Dean of Prince Al Hussein Bin Abdullah II Faculty for Information Technology
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KHALID T. AL-SARAYREH

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https://www.researchgate.net/profile/Khalid_Al-Sarayreh2
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Pubilon: https://publons.com/researcher/1314613/khalid-t-al-sarayreh/

PERSONAL SUMMARY

Khalid Al-Sarayreh started his career with the Hashemite University since 2011. He is now a **Professor** of Software Engineering at the Hashemite University in Jordan since December 2021. He has a PhD degree in Software Engineering from University of Québec in Canada. He also has a Doctoral degree in Computer Information Systems, MSc in Computer Engineering (Embedded Systems) and BS degree in Computer Science from Jordanian Universities. He served during **30 years** in both national and international institutions, such as KADDB (King Abdullah II Design and Development Bureau), Jordan University, Faculty of Information Technology at the Applied Sciences University (Jordan), (GELOG Lab) at University of Quebec in Montreal as a software engineering researcher. With over **80 publications**, his research interests include: Software Quality Engineering, Software Quality Assurance using international standards, Software Requirements (Functional and Nonfunctional requirements), Software Measurement, Software Reuse, Software Engineering Standards (ECSS, IEEE and ISO).

EDUCATION

Ph.D. of Engineering *Sept. 2008 – Sept. 2011*

Department of Software Engineering and Information Technology, School of Higher Technology
University of Quebec, Montreal, Canada.

Thesis: Identification, Specification and Measurement, Using International Standards of the System Non Functional Requirements Allocated to Real-Time Embedded Software

M.Sc. of Computer Engineering (Embedded Systems) *Sept. 2002–Aug. 2004*

Department of Computer Engineering (Alhijawi).
Yarmouk University, Irbid, Jordan.

EDUCATION	**Research Project:** Security System using Voice Recognition chips
	B.Sc. of Computer Science *Sept. 1989 - June 1993*
	Department of Information Technology Mu'tah University, Karak, Jordan.

PROFESSIONAL CERTIFICATES	- Doctor of Philosophy in Computer Information Systems, Jordan, 2005. - Bio informatics Research Conducted by Cornel University, USA, 2007. - Imagery Analyst Training Course, Ministry of French Defence, Paris, 1998. - Advanced Computer Networks, Royal Scientific Society, Jordan, 2001. - Erdas imagine Professional and Virtual CIS, Jordan, 2003. 7 Oracle Certificates from ITCC, Jordan, 1999. - Many Certificates in Computer programming from RJAF, Jordan. - MS-Visual Languages, Middle East Academy for Applied Sciences, Jordan, 1999.

ACADEMIC QUALIFICATIONS	- Strong theoretical background in software engineering. - Over 10 years of experience in scientific research. - Over 10 years of experience in teaching at university level. - Testing the website for functionality in different browsers and at different resolutions. - Ensuring that the web site is accessible to all groups including those with disabilities. - Accurately updating administrative records of software engineering projects. - Organising and setting up conferences and meetings. - Producing informative well-organized reports to senior management. - Software engineering metrology and measurements for improving different quality levels of organizations.

SCHOLARS AND AWARDS	- University of Québec Award–Honor Student, 2009. - University of Québec Award –Honor Student, 2010. - University of Québec Award –Honor Student, 2011. - Scholarship for Master degree in Embedded systems from KADDB and JAF, 2002-2004 - Scholarship for Bachelor degree in Computer Science from JAF, 1989-1993.

WORK EXPERIENCE	- Sept 2020 to date: Dean of Prince All Hussein Bin Abdullah II Faculty for Information Technology. - Dec. 2021 to date: a Professor of Software Engineering, Hashemite University, Faculty of Prince Hussein Bin Abdullah II for Information Technology, Department of Software Engineering.

