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# Khaldoun Al Khalidi

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## Education

- “**Doctorat**” (**Ph.D.**), Computer Science, University of Franche-Comté, Besançon, France, 1996.
- “**Diplôme d’Etudes Approfondies (DEA)**” (one-year postgraduate degree), Biomedical Engineering with specialization in Information Processing and Automation, University of Claude-Bernard, Lyon, France, 1992.
- “**Maîtrise**” (equivalent to a **Master of Science**), Computer Science, University of Franche-Comté, Besançon, France, 1991.
- “**Licence**” (equivalent to a **Bachelor of Science**), Computer Science, University of Franche-Comté, Besançon, France, 1990.
- “**Diplôme d’Etudes Universitaires Généralisées (DEUG A)**” (two-year university degree), Mathematics and Physics, University of Franche-Comté, Besançon, France, 1989.

## Academic/Teaching Experience

**Associate Professor**, International University of Sarajevo<sup>1</sup>, Computer Science and Engineering, Sarajevo, Bosnia and Herzegovina, 2021 – Present

**Program Coordinator**, International University of Sarajevo<sup>1</sup>, Computer Science and Engineering, Sarajevo, Bosnia and Herzegovina, 2022 – Present

**Associate Professor**, Notre Dame University<sup>12</sup>, Computer Science Department<sup>3</sup>, Zouk Mosbeh, Lebanon, 2014 – 2020

**Assistant Professor**, Notre Dame University, Computer Science Department, Zouk Mosbeh, Lebanon, February 1997 – 2013

Teaching undergraduate and graduate students (English is the medium of instruction in all courses).

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<sup>1</sup> English is the medium of instruction in all courses

<sup>2</sup> Accredited by New England Commission of Higher Education - NECHE

<sup>3</sup> Accredited by ABET (for CS)

Advising computer science students.

Supervising Master's students' thesis work.

## **Courses Taught**

### **Undergraduate**

- Program design and data abstraction
- Digital computer fundamentals
- Computer architecture
- Systems analysis and design
- Software Requirements Analysis
- Software Construction
- Data structures
- Object-oriented programming
- Analysis of algorithms
- Theory of Computation
- Advanced programming using java
- Systems integration
- Advanced software development
- Introduction to computer graphics
- Operating systems
- Introduction to image processing
- Software engineering
- Computer graphics and animation
- Senior study

### **Graduate**

- Objected-oriented applications
- Advanced computer architecture
- Advanced software engineering
- Advanced operating systems
- Multimedia systems
- Digital image processing
- Software Modeling and Analysis
- Master thesis in computer science

## **Industrial Experience**

- **Project Manager**, Linkvest (Offshore), Beirut, Lebanon, 2000–2001.

Participation in the development of RiskPro™, a fully integrated Risk Management Software.

- **Vacation Scholar**, University Hospital Center, Besançon, France, 1995–1996.  
Development of an application for tomographic reconstruction in nuclear medicine, and parallel implementation on a network of transputers.
- **Technical Researcher**, National Center of Scientific Research (CNRS), Nancy, France, 1993–1994.  
Development of a software package for Monte Carlo photon transport simulation in emission tomography.

## Projects

- TEMPUS project: Partnership with Enterprises Towards Building Open Source Software Communities and Rejuvenation of Technical Education and Innovation (OSSCOM), 2015-2017.  
Contribution: Writing specifications for a High Performance Computing CPU/GPU cluster installed in Notre Dame University campus.
- Consultant: College of Science and General Studies of Alfaisal University, Riyadh, Saudi Arabia, 2013.  
Task: Developing course specifications of the Computer Science Program to be launched in the academic year 2013-2014.

## Publications

### Journals

- El Khaldi, Khaldoun, Rabiei, Nima and Saleeby, Elias G.. "On modeling column crystallizers and a Hermite predictor–corrector scheme for a system of integro-differential equations" *International Journal of Nonlinear Sciences and Numerical Simulation*, vol. , no. , 2021. <https://doi.org/10.1515/ijnsns-2020-0239>
- El Khaldi, Khaldoun and Saleeby, Elias G.. "On the density of lines and Santalo's formula for computing geometric size measures" *Monte Carlo Methods and Applications*, vol. 26, no. 4, 2020, pp. 315-323. <https://doi.org/10.1515/mcma-2020-2071>
- El Khaldi, K., Khasawneh, M., & Saleeby, E. G. (2019). A Rothe-modified shooting method for solving a nonlinear boundary value problem arising in particulate processes. *Computational and Applied Mathematics*, 38(1), 2.
- El Khaldi, K., & Saleeby, E. G. (2017). On the tangent model for the density of lines and a Monte Carlo method for computing hypersurface area. *Monte Carlo Methods and Applications*, 23(1), 13-20.
- El Khaldi, K., & Saleeby, E. G. (2016). Perimeters of fermat ovals. *Mathematical Scientist*, 41(1).

- El-Khalidi, K., Mourany, N., & Saleeby, E. G. (2013). On the identification of parameters for a nonlinear integrodifferential population balance equation. *International Journal of Computer Mathematics*, 90(9), 2019-2035.
- Hatoum, O., & El-Khalidi, K. (2009). Building a combined micro/macro instruction set according to a modified definition of microprogramming. *Hellenic Open University Journal of Informatics*, 2(1).

