

# KHALID AMMAR, PH.D

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## ACADEMIC QUALIFICATIONS:

- **Doctor of Philosophy in Electrical and Computer Engineering.** 2001  
University of Sherbrooke, Sherbrooke, Canada.  
*Dissertation: Design and development of a very flexible and completely programmable pain control stimulator.*
- **Master of Engineering in Electrical and Computer Engineering.** 1986  
Concordia University, Montreal, Canada.  
*Project: Design Rule Checking Package for VLSI layout.*
- **Bachelor of Science in Computer Engineering.** 1980  
The Higher Institute of Electronics, Libya.  
*Project: Cartridge disk subsystem diagnostic program.*

## TEACHING EXPERIENCE:

AJMAN UNIVERSITY OF SCIENCE AND TECHNOLOGY, UAE. 2002- Present  
(ASSISTANT PROFESSOR).

- Lectured several courses in the area of computer engineering, such as:
  - Digital logic design
  - Digital system design
  - Digital integrated circuits
  - Computer hardware design
  - Microprocessor systems
  - Embedded systems
  - Computer interfacing
  - Computer organization and architecture
  - Operating systems.
  - Electronics
- Served as a faculty member, program coordinator, and head of the Computer Engineering Department for several years.
- Led the Computer Engineering program through the local CAA accreditation and the international ABET accreditation cycles.
- Participated in various department, college, and university committee assignments.

NORTEL NETWORKS (HARDWARE DESIGN SOLUTION GROUP), 2000-2001  
OTTAWA, CANADA. (SENIOR ASIC APPLICATIONS ENGINEER).

- Developed and presented intensive professional courses for Nortel Networks employees training programs, the material substantially raised awareness of technical issues within ASIC design community.

THE HIGHER INSTITUTE OF ELECTRONICS (HIE), LIBYA. (INSTRUCTOR) 1987-1992

- Lectured undergraduate courses in the area of digital electronics, computer architecture, and microprocessor applications.
- Designed lab experiments and supervised undergraduate projects.

THE HIGHER INSTITUTE OF ELECTRONICS (HIE), LIBYA. (ENGINEER) 1980-1982

- Supervised and managed laboratory operations ensured equipment functionality. Conducted laboratory sessions, provided guidance and support to students to reinforce theoretical concepts and enhance their practical skills.

### **RESEARCH AND DEVELOPMENT EXPERIENCE:**

GRAMS, UNIVERSITY OF SHERBROOKE, CANADA. (PH.D RESEARCHER) 1995-1999

Successfully explored, designed, implemented, and tested highly specialized computer system for medical application that introduced new features, improved the efficiency and offered significant flexibility for biomedical applications in the field of neurology

- Designed and implemented a full custom mixed signal RISC processor from concept to realization. The development phase included concept development, system requirements, requirements analysis, design specification, architecture, instruction set definition, design partition, HDL coding, simulation, synthesis, layout, system integration and testing.
- Designed an interface card with an FPGA to manage the data communication between a host computer and a transmitter.
- Developed application software that automated the microcode generation for a dedicated RISC processor and provided the communication protocol between a host computer and a transmitter control card. Integrated and tested the system hardware and software.
- As an active member of the GRAMS, I have participated in supervising undergraduate projects.
- Researched, designed, and implemented a variety of embedded systems across a range of applications

CONCORDIA UNIVERSITY, MONTREAL, CANADA. (M.ENG RESEARCHER) 1983-1986

Investigated geometric VLSI layout problems and significantly enhanced VLSI verification and mask generation tools.

- Innovated new algorithms, which made major enhancements to the VLSI back-end tools such as DRC and mask pattern generator. Coded the algorithms as transportable package. The package incorporated in the design flow methodology and made available to all Canadian Microelectronics Corporation (CMC) VLSI community.

### **INDUSTRIAL EXPERIENCE:**

*NORTEL NETWORKS (HARDWARE DESIGN SOLUTION GROUP), OTTAWA, 2000-2001  
ONTARIO, CANADA. (SENIOR ASIC APPLICATIONS ENGINEER)*

- Provided design guidance and expertise to Nortel ASIC design community through full COT flow from the beginning of the design phase to prototypes and manufacturing by providing solution, analysis, and recommendations to resolve technical issue in the areas of synthesis, simulation, static timing analysis, electrical rule checking, floor planning, layout and power analysis.
- Resolved and managed all non-design technical issues. Provided tool support, maintained design data tracking in the COT flow, and managed file and version control for netlists and vendor libraries. Took action to oversee project planning, status tracking, scheduling, and resource utilization.

### **PROFESSIONAL TECHNICAL COURSES:**

- Prime Time Training with Synopsys. Ottawa, Canada,
- Chip Synthesis Training with Synopsys. Ottawa, ON, Canada,
- Jump start for Verilog verification with Qualis. Ottawa, Canada,
- Deep knowledge in Verilog verification with Qualis. Ottawa, Canada,
- High level Design using Verilog with Qualis. Ottawa, Canada,

### **CERTIFICATES:**

- A certificate of appreciation, for supervising the best scientific paper at the Ninth Approach student scientific conference of AUST Network, June 2013.
- A certificate of appreciation, for supervising the best scientific paper at the eighth Approach student scientific conference of AUST Network, May 2012.
- A certificate of appreciation, for contribution as assessor at the Seventh Approach Student Scientific Conference of AUST, May 2011.
- A certificate of appreciation, for contribution as assessor at the Sixth Approach Student Scientific Conference of AUST, May 2010.
- A certificate of appreciation, for contribution in organizing the international on “Trends in Information Technology and Applications 2010”, UAE, December 2010