	• Sept. 2019 to Sept 2020: Associate Professor of Software Engineering, Hashemite University, Faculty of Prince Hussein Bin Abdullah II for Information Technology, Department of Software Engineering • Sept. 2018-Sept. 2019: Associate Professor of Software Engineering, Prince Sultan University, Collage of Computer and information systems (CCIS) Department of Software Engineering • Dec 2016 to Sept. 2018: Associate Professor of Software Engineering, Hashemite University, Faculty of Prince Hussein Bin Abdullah II for Information Technology, Department of Software Engineering • Sept. 2011 – Dec 2016: Assistant Professor of Software Engineering, Hashemite University, Faculty of Prince Hussein Bin Abdullah II for Information Technology, Department of Software Engineering • Sept. 2008 – Aug. 2011: Researcher (GELOG Lab), University of Quebec, School of Higher Technology (ETS) • Feb. 2007 – Feb.2008: Assistant Professor Applied Science University, Department of Computer Information Systems. • Feb. 2005 – Jan. 2006: Lecturer, Jordan University, Department of Computer Science (KASIT). • Aug. 1989 – Jan. 2005 System Analyst, Programmer, Computer Center and KADDB.
PROFESSIONAL ACTIVITIES	• Committee member of software engineering standards, JTC1/SC7, workgroup 6, Software Evaluation and Measurements, 2010 – to date. • Committee member of software engineering standards (COSMIC), a functional size measurement method, ISO/IEC 1976:2011 – to date. • Organizing committee for different international conferences in software engineering. • Reviewers for many international journals in software engineering. • Member of different accreditation and quality assurance committees for the **Higher Education Accreditation Commission**, for accrediting various IT programs at different universities such as Ajloun University and Petra University.
COMMITTES AND SERVICES	• Committee Member: Council of the IT College as the representative of SE Department (2014 – 2015). • Chairman of the Commission Seminars and Lectures Committee of the IT College (2011 – 2012, 2015 – to date) respectively. • Chairman of the Quality Assurance Committee of the SE Department/Faculty, (2015 – to date). • Member of the Appointment and Promotion Committee of the IT College, (2013 – 2014).
THESIS / DISSERTATION SUPERVISION	• Trade-off Model of Software Requirements for the Application of A balance between Security and Usability Systems, Lina Hassan, Master Level, Hashemite University, Department of SE, Feb. 2015- Dec. 2015. • Capability Maturity Model of Software Requirements Process and Integration, Sireen Najjar, Master Level, Hashemite University, Department of SE, Feb. 2015 – May 2016.

	• Cost Estimation Framework for Software Projects, Shata Al-Qudah, Master Level, Hashemite University, Department of SE, Sept. 2015- June 2016. • Configuration Management for Embedded and Real Time Software in Software Engineering Domain, Hanan Al-Zawahreh, Master Level, Hashemite University, Department of SE, Feb. 2016 – April 2017.
TECHNICAL SKILLS AND TECHNOLOGY	Soft goal, SCRUM Tool, Java Language, UML, Rationale Rose, MS Visual Studio, C\C++, XML, ISBSG Data Set for empirical studies.
FUNDING & RESEARCH GRANTS	• 50,000\$, PI. "Developing a handy and low cost medical system to take images of the Ocular fundus". Funding agency: Scientific Research Support Fund (SRSF), Jordan, January 2016- January 2018. • 12,000\$, Build an E-Glass for the Blinds, Funding agency: Deanship of scientific Research – Hashemite University (March 2013 – OCT 2015).
Taught Courses	• Object Oriented Programming (Java, C++) • Graphical User Interface (GUI) • Formal Methods (Z Notation) • Human Computer Interaction (HCI) • Software Engineering Requirements (SER) **(Master and BA Levels)** • Software Quality Engineering (SQE) **(Master and BA Levels)** • Software Project Management **(PSU, KSA)** • Software Design and Architecture **(PSU, KSA)** • Software Maintenance and Evolution **(PSU, KSA)**
PUBLICATIONS	

Indexed Refereed International Scientific Journal Papers

- **Khalid T. Al-Sarayreh**, Kenza Meridji, Alain Abran, "Software engineering principles: A systematic mapping study and a quantitative literature review", Engineering Science and Technology, an International Journal, Dec 2020.In press. https://doi.org/10.1016/j.jestch.2020.11.005. http://www.sciencedirect.com/science/article/pii/S221509862034252X.

