

Dr. Ramzi JABER

Associate Professor & Researcher in Computer Engineering
Embedded Systems | Computer Architecture | Multiple-Valued Logic | AI Hardware

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Profiles: (Click to open the links below)

- Google Scholar H-Index:12| i10-index:14| 556+ citations
- 24+ Peer-Reviewed Publications | 15 as First Author | 1 as Sole Author
- 100+ Verified Peer Reviews
- ResearchGate: Top 7% worldwide in Education
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October 5, 2026

Academic & Industry Profile

Associate Professor and researcher with a Ph.D. in Computer Engineering and **18+ years of university teaching experience** at Notre Dame University, Beirut Arab University, and Lebanese University. Author of **24+ peer-reviewed publications**, with **556+ Google Scholar citations, an h-index of 12, and an i10-index of 14.** Research interests include multiple-valued logic, CNTFET-based digital circuit design, embedded systems, and AI hardware. Experienced in university teaching, **Ph.D. co-supervision**, academic peer review, international conference service, and doctoral examination, including service as an **Assistant External Examiner at RMIT University, Australia**. Also a Cisco Networking Academy **Instructor (CCNA)**, with experience in robotics, AI education, and student mentoring. Combines academic research and teaching with extensive industry experience in embedded systems, AI, IoT, and software engineering.

Academic Highlights

- **Academic position:** Associate Professor (Part-time), Notre Dame University, Faculty of Engineering (2025–Present).
- **Teaching:** 18+ years across Notre Dame University, Beirut Arab University, and Lebanese University; 18 computer engineering courses taught.
- **Research output:** 24+ peer-reviewed publications, including **15 first-author and one sole-author** IEEE conference paper, with articles in Q1/Q2 journals and papers presented at IEEE conferences; Google Scholar h-index: 12 | i10-index: 14 | 556+ citations.
- **Doctoral supervision:** Co-supervised a Ph.D. student at Beirut Arab University (2021–2024), resulting in three co-authored peer-reviewed publications.
- **Academic service:** 100+ verified peer reviews; TPC member for international conferences; Session Chair; conference finance co-chair; and coordination activities for the IEEE Lebanon Joint Chapter.
- **Doctoral examination:** Invited Assistant External Examiner for a Ph.D. defense at RMIT University, Australia (2021–2022).
- **Funded Research Project:** Research on the first application of multiple-valued logic in a haptic device at Qatar University, supported by the National Priorities Research Program (NPRP) through the Qatar National Research Fund (QNRF), Grant 10-0205-170346 and resulting in two IEEE Access (Q1) journal publications (2021).
- **International collaboration:** Co-authored publications with researchers across 8 countries.
- **Robotics & Student Engagement:** Arduino/Robotics Trainer; Judge & Technical Committee Member for Lebanon's National Robotics and AI Competition (NRC) and Annual Robotics Competition (ARC), selected years 2015–2024.
- **Teaching Credentials:** Cisco Networking Academy Instructor (CCNA); Ethical Hacker (AIAE); Cisco Cybersecurity Certified.
- **Industry–academia integration:** 23+ years as Founder & Technical Lead of JABERPC & Technology Co., plus applied AI/IoT experience with international organizations.

Taught Courses

- Microprocessor (8085) System Design
- Fundamentals of Computer Hardware: RISC MIPS
- Computer Organization and Architecture: RISC-V CPU
- Computer Hardware: FPGA
- Microcontroller (16F84)
- Performance Evaluation
- Computer Networks
- Database Systems
- Digital Electronics
- Digital Systems I & II
- Design and Analysis of Algorithms
- Computer Programming I & II: C, C++
- Programming for Engineers: Python
- Queueing and Modeling
- Discrete Structures
- Object-Oriented Programming (OOP)

Selected Teaching Platforms & Languages

- **Programming:** C, C++, Java, Python, PHP, JavaScript, VB.NET, ASP.NET, SQL
- **Computer Architecture & Hardware:** RISC-V, MIPS Assembly, VHDL, FPGA, CNTFET, MPLAB, Arduino, Quartus, ModelSim, HSPICE
- **Systems & Networking:** Cisco Packet Tracer, Apache, IIS, Windows Server, VMware
- **Teaching/Research Tools:** MATLAB, Ripes, MARS, Intel VTune, MySQL, SQL Server

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Teaching Philosophy

I view teaching as a bridge between rigorous engineering foundations and the practical realities of modern computing. My approach combines core computer engineering topics—including microprocessors, computer architecture, and digital systems—with current AI methods such as machine learning, large language models, and applied generative AI. I draw on industrial case studies, published research, and hands-on laboratory work. I emphasize problem-solving, reproducibility, and student ownership of projects, and design assessments that reflect real engineering constraints, including performance, reliability, cost, and deployability.

