing Experimental Framework. *Simulation Modelling Practice and Theory* 49: 180-192, December 2014.
<https://doi.org/10.1016/j.simpat.2014.09.003>
<https://github.com/CloudComputingSim/CloudExp>
- J63. **Mahmoud Al-Ayyoub** and Himanshu Gupta. Truthful Spectrum Auctions with Approximate Social-Welfare or Revenue. *IEEE/ACM Transactions on Networking* 22(6): 1873-1885, December 2014.
<https://doi.org/10.1109/TNET.2013.2288317>
- J64. Nawaf Abdulla, Nizar Ahmed, Mohammed Shehab, **Mahmoud Al-Ayyoub**, Mohammed Al-Kabi and Saleh Al-rifai. Towards Improving the Lexicon-Based Approach for Arabic Sentiment Analysis. *International Journal of Information Technology and Web Engineering (IJITWE)* 9(3): 55-70, July 2014.
<https://doi.org/10.4018/ijitwe.2014070104>
- J65. Nawaf Abdulla, **Mahmoud Al-Ayyoub** and Mohammed Al-Kabi. An Extended Analytical Study of Arabic Sentiments. *International Journal of Big Data Intelligence (IJBDI)* 1(1/2): 103-113, 2014.
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- J66. **Mahmoud Al-Ayyoub**, Duaa Alawad, Khaldun Al-Darabsah and Inad Aljarrah. Automatic Detection and Classification of Brain Hemorrhages. *WSEAS Transactions on Computers* 12(10): 395-405, October 2013.
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- J67. **Mahmoud Al-Ayyoub**, Ismail Hmeidi and Haya Rababah. Detecting Hand Bone Fractures in X-Ray Images. *Journal of Multimedia Processing and Technologies (JMPT)* 4(3): 155-168, September 2013.
- J68. **Mahmoud Al-Ayyoub** and Duha Al-Zghool. Determining the Type of Long Bone Fractures in X-Ray Images. *WSEAS Transactions on Information Science and Applications* 10(8): 261-270, August 2013.
- J69. Abdelnasser Banihani, **Mahmoud Al-Ayyoub** and Ismail Ababneh. A Direction-Based Vertical Handoff Scheme. *Journal of Emerging Technologies in Web Intelligence (JETWI)* 5(3): 278-286, August 2013.
<https://doi.org/10.4304/jetwi.5.3.278-286>
- J70. **Mahmoud Al-Ayyoub** and Himanshu Gupta. Joint Routing, Channel Assignment, and Scheduling for Throughput Maximization in General Interference Models. *IEEE Transactions on Mobile Computing*, 9(4): 553-565, April 2010.
<https://doi.org/10.1109/TMC.2009.144>

Conference/Workshop Papers:

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- C105. Anand Subramanian, **Mahmoud Al-Ayyoub**, Himanshu Gupta, Samir Das and Milind Buddhikot. Near-Optimal Dynamic Spectrum Allocation in Cellular Networks. In the proceedings of *the 3rd IEEE International Symposium on New Directions in Dynamic Spectrum Access Networks (DySPAN)*, 2008.
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Poster/Demo/Short Papers:

- S1. Khaldun Al-Darabsah and **Mahmoud Al-Ayyoub**. Breast Cancer Diagnosis Using Machine Learning Technologies Based on Statistical and Texture Feature Extraction. In *the 5th Undergraduate Research Conference (URC)*, 2013.
- S2. Mjd Odeh, Ala'a Waked and **Mahmoud Al-Ayyoub**. xQuad: 3G Controlled Quadcopter. In *the 6th Undergraduate Research Conference (URC)*, 2014.
- S3. Arifa Al-Haj Ali and **Mahmoud Al-Ayyoub**. Automatic Diagnosis of Prostate Cancer from Microscopic Images. In *the 6th Undergraduate Research Conference (URC)*, 2014.

- S4. Haifa Musleh, Saba'a Al-Qaisi and **Mahmoud Al-Ayyoub**. Very Fast Food Delivery for Restaurant Chains. In *the 6th Undergraduate Research Conference (URC)*, 2014.
- S5. Laith Al-Hamed, Mohammad Mutawe, Wissam Alazzam, **Mahmoud Al-Ayyoub** and Mohammad Malkawi. Kinship Recognition Intelligent System. In *the 7th Undergraduate Research Conference (URC)*, 2015.
- S6. Sirin Fayeze Haddad and **Mahmoud Al-Ayyoub**. Automated Crowd Monitoring System in Public Places. In *the 7th Undergraduate Research Conference (URC)*, 2015.
- S7. Al-hassan Abed Al-Rahman, Mohammad Masadeh, Rashed Abu Al-Asal and **Mahmoud Al-Ayyoub**. A Prototype of a Mind-Controlled Unmanned Ground Vehicles through the Cloud. In *the 7th Undergraduate Research Conference (URC)*, 2015.
- S8. **Mahmoud Al-Ayyoub**, Qussai Yaseen, Moahmmed Shehab, Yaser Jararweh and Firas Albalas. Accelerating Clustering Algorithms Using GPUs. In *IEEE High Performance Extreme Computing Conference (HPEC)*, 2016.
- S9. Moahmmed Shehab, Qussai Yaseen, **Mahmoud Al-Ayyoub**, Firas Albalas, Yaser Jararweh. Accelerating FCM-Based Text Classification Algorithm Using GPUs. In *IEEE High Performance Extreme Computing Conference (HPEC)*, 2016.