## Conferences

- Challita, K., Farhat, H., & Khalidi, K. (2010, August). Biometric authentication for intrusion detection systems. In *2010 First International Conference on Integrated Intelligent Computing* (pp. 195-199). IEEE.
- Challita, K., Farhat, H., & Khalidi, K. (2010, August). Integrating mobile agents into network access control. In *2010 First International Conference on Integrated Intelligent Computing* (pp. 314-318). IEEE.
- El-Khalidi, K., Rached, Z., & Saleeby, E. G. (2009). On the positivity of solutions of certain systems of integrodifferential equations. In *Proceedings of the International Conference on Analysis & Computational Mathematics* (pp. 41-60). Research Publishing, Singapore.
- El Khalidi, K., & Saleeby, E. G. (2009). A fourth order numerical method for some second order integrodifferential equations. In *Proceedings of the International Conference on Analysis & Computational Mathematics* (pp. 61-74). Research Publishing Services, Singapore.
- El Khalidi, K. (2009, June). Numerical solution of a population balance and the modeling of crystallization problem. In *LinkSceem High Performance Computing (HPC) User's Meeting*. American University of Beirut, Lebanon.
- El Khalidi, K., & El-Khoury, E (2007). Specification of ignorance rules for precise detection of GOF design patterns in implementation perspective UML diagrams using bit-vector algorithm. In *Conference on Current Trends in the Theory and Applications of Computer Science*. Notre Dame University, Lebanon.
- El Khalidi, K., Guillemin, H., & Bidet., R. (1996, October). Comparative study of four reconstruction techniques applied to cone-beam gamma ray transmission tomography. In *35ème Colloque de Médecine Nucléaire de Langue Française*. Lille, France.
- El Khalidi, K., Ben Younes, R., Guillemin, H., & Bidet., R. (1995, November). A cone-beam reconstruction algorithm in transmission tomography using maximum likelihood techniques. In *34ème Colloque de Médecine Nucléaire de Langue Française*. Monaco.
- El Khalidi, K., Ben Younes, Mas, J., & Bidet., R. (1994, October). Iterative image reconstruction algorithm for cone-beam emission computed tomography. In *33ème Colloque de Médecine Nucléaire de Langue Française*. Grenoble, France.
- Younes, R. B., Rohmer, P., El Khalidi, K., Pousse, A., & Bidet, R (1992). Acquisition and reconstruction of 3-D ultrasonic imaging. In *1992 14th Annual*

*International Conference of the IEEE Engineering in Medicine and Biology Society* (Vol. 5, pp. 2139-2139). IEEE.

## Master's Theses Supervised

- Sara Rizk. Plant leaf classification using dual path convolutional neural networks. May 2019.
- Samer Hamam. CSAS: Course Schedule Advisory Expert System. February 2014.
- Ziad Tawk. CASPER: Cross-platform Automated Space Planning Engine for Retailers. January 2010.
- Mario Aoun. Temporal difference learning with spike-time-dependent hebbian plasticity as a learning algorithm in networks of chaotic spiking neurons. July 2007.
- Elias El-Khoury. Design patterns reverse engineering: modification of the bit-vector algorithm by removing false positives using ignorance rules. July 2007.
- Salim Kassab. Architectural analysis based evaluation for software systems integration. June 2006.
- Joseph Jabbour. Dynamically driven & generated systems. June 2005.
- Leonardo Zeaiter. Using model driven architecture (MDA) for generating ER and .NET code models from an input PSM based on UML. February 2005.
- Walid Murad. Distributed architecture for interoperable GIS using CORBA ORB and EJB integration technologies. December 2004.
- Bassel Dhaini. Association rule mining using vertical a priori. June 2004.
- Oussama Hatoum. Building a combined micro/macro instruction set according to a modified definition of microprogramming. March 2004.
- Fady Faddoul. Enhancing component interactivity and manageability using delegates. February 2004.
- Elie Jurascovitch. Distributed architectures and web services: using .NET platform for building an e-commerce application. November 2002.
- Tarek Maalouf. Design patterns and transaction processing in object-oriented programming. August 2001.
- Walid El Daccache. Transforming the web into a database with XML. June 2001.
- Maurice Mouawad. Web rings and tree structures on the web. June 2001.
- Michel Kokozaki. Modeling of complex dimensional objects with emphasis on boolean operations and a modification of the ray-casting method. July 2000.
- Naji El Hayek. Segmentation of textured images using gibbs random fields. July 2000.
- Armen Balian. Automatic segmentation and 3d rendering of liver veins from ultrasonic images. January 1999.

## **Research Interests**

My early work in medical image processing was related to tomography where I investigated the application of cone-beam geometry to gamma ray emission tomography. With research collaboration, I moved my research interest into the field of computational mathematics, more specifically, integral geometry and numerical analysis of new models of crystal size distribution in crystallization systems. I am also interested in high performance computing, model-driven development, digital image processing, and computer graphics and animation.

## **Skills**

### **Languages**

- Arabic (native)
- English (fluent)
- French (fluent)

### **Programming**

- Languages: Java (SE, EE), C/C++, C#, Python, Matlab , GNU Octave, Lua, Pascal, Fortran, Lisp, Prolog, Assembly, SQL, CORBA IDL
- Graphics: OpenGL, GLSL
- Platforms: Linux, Windows

### **Tools**

- Development: Eclipse, NetBeans, Visual Studio
- Modeling: StarUML, UMLet , Microsoft Visio
- Scientific: Matlab, Mathematica, Maple, GeoGebra, SageMath
- Version Control: Git
- Integration: Microsoft Biztalk Server, Microsoft Message Queuing Services (MSMQs), IBM MQ
- Latex: Scientific Notebook, TeXlipse
- Other: GIMP, Photoshop, 3ds Max, Unity, MS Office