Teaching Interests & Courses Prepared to Teach

Prepared to develop and teach undergraduate and graduate courses in computer engineering and artificial intelligence, including Computer Architecture, Microprocessors, Digital Systems, Programming, Algorithms, Networks, Databases, Machine Learning, Deep Learning, NLP, Large Language Models, and Applied Generative AI. Additional interests include TinyML, AI Hardware, embedded ML, robotics, and AI for engineering applications. My teaching draws on more than 18 years of university experience, active research, and hands-on industry practice. **Open to co-developing new courses, capstone tracks, and graduate seminars in AI, robotics, and AI for engineering applications.**

Research & Technical Skills

- **Research:** Research design and simulation methods; literature reviews and critical synthesis; research problem formulation; and academic writing with LaTeX/BibTeX.
- **AI & Data:** SPARQL, RDF, OWL, Knowledge Graphs, semantic web technologies, data annotation/analysis, prompt engineering, LLM application design (RAG and agentic workflows), Python (pandas, NumPy).
- **Embedded Systems & Hardware:** Multiple-Valued Logic, CNTFET circuit design, FPGA, microcontrollers, digital systems, HSPICE, MicroCAP.
- **Professional credentials:** Cisco Networking Academy Instructor (CCNA); Ethical Hacker (AIAE); Cisco Cybersecurity certification; Artificial Intelligence certification.

Academic Service & Research Supervision

- (2021–2024) **Ph.D. Co-Supervisor:** Co-supervised a Ph.D. student at Beirut Arab University
  – Three co-authored peer-reviewed publications
- (2019-Present) **Reviewer for peer-reviewed journals: 100+ verified reviews**
- (2019-Present) **Technical Program Committee (TPC) member for international conferences**
- (2025) **Session Chair** at the Sixth Int. Conf. on Advances in Computational Tools for Eng. Applications (ACTEA)
- (2024) **Finance Co-Chair** at the 2nd Int. Conf. on Smart Systems and Power Management (IC2SPM)
- (2021-2022) **Assistant External Examiner — Ph.D. Defense:** For a Ph.D. candidate at RMIT University, Australia
- (2021) **Conference Tutorial:** International Conference on Microelectronics (ICM)
  – How to Simulate Ternary Logic Circuits from A to Z Using CNTFET and Implement Them in the HSPICE Simulator?
- (2019-2023) **Professional activities coordinator & webmaster** of the IEEE Lebanon Joint Chapter
  – IE13/PE31/CAS04/PEL35 (Industrial Elect., Power & Energy, Circuits and Systems, Power Electronics)
- (18 years cumulative) **Project Supervision** across taught courses at
  – Notre Dame University, Beirut Arab University, and Lebanese University.
- (2015–2024, selected years) **Judge & Technical Committee Member**
  – National Robotics and Artificial Intelligence Competition (NRC), organized by The International Center for Training & Development (ICTD).
  – Annual Robotics Competition (ARC), a national robotics competition in Lebanon. Evaluated robotics design, autonomous behavior, AI/programming components, and team presentations.

Research Interests

- **Multiple-Valued Logic (MVL):** circuit design, CNTFET, embedded systems and data transmission
- **Embedded Systems & AI Hardware:** energy-efficient computing, TinyML and hardware/software integration
- **AI & Large Language Models:** applied AI systems, LLM applications and deployment
- **Brain–Machine Interfaces:** BCI and AI convergence
- **Hardware Security & Biomedical Systems**

Academic & Research Experiences

(1) Notre Dame University - Faculty of Engineering — LEBANON

Associate Professor (Part-time) at Shouf Campus — *1/2025 – Present*: (1 y, 9 m)

- First author of 4 peer-reviewed publications.

(2) International Research Collaborations — KSA, MALAYSIA, IRELAND, KOREA, INDIA, USA, FRANCE, QATAR

Independent Researcher in Embedded Systems and AI. — *1/2021 – Present*: (5 y, 9 m)

- King Faisal Univ. (KSA), Univ. Teknologi Petronas (Malaysia), VIT Bhopal Univ. & PES Univ. (India), Sejong Univ. (Korea), and Univ. College Cork (Ireland):

- Research on ternary logic systems, RRAM, TCAM, and Neural networks
- Co-authored a journal paper in *Results in Engineering* (2024, Q1).
- One additional manuscript is under review.