- **Al-Sarayreh KT**, Alenezi M, Zarour M, Meridji K., "A reference measurement framework of software security product quality (SPQNFSR)", IET Inf. Secur. 2021; Vol. 15, No. 1, pp. 23–37. https://doi.org/10.1049/ise2.12002

- **Khalid T. Al-Sarayreh**, Kenza Meridji, Alain Abran, Sylvie Trudel, "System performance requirements: A standards-based model for early identification, allocation to software functions and size measurement", e-Informatica Software Engineering Journal, vol 14, No. 1, pp. 117-148, 2020.

- **Khalid T. Al-Sarayreh**, Kenza Meridji, Mamdouh Alenezi, Mohammed Zarour, Mohammed D. Al-Majali, "A Sustainable Procedural Method of Software Design Process Improvements", Indonesian Journal of Electrical Engineering and Computer Science, Vol 21, No. 1, 2021.

- Kenza Meridji, **Khalid T. Al-Sarayreh**, Alain Abran and Sylvie Trudel, "System Security Requirements: A Framework for Early Identification, Specification and Measurement of Related Software Requirements", Accepted to publish at Computer Standards & Interfaces, Elsevier, Doi.org/10.1016/j.csi.2019.04.005, 2019.

- Mua'ad Abu-Faraj**, Khalid T. Al-Sarayreh**, Kenza Meridji," A Model Combining a Priori and Posteriori Contexts to Estimate the Costs of a Software Project", Journal of Engineering and Applied Sciences 14(11):3643-3650, 2019.

- Mohammad Zarour, Norah Alhammad, Mamdouh Alenezi, **Khalid Al-Sarayrah,** "A Research on DevOps Maturity Models"**,** International Journal of Recent Technology and Engineering (IJRTE), vol 8, No. 3, pp. 2277-3878, 2019.

- Ghazi Alkhatib, **Khalid Al-Sarayrah**, Alain Abran, "Exploring ISBSG R12 Dataset Using Multi-Data Analytics", Smart Innovation, Systems and Technologies, Springer, Cham, vol. 164, pp. 131-143, 2018.

- K Almakadmeh, K Meridji and **Khalid T. Al-Sarayreh**, "Towards a Reference Model of Software Resources Quality", Published at Journal of Computer Science (JCS), vol. 14, issue 2, pp. 182-198, 2018.

- K Almakadmeh, **Khalid T. Sarayreh** and K Meridji," A MEASUREMENT MODEL OF THE FUNCTIONAL SIZE OF SOFTWARE MAINTAINABILITY REQUIREMENTS", Journal of Theoretical & Applied Information Technology, Vol: 96, issue 12, 2018.

- **Khalid T. Al-Sarayreh**, "Dependability Model for Decomposition and Allocation of System Safety Integrity Levels of Software Quality", International Review on Computers and Software (I.RE.CO. S), published at Vol. 10, No. 11, 2015.

- **Khalid T. Al-Sarayreh** and Kenza Meridji, "Towards a Development of an Operational Process for Software Requirements: Case study application for Renewable Energy Software", International journal of software engineering and its applications. IJSEIA. SCOPUS indexed, Vol. 9, No. 7, pp. 11-26, 2015.

- **Khalid T. Al-Sarayreh**, Lina Hassan, Khaled Almakadmeh, "A Trade-off Model of Software Requirements of balancing between Security and Usability Issues", Published at International Review on Computers and Software (IRECOS) Journal, Vol. 10, No. 12, 2015.

- **Khalid T. Al-Sarayreh**, Kenza Meridji, Ebaa Fayyoumi and Sahar Idwan, "A Novel Approach to Build a Generic Model of Photovoltaic Solar System Using Sound Biometric Techniques", International Journal of Information Technology and Web Engineering (IJITWE), Vol. 9, No.1, IGI, USA, SCOPUS indexed, 8/21/2014, pp.31-45, 10.4018/ijitwe.2014010103.

- **Al-Sarayreh Khalid T**., Al-Oqily I. and Kenza Meridji "A standard-based reference framework for system operations requirements" Journal: Int. J. Computer Applications in Technology IJCAT, 2013 - Vol. 47, No. 4: pp.: 351-363.