Patents:

- P1. Milind Buddhikot, **Mahmoud Al-Ayyoub** and Himanshu Gupta. "Method and System for Spectrum Management." U.S. Patent Application 13/080,216, granted September 10, 2013.

Non-Reviewed Papers:

- N1. Yaser Jararweh, **Mahmoud Al-Ayyoub** and Elhadj Benkhelifa. Advanced Arabic Natural Language Processing (ANLP) and its Applications - Introduction to the special issue. *Journal of Information Processing and Management (IP&M)*. To appear.
<https://doi.org/10.1016/j.ipm.2018.09.003>

Academic and Professional Services

Committees and Councils:

- 2010-2015: I was part of the Computer Science (CS) Department Council and the Faculty of Computer and Information Technology (CIT) Council. I chaired several committees at the department-level such as the Library Committee and the Curriculum Committee. I also served as a member of other committees at the department-level (such as the Accreditation Committee, the Senior/Capstone/Graduation Projects (GP) Committee, the Graduate Studies & Research (GSR) Committee and the Hiring and Scholarships (HS) Committee) and at the faculty-level (such as the Course and Exams Scheduling Committee, the Curriculum Committee and the Disciplinary Committee). Finally, I was part of the special committees in charge of hiring full-time lecturers.
- 2015-2017: As the CS Department Chairperson, I chaired the CS Department Council as well as other committees at the department-level (such as the Curriculum Committee, the Quality Assurance (QA) Committee, the GSR Committee and several Focus Groups) and at the faculty-level (such as the special committee for the Best MSc Thesis Award). Moreover, I was part of the Faculty of CIT Council and the Department Chairs Council. I also served as a member of other committees at the faculty-level (such as the Curriculum Committee, the Promotions Committee and the GSR Committee) and at the university-level.
- In 2016, the Innovative Programming committee was formed and I was selected to chair it. As part of the activities of this committee, we organized/participated in many events related

to student programming competitions such as JUST CPC, Arabella CPC, JCPC, Capture the Flag (ethical hacking competition), etc. We also held numerous training sessions for students at different levels (e.g., programming sessions for high school and freshman students, advanced training sessions for senior students as part of their practical training, etc.)

- 2017-Present: I left the department chairing position to become the Vice Dean of the Faculty of CIT. However, I continued to serve as a member of the faculty and department councils, the Department Chairs Council, the department's Curriculum Committee, GSR Committee and several Focus Groups and the faculty's Curriculum Committee and Promotions Committee. I also served as a chairperson and a member of the faculty's GSR Committee and Disciplinary Committee. Finally, I was a member of several university-level committees.

Service to the Research Community:

- Invited Talks and Panel Discussion:
 - The 1st Yarmouk University Scientific Research Symposium (YUSR 2017) themed "Emerging Wireless Communication and Networking Technologies" in conjunction with the 3rd International Conference on Open Source Software Computing (OSSCOM 2017):
Lead the panel discussion on Emerging Wireless Technologies and Spectrum Management Policies: Auction Theory and its Applications in Wireless Networks and Communication.
 - The 15th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA):
One of the mentors at the PhD Forum.
- Journal Editorial Board Member:
 - Journal Information Processing and Management (IP&M).
 - International Journal of Information Technology and Web Engineering (IJITWE).
- Journal Guest Editor:
 - Journal Information Processing and Management (IP&M): 2016 Special Issue on Advance Arabic Natural Language Processing (ANLP) and Its Applications.
 - Concurrency and Computation Practice and Experience (CCPE): 2018 Special Issue for the 9th International Conference on Information and Communication Systems (ICICS 2018).
 - International Journal of Information Technology and Web Engineering (IJITWE): 2018 Special Issue on Emerging Trends in AI and Web Technologies.
- Conference/Workshop Organizer:
 - ACS/IEEE International Conference on Computer Systems and Applications (AICCSA): 2015-2018.
 - International Workshop on Advances in Natural Language Processing (ANLP): 2018.
 - International Workshop on Arabic Natural Language Processing (ANLP): 2017.
 - International Workshop on Big Data and Social Networking Management and Security (BDSN): 2013-2018.
 - IEEE International Conference on Fog and Edge Mobile Computing (FMEC): 2016.
 - International Conference on Information and Communication Systems (ICICS): 2016-2019.
 - International Workshop on Internet of Things: Networking Applications and Technologies (IoTNAT): 2016.
 - International Symposium on Internet of Things: Systems, Management and Security (IoTSMS): 2014-2017.