- NanosTech (USA) & Lebanese University:

- Co-authored Chapter 6, *"The Convergence of AI and BCIs: A New Era of Brain-Machine Interfaces"* in
- *Artificial Intelligence in the Age of Nanotechnology*, IGI Global, 2024.

- Paris Saclay University - LISN (France):

- Research collaboration on comparing ternary circuits with their corresponding binary circuits.
- Co-authored two Journal papers (2023).

- Qatar University - College of Engineering:

- First application of Multiple-Valued Logic in a haptic device.
- Research supported by the National Priorities Research Program (NPRP) through the Qatar National Research Fund (QNRF), Grant 10-0205-170346.
- Resulted in two peer-reviewed *IEEE Access* (Q1) journal papers (2021)

[3] Beirut Arab University - Faculty of Engineering — Lebanon

- Research Collaborator & Ph.D. Co-Supervisor — *1/2021 – 12/2024*: (4 y)

- Co-supervised a PhD Student, resulting in three co-authored peer-reviewed publications.
- Co-authored 12 peer-reviewed publications through research collaborations.

- Assistant Professor — *9/2020 – 5/2021*: (8 m)

- Lab Instructor & Lecturer — *9/2006 – 8/2020*: (14 y)

[4] IRC NGO (International Rescue Committee) — Lebanon

Trainer (Computer & Smart Phone Maintenance) — *1/2015 – 4/2015*: (3 m)

[5] Lebanese University - Faculty of Sciences — Lebanon

Lab Instructor — *10/2006 – 9/2010*: (4 y)

Professional & Industry Experience

[6] Trust Scale (An e2f Company) | Full Remote — USA

SPARQL Annotations Specialist — *7/2025 – 7/2026*: (1 y)

trustscale.ai

- Performed data annotation using SPARQL queries for a US-based AI company
- Applied semantic web technologies for dataset labeling and categorization
- Evaluated data quality to ensure accuracy and compliance with guidelines
- Collaborated remotely with a US-based team, applying effective cross-cultural communication
- Utilized knowledge graphs and RDF structures for precise data classification

[7] JABERPC & Technology Co. — Lebanon

Founder & Technical Lead — *2003 – Present*: (23 y, 4 m)

www.jaberpc.technology

– Designed and developed full-stack software products, including a React-based Point-of-Sale system with hardware integration.
– Built AI-powered MVPs using modern LLM APIs for applied prototypes and proof-of-concept work.
– Delivered embedded systems, IoT, and engineering solutions, leading requirements, design, implementation, deployment, and support.

[8] SENSONEO Co. — Slovakia

Business Development Manager in the MENA Region (Remotely) — *5/2021 – 12/2023*: (2 y 7 m)

www.sensoneo.com

- Worked on smart-city and waste-management solutions involving IoT fill-level sensors

[9] Lebanese University — Lebanon

- Faculty of Dental Medicine: *IT Manager* — *2/2014 – 12/2018*: (4 y 10 m)

- Doctoral School of Science and Technology: *IT Engineer* — *1/2008 – 12/2009*: (1 y)

- Faculty of Sciences: *System Administrator* — *10/2006 – 10/2010*: (4 y)

[10] AluMarket (Chouman Group): Aluminum wholesaler — Lebanon

- Business Development & IT Manager — *6/2005 – 12/2017*: (12 y 6 m)

[11] Ministry of Defense Lebanese Armed Forces — Lebanon

- Army Lieutenant (Developer Engineer): www.lebarmy.gov.lb — *2/2002 – 2/2003*: (1 y)

Selected 4 from 12 Certifications

1. **CCNA Instructor (Cisco Networking Academy)** — Cisco - USA - 2010
2. **Ethical Hacker** — AIAE - USA - 2019
3. **Introduction to Cyber Security** — Cisco - USA - 2017
4. **Introduction to Artificial Intelligence** — ICTD - Lebanon - 2021

Education

Beirut Arab University — Debbieh, Lebanon

- Ph.D. in Computer Engineering *2016 – 2020*

- Dissertation Title:

"Multiple-Valued Logic Circuit Design and Data Transmission Intended for Embedded Systems."

- Committee:

1. **Prof. Ali Haidar**: Committee Chair and Computer Engineering Program Coordinator at BAU
2. **Prof. Ziad Osman**: Chair of Electrical & Computer Eng. Dept. at BAU
3. **Associate Prof. Issam Damaj**: Director of the Center for Quality Assurance at BAU
4. **Prof. Mohamed Dbouk**: Director of L'ARiCoD: Lab of Advanced Research in Intelligent Computing & Data, and Master Coordinator at Lebanese Univ.
5. **Prof. Mohamad Sawan**: Chair Professor at Westlake University, Hangzhou, China and Canada Research Chair at Polytechnique Montreal, Canada

- Master in Computer Engineering & Informatics *2008 – 2010*

- Thesis Title: "Applications and Study of Network Flow Algorithms."