- **Al-Sarayreh, Khalid T.,** Abran, A. and Cuadrado, J, "A Standards-Based Model of System Maintainability Requirements", Published at Journal of Software Evolution and Process, John Wiley & Sons, Ltd. V:25(5): pp:459-505, 2013, DOI: 10.1002/smr.1553

- **Al-Sarayreh, Khalid T.;** Al-Qutaish, Rafa E. and Al-Majali, Mohammed D., "Incorporating the Biometric Voice Technology into the E-Government Systems to Enhance the User Verification", WSEAS Transactions on Computers, Vol. 7, No. 5, 2008, pp. 435-452. (ISSN: 1109-2750)

- Abran, Alain, **Al-Sarayreh, Khalid T.** and Juan J. Cuadrado-Gallego, "A Standards-based Reference Framework for System Portability Requirements", Published at Computer Standards & Interfaces, Elsevier, and V: 35(4): pp.:380-395, 2013, DOI: 10.1016/j.csi.2012.11.003.

- Kenza Meridji, **Khalid T. Al-Sarayreh**, Al-Khasawneh A. "A generic model for the specification of software reliability requirements and measurement of their functional size". International journal of Information Quality, (IJIQ), 2013 - Vol 3, Pages 139-163, Inderscience Publishers, DOI 10.1504/IJIQ.2013.054279.

- Ayoub Alsarhan, **Khalid T. Al-Sarayreh**, Abdel-Rahman Al-Ghuwairi and Yousef Kilani, "Resource trading in cloud environments for profit maximization using an auction model", International Journal of Advanced Intelligence Paradigms, IJAIP 6(3): 176-190 (2014)

- Ahmad Al-Khasawneh, **Khalid T. Al-Sarayreh**, Kenza Meridji, Mohammad Khasawneh "Model of system configuration requirements and measurement of their functional size", Int. J. of Networking and Virtual Organizations 2013 - Vol. 12, No.3 pp. 201 - 216.

- Kenza Meridji, **Khaled AlMakhadmeh**, Khalid T. Al-Sarayreh, Anas Abuljadayel and Mohammad Khalaf, "Towards A Requirements Model of System Security Using International Standards", International journal of software engineering and its applications. IJSEIA. SCOPUS indexed, Vol. 9, No. 4, pp. 139-164, 2015.

- Ebaa Fayyoumi, Sahar Idwan, **Khalid T. AL-Sarayreh**, and Randa Obeidallah, " E-learning: challenges and ambitions at Hashemite University", International Journal of Innovation and Learning, Vol. 17: NO. 4, pp. 470-485, 2015.

- Ali Maqousi, Tatiana Balikhina, Kenza Meridji and **Khalid T. Al-Sarayreh**, "A Reference Model of Security Requirements for Early Identification and Measurement of Security Awareness Program", Journal of Theoretical and Applied Information Technology, Vol. 63, No.1, 5/10/2014, pp.74 – 84

- Ahmad Al-Khasawneh; **Khalid T. Al-Sarayreh**; Kenza Meridji "Towards a framework for quantifying system non-functional data definition and database requirements" International Journal of Data Analysis Techniques and Strategies, (IJDATS), Vol. 6, No. 2, pp. 162-187, 2014.

- Al-Khasawneh A. **Al-Sarayreh Khalid T**. and Kenza Meridji, "A standards-based framework of software configuration derived from system requirements" Int. J. of Computer Applications in Technology (IJDATS), 2013 - Vol. 48, No.1 pp. 14 - 26. Inderscience Publishers.

- Ahmad Al-Khasawneh, **Khalid T. Al-Sarayreh**, Kenza Meridji, Mohammad Khasawneh "A generic measurement model for system data definition and database requirements", Int. J. of Computer Applications in Technology 2013 - Vol. 47, No.4 pp. 305 - 313.

- Ibrahim Al-oqily, Kasem M. Al-Aubidy, Ahmad Alshtnawi, **Al-Sarayreh Khalid T.,** "An Efficient Media Ports Resource Discovery for Service Networks" in International Journal of Business Information Systems (IJBIS), Volume 15 Issue 2, pp.: 222-243, 2014.