- IEEE International Workshop on Mobile Cloud Computing systems, Management, and Security (MCSMS): 2015-2017.
- International Workshop on Online Social Networks Technologies (OSNT): 2015-2018.
- International Symposium on Social Computing and Arabic Language Processing (SC-ALP): 2018.
- IEEE International Conference on Software Defined Systems (SDS): 2014-2017.
- International Workshop on Semantic Evaluation (SemEval): 2016.
- International Conference on Social Networks Analysis, Management and Security (SNAMS): 2014-2017.
- Reviewer for Journal/Conference/Workshop:
 - International Conference on Arabic Computational Linguistics (ACLing): 2017-2018.
 - IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies (AEECT): 2013-2017.
 - Annals of Telecommunications.
 - International Conference on Ambient Systems, Networks and Technologies (ANT): 2016-2017.
 - IEEE Asia-Pacific Conference on Applied Electromagnetics (APACE): 2012.
 - Computing and Informatics (CAI).
 - International workshop on Cloud Computing Applications and Security (CASE).
 - International Workshop on Cloud Computing Systems, Networks, and Applications (CCSNA): 2013-2018.
 - International Conference on Technologies and Innovation (CITI): 2016.
 - Cluster Computing.
 - Computer Methods and Programs in Biomedicine (CMPB).
 - International Workshop for Data Science and Computing (DSC): 2017.
 - International Workshop on Data Science Engineering and its Applications (DSEA): 2018.
 - Egyptian Informatics Journal (EIJ).
 - International Conference on Computer, Communications, and Control Technology (I4CT): 2014.
 - IEEE International Conference on Communications (ICC): 2015.
 - International Conference on Connected Vehicles and Expo (ICCVE): 2013, 2015.
 - International Conference on Information and Communication Systems (ICICS): 2011-2015.
 - International Computer Sciences and Informatics Conference (ICSIC): 2016.
 - International Conference on Telecommunications (ICT): 2016-2017.
 - IEEE Symposium on Computers & Informatics (ISCI): 2013.
 - International Symposium on Technology Management and Emerging Technologies (ISTMET): 2014.
 - International Journal of Big Data Intelligence (IJBDI).
 - International Journal of Computer Sciences and Engineering (IJCSE).
 - International Journal of Electronic Marketing and Retailing (IJEMR).
 - International Journal of Embedded Systems (IJES).
 - International Journal of Grid and High Performance Computing (IJGHPC).
 - International Journal of High Performance Computing and Networking (IJHPCN).
 - International Journal of Information and Computer Security (IJICS).
 - Journal of Advances in Information Technology (JAIT).
 - Journal of the Association for Information Science and Technology (JASIST).
 - Journal of Computational Methods in Sciences and Engineering (JCMSE).

- IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT): 2019.
- Journal of Information Science (JIS).
- Jordanian Journal of Computers and Information Technology (JJCIT).
- Journal of Computational Science (JoCS).
- Knowledge-Based Systems.
- IEEE International Conference on Mobile Ad hoc and Sensor Systems (MASS): 2009.
- Mosharaka International Conference on Communications, Networking and Information Technology (MIC-CNIT): 2012.
- Mosharaka International Conference on Networks (MIC-Networks): 2015.
- International Conference on Mobile Computing and Networking (MobiCom): 2009, 2011.
- Renewable Energy and Green Technology International Conference (REEGETECH): 2015-2016.
- IEEE Student Conference on Research and Development (SCORED): 2013.
- IEEE International Conference on Sensing, Communication and Networking (SECON): 2009-2010.
- Simulation Modelling Practice and Theory
- Recent Research in Social Sciences International Conference (SOCSIC): 2016.
- International Symposium on Social Sciences, Arts and Humanities (SYSSARM): 2015.
- ACM Transactions on Asian and Low-Resource Language Information Processing (TALLIP).
- IEEE/ACM Transactions on Networking (ToN).
- IEEE Vehicular Technology Conference (VTC): 2010-Fall.
- IEEE Wireless Communications and Networking Conference (WCNC): 2013, 2016.