- Bachelor in Computer Engineering *1996 – 2001*

- Project Title: "Hotel Management & Online Reservation System."

Memberships

- The Lebanese Order of Engineers and Architects — 2002 – Present
- The Institute of Electrical and Electronics Engineers (IEEE) — 2017 – Present
- Lebanese Red Cross – First Aid & Trainer — 1996 – 2001
- Jeunesse Anti Drogues (JAD) — 1998 – 2004
- Green Peace — 1998 – 2006

Languages

- Arabic (Mother Tongue)
- English (Professional)
- French (Intermediate)

Research Publications & Scholarly Output

Google Scholar: https://cutt.ly/Mm461I1

- **24+ peer-reviewed publications**
- **1 under review**
- **2 under preparation**

Under Review:

1. **R. A. Jaber**, et al., *"Design of Ternary Pseudo Random Number Generator for Secure IoT Applications,"* Engineering Science and Technology Journal (JESTECH) **Q1, 2026**.

Published Peer-Reviewed Journals:

1. Furqan Zahoor, **R. A. Jaber**, et al., *"Design implementations of ternary logic systems: A critical review,"***Results in Engineering journal**, Volume 23, **2024**, https://doi.org/10.1016/j.rineng.2024.102761.
2. Hiba Bazzi, **R. A. Jaber**, et al., *"Enhanced CPU Design for SDN Controller"* in **Micromachines Journal 2024**; 15(8):997. https://doi.org/10.3390/mi15080997
3. D. Etiemble, and **R. A. Jaber**, *"Comparing Unbalanced and Balanced CNTFET Ternary Adders and Multipliers,"* in **Asian Journal of Research in Computer Science (AJRCOS)**, vol. 16, issue 4, pp. 396-417,**2023**,DOI: 10.9734/AJRCOS/2023/v16i4400
4. D. Etiemble, and **R. A. Jaber**, *"Design of (3,2) and (4,2) CNTFET Ternary Counters for Multipliers,"* in **Asian Journal of Research in Computer Science (AJRCOS)**, vol. 16, issue 3, pp. 103-118, **2023**, DOI: 10.9734/AJRCOS/2023/v16i3349.
5. **R. A. Jaber**, et al., *"Ternary Full Adder Designs Employing Unary Operators and Ternary Multiplexers,"* in **Micromachines (IF= 3.5, Q2)**, vol. 14, pp. 1064, **2023**, DOI: 10.3390/mi14051064.

6. **R. A. Jaber**, et al., *"Ultra-Low Energy CNFET-Based Ternary Combinational Circuits Designs,"* in **IEEE Access (IF= 4.8, Q1)**, vol. 9, pp. 115951-115961, **2021**, DOI: 10.1109/ACCESS.2021.3105577.
7. J. M. Aljaam, **R. A. Jaber** and S. A. Al-Maadeed, *"Novel Ternary Adder and Multiplier Designs Without Using Decoders or Encoders,"* in **IEEE Access (IF= 4.8, Q1)**, vol. 9, pp. 56726-56735, **2021**, DOI: 10.1109/ACCESS.2021.3072567.
8. **R. A. Jaber**, Abdallah Kassem, Ahmad ElHajj, Lina Nimri, Ali Haidar, *" CNFET-Based Designs of Ternary Half-Adder using a Novel "Decoder-less" Ternary Multiplexer based on Unary Operators,"* **Microelectronics Journal (IF= 3, Q2), Feb 2020**, DOI: 10.1016/j.mejo.2019.104698.
9. **R. A. Jaber**, Abdallah Kassem, Ahmad ElHajj, Lina Nimri, Ali Haidar, *"High-Performance and Energy-Efficient CNFET-Based Designs for Ternary Logic Circuits,"* **IEEE Access (IF= 3.9, Q1), July 2019**, DOI: 10.1109/ACCESS.2019.2928251.