- Kenza Meridji; **Al-Sarayreh, Khalid T**., "Embedded System Using Ultrasonic Waves and Voice Biometric to Build an E-Glass for the Blinds", ", the Journal of American Science, Vol. 6, No. 4, 2010, pp. 34-42. (ISSN: 1545-1003)

- **Al-Sarayreh, Khalid T.;** Al-Qutaish, Rafa E. and Basil M. Al-Kasasbeh, "Using the Sound Recognition Techniques to Reduce the Electricity Consumption in Highways", the Journal of American Science, Vol. 5, No. 2, 2009, pp. 1-12. (ISSN: 1545-1003)

- Al-Qutaish, Rafa E., and **Al-Sarayreh, Khalid T.,** "Software Process and Product ISO Standards: A Comprehensive Survey", European Journal of Scientific Research, Vol. 19, No. 2, 2008, pp. 289-303. (ISSN: 1450-216X)

- Al-Kasasbeh, Basil M.; Al-Qutaish, Rafa E. and **Al-Sarayreh, Khalid T.,** "Indirect Routing of Mobile IP: A Non-Encapsulation Approach", International Journal of Computer Science and Network Security, Vol. 8, No. 7, 2008. pp. 124-131. (ISSN: 1738-7906).

- Al-Kasasbeh, Basil M.; Al-Ani, Muzhir S.; Al-Qutaish, Rafa E. and Al-**Sarayreh, Khalid T**., "Measuring the Optimal Transmission Power of GSM Cellular Network: A Case Study", Communications of the IBIMA, Vol. 4, 2008, pp. 216-221. (ISBN: 1943-7765)

- Al-Kasasbeh, Basil M.; Al-Qutaish, Rafa E.; Al-Ani, Muzhir S. and Al-**Sarayreh, Khalid T.,** "Real Digital TV Accessed by Cellular Mobile System", European Journal of Scientific Research, Vol. 20, No. 4, 2008, pp. 914-923. (ISSN: 1450-216X)

International Scientific Conferences

- Mohammad Zarour, Mamdouh Alenezi, **Khalid Al-Sarayrah**, " Software Security Specifications and Design How Software Engineers and Practitioners Are Mixing Things up", Evaluation and Assessment in Software Engineering (EASE'20), 2020, ACM, New York, NY, USA, https://doi.org/10.1145/3383219.3383284.

- **Khalid T. Al-Sarayreh,** Kenza Meridji, Mohammad Abu-Arqoub, Ghassan Issa, " Procedural Model of Software Quality, Improvements for Sustainable Applications, Process of Renewable Energy Systems (Development & Enhancement)"**,** *IEEE 2017 2ⁿᵈ International Conference & Exhibition on the Applications of Information Technology in the Development of Renewable Energy processes & System IT-DREPS 2017, pp. 192-197, Amman, Jordan Dec 6-8, 2017.*

- Kenza Meridji**, Khalid T. Al-Sarayreh,** Mohammad Abu-Arqoub, Ghassan Issa," Exploration of Development Projects of Renewable Energy Applications in the ISBSG Dataset: Empirical Study"**,** *IEEE 2017 2ⁿᵈ International Conference & Exhibition on the Applications of Information Technology in the Development of Renewable Energy processes & System IT-DREPS 2017, pp. 58-63, Amman, Jordan Dec 6-8, 2017.*

- **Khalid T. Al-Sarayreh**, " A Quality Requirements Safety Model for Embedded and Real Time Software Product Quality", Recent Advances in Computer Science, Proceedings of the 14th International Conference on Applied Computer and Applied Computational Science (ACACOS '15), ISSN: 1790-5109, ISBN: 978-1-61804-297-2, WSEAS, pp. 200-206, Kuala Lumpur, Malaysia, April 23-25 2015

- **Khalid T. Al-Sarayreh,** "Model of Early Specifications of Performance Requirements at Functional Levels," Recent Advances on Electroscience and Computers, Proceedings of the International Conference on Systems, Control, Signal Processing and Informatics (SCSI 2015), ISBN: 978-1-61804-290-3, INASE.org, pp. 236-241, Barcelona, Spain, 7-9 April, 2015.

- **Khalid T. Al-Sarayreh**, Asma Labadi and Kenza Meridji, "A Generic Method for Identifying Maintainability Requirements Using ISO Standards," International Conference on Intelligent Information Processing,

Security and Advanced Communication (IPAC 2015), ISBN: 978-1-4503-3458-7, ACM, ICPS, Algeria, NOV. 23-25, 2015.