## PUBLICATIONS: (Past Five Years)

### Journals

- “*An Intelligent, Two-Stage, In-Vehicle Diagnostic-Based Secured Framework*”. IEEE Access, Volume: 10, Pages: 88907–88919, 19 August 2022. DOI: [10.1109/ACCESS.2022.3200375](https://doi.org/10.1109/ACCESS.2022.3200375)
- “*Intelligent Multi-Group Marine Predator Algorithm with Deep Learning Assisted Anomaly Detection in Pedestrian Walkways*”. IEEE Access, Volume: 12, Pages: 72662–72671, 21 May 2024. DOI: [10.1109/ACCESS.2024.3403549](https://doi.org/10.1109/ACCESS.2024.3403549)
- “*Design and Implementation of Secure Boot Architecture on RISC-V using FPGA. Microprocessors and Microsystems*”, Vol: 101, June 2023. DOI: <https://doi.org/10.1016/j.micpro.2023.104889>
- “*Restorative Hand Therapy Exercise using IoT-Based Flex Force Smart Glove*”. MAKARA Journal of Technology, Vol. 27, Iss. 1, 2023. DOI: <https://doi.org/10.7454/mst.v27i1.1540>
- “*A novel active lithium-ion cell balancing method based on charging and discharging state of power in electric vehicles*”, Scientific Reports. 06/May/2025. DOI: [10.1038/s41598-025-96581-8](https://doi.org/10.1038/s41598-025-96581-8)
- “*Blockchain enhanced distributed denial of service detection in IoT using deep learning and evolutionary computation*”, Scientific Reports, 2/July/2025. DOI: [10.1038/s41598-025-06568-8](https://doi.org/10.1038/s41598-025-06568-8)
- “*A new active cell equalizer for series connected Lithium-ion battery pack in electric vehicle application for fast equalization*”. Energy Conversion and Management: X. July 2025. DOI: [10.1016/j.ecmx.2025.101149](https://doi.org/10.1016/j.ecmx.2025.101149)
- “*Combined Architecture of Destination Sequence Distance Vector (DSDV) Routing with Software Defined Networking (SDN) and Blockchain in Cyber-Physical Systems*”. Computers, Materials and Continua. 17/February/2025. DOI: [10.32604/cmc.2025.057848](https://doi.org/10.32604/cmc.2025.057848).
- “*Enhancing Student Management Through Hybrid Machine Learning and Rough Set Models: A Framework for Positive Learning Environments*”. IEEE Access. 29 April 2025. DOI: [10.1109/ACCESS.2025.3565585](https://doi.org/10.1109/ACCESS.2025.3565585)

## Conferences

- “*A Real-time School Bus Tracking and Monitoring System*”. 2019 IEEE 10th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), 17-19 Oct. 2019, Vancouver, BC, Canada. DOI: 10.1109/IEMCON.2019.8936199
- “*Factors Influencing Plagiarism and Collusion in Programming Assignments*”. ITHET 2019, 26-27 Sept. 2019, Magdeburg, Germany. DOI: 10.1109/ITHET46829.2019.8937362
- “*Developing Fine-Grained Performance Indicators for Assessment of Computer Engineering using Outcome-Based Education*”. 27-29 March 2021, Okayama, Japan. DOI: 10.1109/ICIET51873.2021.9419611
- “*Real-time Vehicle Speed Enforcement System*”. 7-10 June 2021, Budva, Montenegro. DOI: 10.1109/MECO52532.2021.9460297
- “*Outcome-Based Performance Evaluation Approach Using Rubric-Based Capstone Projects Assessment*”. 20th International Multi-Conference on Systems, Signals & Devices (SSD), 20-23 Feb. 2023, Mahdia, Tunisia. DOI: 10.1109/SSD58187.2023.10411275
- “*Energy Consumption Analysis of Elliptic Curve Cryptography Middleware Broker for MQTT Application in IoT Systems*”. 6-8 Dec. 2023, Ajman, UAE. DOI: 10.1109/ACIT58888.2023.10453797
- “*Predictive Modeling for Smart Traffic Systems: Harnessing IoT Data Insights*”. 6-8 Dec. 2023, Ajman, UAE. DOI: 10.1109/ACIT58888.2023.10453841
- “*Enhancing Network Security and Efficiency in Smart Cities: SDN-Based Hashing Authentication*”. 15-17 Jan. 2024, Bangkok, Thailand. DOI: <https://doi.org/10.1145/3641181.3641202>
- “*Real-Time Decision System for Detecting Driver Intoxication*”. International Conference on Decision Aid Sciences and Applications, Manama Bahrain. DASA 2024. DOI: [10.1109/DASA63652.2024.10836389](https://doi.org/10.1109/DASA63652.2024.10836389)
- “*Implementation of Device-to-Device Authentication with Middleware Broker System for Secure Smart Homes*”. 13th International Symposium on Digital Forensics and Security, ISDFS 2025, Boston. 02 June 2025, Boston USA. DOI: [10.1109/ISDFS65363.2025.11012054](https://doi.org/10.1109/ISDFS65363.2025.11012054)
- “*Collective Intelligence Unleashed: Exploring the Dynamics and Applications of Swarm Robotic Systems*”. 11th International Conference on Automation, Robotics, and Applications, ICARA 2025. 05 May 2025, Zagreb, Croatia. DOI: [10.1109/ICARA64554.2025.10977704](https://doi.org/10.1109/ICARA64554.2025.10977704)