Published Peer-Reviewed Conferences:

1. **R. A. Jaber**, B. Owaidat and A. Kassem, *"A Decoder-Based CNTFET Ternary Half-Adder Design,"* 2026 IEEE 5th International Multidisciplinary Conference on Engineering Technology **(IMCET 2026)**, Beirut, Lebanon, pp. 1-5, doi: 10.1109/IMCET69180.2026.11503715.
2. **R. A. Jaber**, *"Proposed a Ternary Adder using CNTFET"* The IEEE 37th International Conference on Microelectronics **(ICM 2025)**, Cairo, Egypt, 2025, pp. 1-5, doi: 10.1109/ICM66518.2025.11322526.
3. **R. A. Jaber**, A. Kassem and A. M. Haidar, *"Proposed a Ternary Multiplexer using CNTFET,"* 2025 32nd IEEE International Conference on Electronics, Circuits and Systems **(ICECS 2025)**, Marrakech, Morocco, pp. 1-4, doi: 10.1109/ICECS66544.2025.11270756.
4. **R. A. Jaber**, et al., *"Proposed a Ternary Inverter and a Ternary Decoder using CNTFET,"* **ACTEA'25.** The Sixth International Conference on Advances in Computational Tools for Engineering Applications, NDU, Lebanon, September 24-26, 2025.
5. **R. A. Jaber**, H. S. Bazzi, A. Kassem and A. M. Haidar, *"Proposed Two Ternary Decoders Using CNTFET,"* 2024 Int. Conf. on Microelectronics **(ICM 2024)**, Doha, Qatar, pp. 1-4, doi: 10.1109/ICM63406.2024.10815865.
6. **R. A. Jaber**, H. Bazzi, A. Haidar, B. Owaidat and A. Kassem, *"1-trit Ternary Multiplier and Adder Designs Using Ternary Multiplexers and Unary Operators,"* 2021 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies **(3ICT 2021)**, pp. 292-297, doi: 10.1109/3ICT53449.2021.9581366.
7. **R. A. Jaber**, Abdallah Kassem, Ahmad ElHajj, Ali Haidar, *"A Novel CNFET-Based Ternary to Binary Converter Design in Data Transmission,"* The IEEE 32nd International Conference on Microelectronics **(ICM 2020)**, Aqaba, Jordan, 14-17 Dec. 2020, pp. 1-4, doi: 10.1109/ICM50269.2020.9331769.
8. **R. A. Jaber**, Abdallah Kassem, Ali Haidar, *"CNTFET-Based Design of Ternary Multiplier using Only Multiplexers,"* The IEEE 32nd International Conference on Microelectronics **(ICM 2020)**, Aqaba, Jordan, 14-17 Dec. 2020, pp. 1-4, doi: 10.1109/ICM50269.2020.9331806.
9. **R. A. Jaber**, Bilal Owaidat, Abdallah Kassem, Ali Haidar, *"A Novel Low-Energy CNTFET-Based Ternary Half-Adder Design using Unary Operators,"* The IEEE International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies **(3ICT 2020)**, Sakheer, Bahrain, 20-21 Dec. 2020, pp. 1-6, doi: 10.1109/3ICT51146.2020.9311953.
10. **R. A. Jaber**, Abdallah Kassem, Ahmad ElHajj, Lina Nimri, Ali Haidar, *"A Novel Binary to Ternary Converter using Double Pass-Transistor Logic,"* The IEEE 31st International Conference on Microelectronics **(ICM 2019)**, 15-18 Dec. 2019, Cairo, Egypt, DOI: 10.1109/ICM48031.2019.9021886.
11. **R. A. Jaber**, Ahmad ElHajj, Lina Nimri, Ali Haidar, *" A Novel Implementation of Ternary Decoder Using CMOS DPL Binary Gates,"* International Arab Conference on Information Technology **(ACIT 2018)** by IEEE, 28-30 Nov. 2018, Lebanon, DOI: 10.1109/ACIT.2018.8672698.
12. **R. A. Jaber** and Ali HAIDAR, *"Ternary Data Transmission between Hosts,"* the 23rd International Scientific Conference **LAAS 2017**, Beirut, Lebanon.

13. A. Belal, B. Owaidat, N. Saleh, **R. A. Jaber**, *" Error correction capabilities in block ciphers,"* 2012 2nd International Conference on Advances in Computational Tools for Engineering Applications **(ACTEA 2012)** by IEEE, 12-15, Lebanon, DOI: 10.1109/ICTEA.2012.6462905.

Tutorial in Conferences:

1. **R. A. Jaber**, "How to Simulate Ternary Logic Circuits from A to Z Using CNTFET and Implement Them in the HSPICE Simulator?," 2021 International Conference on Microelectronics **(ICM 2021)**, DOI: 10.1109/ICM52667.202

Books:

1. **R. A. Jaber**, et al., "Chapter 6: The Convergence of AI and BCIs: A New Era of Brain-Machine Interfaces," in the book *Artificial Intelligence in the Age of Nanotechnology* Jaber, Wassim, editor. **IGI Global, 2024**. https://doi.org/10.4018/979-8-3693-0368-9