- *Al-Sarayreh, Khalid T., and Meridji, K," Towards Apriori and Posteriori Estimation Models for Renewable Energy Projects in Software Engineering", IEEE 2013 1st International Conference & Exhibition on the Applications of Information Technology in the Development of Renewable Energy processes & System IT-DREPS 2013, pp. 101-106, Amman, Jordan May 29-31, 2013.*

- **Al-Sarayreh, Khalid T.,** Al-Oqily I. and Meridji, K.," A Standard Based Reference Framework for System Adaptation and Installation Requirements", In *Proceedings of the 6th* International Conference on next Generation Mobile, Applications, Services and Technologies (NGMAST 2012), 12-14 Sept 2012, Paris, France, IEEE-CS Press.

- **Al-Sarayreh, Khalid T.** and Abran, A., "A Generic Model for the Specification of Software Interface Requirements and Measurement of their Functional Size", In *Proceedings of the* 8th ACIS International Conference on Software Engineering Research, Management and Applications - SERA 2010, Montreal, May 24-26, 2010, IEEE-CS Press, Los Alamitos, pp. 217-222, *(ISBN: 978-0-7695-4075-7), doi>10.1109/SERA.2010.35.*

- **Al-Sarayreh, Khalid T.;** Alain Abran and Juan J. Cuadrado-Gallego, "A Standards-based Model for the Specification and Measurement of Maintainability Requirements", In *Proceedings of the* 22nd International Conference on Software Engineering and Knowledge Engineering (SEKE 2010), Redwood City, California, USA, July 2010, *(ISBN 1-8917066-8).*

- **Al-Sarayreh, Khalid T.** and Alain Abran, "Measurement of Software Requirements Derived from System Reliability Requirements", In *Proceedings of the 24th* European Conference on Object-Oriented Programming (ECOOP 2010), ACM, Maribor, Slovenia, EU, 2010, (ISBN: 978-1-4503-0539-6), doi>10.1145/1921705.1921706.

- **Al-Sarayreh, Khalid T.** and Alain Abran, "Specification and Measurement of System Configuration Non Functional Requirements", In *Proceedings of the* 20th International Workshop on Software Measurement (IWSM 2010), Springer, Stuttgart, Germany, Nov. 2010, *(ISBN: 978-3-8322-9618-6).*

- **Al-Sarayreh, Khalid T**. and Al-Qutaish, Rafa E., "Enhancing the Security of E-Government Portals using Biometric Voice along with a Traditional Password", In *Proceedings of the 7th International Conference on Artificial Intelligence, Knowledge Engineering and Data Bases (AIKED'08)*, University of Cambridge, Cambridge, UK, 2008, pp. 101-108. *(ISBN: 978-960-6766-41-1)*

- Kenza Meridji, **Khalid T. Al-Sarayreh**, Tatiana Balikhina," Model of Resources Requirements for Software Product Quality Using ISO Standards", Recent Advances on Electroscience and Computers,

Proceedings of the International Conference on Systems, Control, Signal Processing and Informatics (SCSI 2015), ISBN: 978-1-61804-290-3, INASE.org, pp. 209-214, Barcelona, Spain, 7-9 April, 2015.

- Khalid Al Makhadmeh, **Khalid T. Al-Sarayreh**, Kenza Meridji, " Towards A Design Measurement Context for Software Coupling and Cohesion Requirements", Recent Advances in Computer Science, Proceedings of the 14th International Conference on Applied Computer and Applied Computational Science (ACACOS '15), ISSN: 1790-5109, ISBN: 978-1-61804-297-2, WSEAS, pp. 111-116, Kuala Lumpur, Malaysia, April 23-25 2015.

- Kenza Meridji and **Khalid T. Al-Sarayreh**, "Mapping A Knowledge Areas of The SWEBOK Standard with The CBOK in Software Engineering", Advances in Software Engineering and Systems, Proceedings of the 14th International Conference on Software Engineering, Parallel and Distributed Systems (SEPADS '15), ISSN: 1790-5109, ISBN: 978-1-61804-277-4, WSEAS, pp. 126-130, Dubai, United Arab Emirates, February 22-24, 2015. BEST PAPER AWARD

- Sireen Najjar and **Khalid T. Al-Sarayreh**, "Capability Maturity Model of Software Requirements Process and Integration (SRP^{CMMI})", International Conference on Intelligent Information Processing, Security and Advanced Communication (IPAC 2015), ISBN: 978-1-4503-3458-7, ACM, ICPS, Algeria, NOV. 23-25, 2015.

- Lina Hasan and **Khalid T. Al-Sarayreh**, "An Integrated Measurement Model for Evaluating Usability Attributes", International Conference on Intelligent Information Processing, Security and Advanced Communication (IPAC 2015), ISBN: 978-1-4503-3458-7, ACM, ICPS, Algeria, NOV. 23-25, 2015.

- Shatha Alqudah, **Khalid T. Al-Sarayreh** and Kenza Meridji, "A Comprehensive Survey of Software Development Cost Estimation Studies", International Conference on Intelligent Information Processing, Security and Advanced Communication (IPAC 2015), ISBN: 978-1-4503-3458-7, ACM, ICPS, Algeria, NOV. 23-25, 2015.

- Meridji, K, **Al-Sarayreh, Khalid T.,** *Ebaa Fayyoumi, and Sahar Idwan" Integrated Model of Photovoltaic Solar System with the Sound Biometric Techniques", IEEE 2013 1st International Conference & Exhibition on the Applications of Information Technology in the Development of Renewable Energy processes & System IT-DREPS 2013, pp.: 43-48, Amman, Jordan May 29-31, 2013.*

- Al-Khasawneh, A. **Al-Sarayreh, Khalid T.** and Meridji, K., "Early identification, specification and measurement for data definition and database requirements", In *Proceedings of the 1st CITS* International Conference of Computer, Information and Telecommunication Systems (CITS2012), May 14-16,2012, Jordan, IEEE-CS Press.

- Abran, Alain, **Al-Sarayreh, Khalid T.** and Juan J. Cuadrado-Gallego, "Measurement Model of Software Requirements Derived from System Portability Requirements", In *Proceedings of the* 9th International Conference on Software Engineering Research and Practice (SERP 2010), Las Vegas, USA, July 2010, CSREA Press 2010, *(ISBN 1-60132-167-8).*

- Alain Abran and **Al-Sarayreh, Khalid T.,** "A Standards-Based Model for the Specification of System Design and Implementation Constraints", In *Proceedings of the* Industry track, 17th International Conference on European Systems and Software Process Improvements (EURO-SPI 2010), Grenoble Institute of Technology, Grenoble, France, Sept. 2010.

- Alain Abran and **Al-Sarayreh, Khalid T.,** "Measurement of Software Requirements Derived from System Operations Requirements", In *Proceedings of the* 20th International Workshop on Software Measurement (IWSM 2010`), Springer, Stuttgart, Germany, Nov. 2010, *(ISBN: 978-3-8322-9618-6).*

- Al-Qutaish, Rafa E. and **Al-Sarayreh, Khalid T.,** "Applying Six-Sigma Concepts to the Software Engineering: Myths and Facts", In *Proceedings of the 7th International Conference on Software Engineering, Parallel and Distributed Systems (SEPADS'08)*, University of Cambridge, Cambridge, UK, 2008, pp. 178-183. *(ISBN: 978-960-6766-42-8)*

- Mohammad Aloran, Hazem Eid and **Khalid T. Al-Sarayreh**, "A High Quality Software After Maintenance Depend on Effectiveness measures", International Conference on Intelligent Information Processing, Security and Advanced Communication (IPAC 2015), ISBN: 978-1-4503-3458-7, ACM, ICPS, Algeria, NOV. 23-25, 2015.

- **Al-Sarayreh, Khalid T.** and Al-Qutaish, Rafa E., "Using Information Technology and Artificial Intelligence to Build an E-Glass for the Blinds", presented at *the Regional Conference on Sharing Experience on Best Practices in ICT Services for Persons with Disabilities*, Cairo, Egypt, 2007.

- Al-Kasasbeh, Basil M.; Al-Ani, Muzhir S.; Al-Qutaish, Rafa E. and **Al-Sarayreh, Khalid T.,** "Measuring the Optimal Transmission Power of GSM Cellular Network: A Case Study", In *Proceedings of the 10th International Business Information Management Association Conference on Innovation and Knowledge Management in Business Globalization*, Kuala Lumpur, Malaysia, 2008. pp. 760-765. *(ISBN: 0-9753393-9-7).*

- **Al-Sarayreh, Khalid T.,** "Using Information Technology and Artificial Intelligence to Convert Human Voice to Power to move E-Handicapped Chair", The Arab Conference of Special Education, University of Jordan, April 2004.

BOOK CHAPTER	• Kenza Meridji, Alain Abran, **Khalid T. Al-Sarayreh**, Alain April**, "**A Framework for the Measurement Concepts in the SWEBOK Guide", **Book Title:** Software-Engineering German Title: Beiträge zum empirischen, Shaker Verlag**,** Andreas Schmiedentorf and Cornelius Wille**,** Germany 2012.
DOCTORAL THESIS	• **Khalid Al-Sarayreh**, Identification, specification and measurement, using international standards, of the system non-functional requirements allocated to real time embedded software", École de technologie supérieure, University of Quebec, Canada, Sept. 2011. http://espace.etsmtl.ca/923/
PROGRESSING & SUBMITTED RESEARCH STUDIES	• *Systematic literature review of Software Cost Estimation for Software Engineering Domain.* • Early Identification, Specification and Measurement of System Non-Functional *Interface Requirements.* • Towards on Measurement of Software Requirements Derived from *System Reliability*. • Toward an Early Addressing and Measuring of System *Performance Requirements*. • System *Security Requirements*: Early Identification, Specification and Measurement based on International Standards • A Confusion Use of *Apriori and Posteriori Context for Estimating Cost* in Renewable Energy Project. International Journal of Information and Communication Technology. • A Standard Based Reference Framework for System *Adaptation and Installation Requirements.* • Towards A Standard-Based Reference Model of *Software Resources Quality*. • *Handless Mouse Software* for Common People with Disabilities Using Head Movements • A Comprehensive Survey of *Software Engineering Principles* in Software Engineering Domain.
PRESENTATIONS & WORKSHOPS	• Sorbonne University, Sept. 2012, "A Standard Based Reference Framework for System Adaptation and Installation Requirements" Paris, France. • University of Quebec, ETS, July 2009, "Non-Functional systems Requirements allocated to Embedded Software (future and challenges)" Montreal, Canada.

- Renault Company, Research Center, December 2009, "Non-Functional Requirements (Modeling and measurements their functional size) - Industry Research Track" Paris, France.
- Versailles University (Workshop), December 2009, "Non-Functional Requirements (Modeling and measurements their functional size) – Academics Research Track", Versailles, France.
- Van Hugo School (Workshop), December 2009, "Non-Functional Requirements (Modeling and measurements their functional size) – Academics and industry Research Track", IWSM 2009 Conference, Amsterdam, Holland.
- Concordia University, January 2010, "Generic Models for specifying Non-Functional Systems Requirements based on ECSS, ISO and IEEE standards" Montreal, Canada.
- School of Higher Technology (ETS), University of Quebec, Main Campus, June 2010, "Generic Models for specifying Non-Functional Systems Requirements based on ECSS, ISO and IEEE standards and measurement their functional size using COSMIC method (ISO 19765)".
- Abran, A. & Sarayreh, K, 'Specification of System Non Functional Requirements & their Measurement when allocated as Software Requirements', Chennai-SPIN, Chennai (India), February 23, 2011.

- University of Petra, Dec. 2017, "Procedural *Model of Software Quality, Improvements for Sustainable Applications, Process of Renewable Energy Systems (Development & Enhancement)", Amman, Jordan.*
- University of Petra, Dec. 2017," *Exploration of Development Projects of Renewable Energy Applications in the ISBSG Dataset: Empirical Study"*, Amman, Jordan.
- University of Petra, July. 2013, "*Towards Apriori and Posteriori Estimation Models for Renewable Energy Projects in Software Engineering", Amman, Jordan.*
- University of Petra, July. 2013, "*Integrated Model of Photovoltaic Solar System with the Sound Biometric Techniques ", Amman, Jordan.*
- Philadelphia University, May 2013, "Early identification, specification and measurement for data definition and database requirements", Jerash, Jordan.

REFERENCES

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