

PROFESSIONAL APPOINTMENTS

MSc. degree in Electrical Engineering 2003-2007

Faculty of Engineering, Ain Shams University | Cairo, Egypt

- Computer and Systems Engineering Dept.
- Thesis topic: "Configurable Application Specific Microprocessor"

BSc. degree in Electrical Engineering 1997-2002

Faculty of Engineering, Ain Shams University | Cairo, Egypt

- Computer and Systems Engineering Dept., Major: Control Systems' engineering
- Grade: Very Good
- Thesis topic: "Parallel processing system in heterogeneous environment, Grade: Excellent"

POST DOC. UNIVERSITY ASSISTANT 2019-Currently

Institute of Computer Technology, TU Wien | Vienna, Austria

- Conducting Research in the area of Power and reliability optimisation in FPGAs
- Supervising bachelor and master students
- Conducting SoC Design, Lab and Project courses

RESEARCH ASSOCIATE & GUEST PROFESSOR 2017-Currently

Faculty of Informatics, TU Wien | Vienna, Austria

- Conducting Research in the area of Formal Verification with Prof. Eva Kuehn team
- Teaching "Advanced FPGA Design" and "Hardware Verification" courses for Master of Computer Engineering program

RESEARCH ASSOCIATE & ADJUNCT FACULTY 2015-2017

American University in Cairo - AUC | Cairo Egypt

- Part of SEAD research team led by Prof. H. Amer conducting Research in the area Reliability of FPGA based systems
- Conducting Microcontrollers design Lab

ADJUNCT FACULTY 2015-2017

Arab Academy for Science, Technology & Maritime Transport, College of Engineering and Technology | Alexandria, Egypt

- Teaching "Embedded Systems" for post graduate and undergraduate students
- Teaching "Digital design" and "Computer Programming" for undergraduate students

HEAD OF QUALITY ASSURANCE UNIT 2014-2017

Canadian International College - CIC | Cairo, Egypt

- Managing the preparation of the quality accreditation files
- Reviewing and follow up for the Intended learning outcomes design and definition
- Preparing the application documents for University accreditation
- Planning and executing training workshops for faculty staff

EXECUTIVE MANAGER**2011-2014***Elghad for Educational Projects* | Cairo, Egypt

(EDLCON (Education, Learning, and Consultation) training and learning center)

- Managing the conduction of training programs
- Design training programs for IOT, Cloud Computing and Embedded systems
- Trainers recruiting
- Planning and executing agreements with Technical institutes and universities nationally and internationally

ASSISTANT PROFESSOR**2013-Currently***Canadian International College - CIC* | Cairo, Egypt

(Electrical Engineering Dept.)

- Teaching Embedded systems, Microprocessors and Microcontrollers, Digital systems, Microelectronics Design tools, FPGAs and Reconfigurable hardware

LECTURER**2007-2012***Canadian International College - CIC* | Cairo, Egypt

(Electrical Engineering Dept.)

- Teaching Embedded systems, Microprocessors and Microcontrollers, Digital systems, Microelectronics Design tools, FPGAs and Reconfigurable hardware

TEACHING ASSISTANT**2004-2007***Canadian International College - CIC* | Cairo, Egypt

(Electrical Engineering Dept.)

- Teaching Embedded systems, Microprocessors and Microcontrollers, Digital systems, Microelectronics Design tools, FPGAs and Reconfigurable hardware

TEACHING ASSISTANT**2003-2004***Modern Academy for Engineering and Technology* | Cairo, Egypt

(Computer and Information Technology Dept.)

- Teaching Embedded systems, Microprocessors and Microcontrollers, Digital systems

INSTRUCTOR**2003-2004***Compusystems* | Cairo, Egypt

(Training Center)

- Teaching VHDL programming, VHDL for synthesis, and FPGA design

HARDWARE ENGINEER**2002-2003***Guide Systems Integrators* | Cairo, Egypt

(Xilinx Distributor)

- Designing hardware solutions
- Trainer, and Technical Support for Xilinx products in Egypt

PROJECTS

Running

- Formal Verification of Deep Neural Networks for Code Conversion applications, collaboration between Nile University and Institute of Computer Technology-TU Wien
- Hybrid Semantic based Formal Verification, in collaboration with Prof. Eva Kuehn Institute of Information Systems Engineering - TU Wien
- Adaptive Verification for Security Features of Machine Learning-based Systems, Ph.D. co-supervision by SecInt doctoral college - TU Wien
- Partial Reconfiguration for secure countermeasures on FPGAs (FPGA-based security platforms), Institute of Computer Technology - TU Wien
- Power Optimisation for FPGA-based systems, in collaboration with Prof. Axel Jantsch Institute of Computer Technology - TU Wien
- Power Efficient SRAM cell design, Ph.D. co-supervision Faculty of Engineering, Ain Shams University

Accomplished

- **SafeWien** project developing a framework for enhancing and easing the certification process of hardware. Institute of Computer Technology - TU Wien, Industrial Partner and Funding: Mission Embedded
- **LOPONODE** integration project developing a demonstrator and hardware in the rail traffic domain based on robust and re-usable middleware components for secure communication between low-power nodes, connected by wireless networks. Institute of Information Systems Engineering - TU Wien, Industrial Partner and Funding: ÖBB Infrastruktur AG.
- FPGAs for Intelligent Control Systems (smart agent for elderly people support), Research project at Canadian International College
- A mapping tool using Prolog to convert B models into their corresponding VHDL implementation, Research project at Ain Shams University
- Video processor for image enhancement using VHDL and Matlab simulation, Research project at Ain Shams University
- Microcontroller board layout using Mentor Graphics PCB Tools, Research project at Ain Shams University

TRAINING & WORKSHOPS

- VLSI Design by Mentor Graphics tools at National Information Technology Institute (NTI), Cairo, Egypt.
- Quality Assurance for Educational Institutes training program (Academic programs & Course Specs, Course Report, How to prepare exam paper, Practices and supporting documents for higher education institutions, Institutional self-evaluation for higher education institutions, Strategic Planning), Sponsored by National Authority for Quality Assurance & Accreditation - Egypt NAQAAE at Canadian International College, Cairo, Egypt.
- Effective teaching and learning principals
- Soft Skills: Presentation skills, Communication skills, Time management, Creative thinking, Leadership

Selected Publications

- Alkady, G.I., A. AbdelKader, R.M. Daoud, H.H. Amer, N.A. El-Araby, and M.B. Abdelhalim (2017). "Integration of Multiple Fault-Tolerant techniques for FPGA-based NCS Nodes". In: *Proceedings of 2016 11th International Conference on Computer Engineering and Systems, ICCES 2016*, pp. 299-304.
- Alkady, G.I., N.A. El-Araby, M.B. Abdelhalim, H.H. Amer, and A.H. Madian (2014). "A fault-tolerant technique to detect and recover from open faults in FPGA interconnects". In: *Proceedings of the Biennial Baltic Electronics Conference, BEC 2015-November*, pp. 69-72.
- Alkady, G.I., N.A. El-Araby, H.H. Amer, and M.B. Abdelhalim (2016). "Using power consumption in the performability of Fault-Tolerant FPGAs". In: *2016 5th Mediterranean Conference on Embedded Computing, MECO 2016 - Including ECyPS 2016, BIOENG.MED 2016, MECO: Student Challenge 2016*, pp. 55-58.
- El-Araby, N.A., A.M. Wahba, and M.M. Taher (2011). "Implementation of formally verified real time distributed systems: Simplified flight control system". In: *Proceedings - ICCES'2011: 2011 International Conference on Computer Engineering and Systems*, pp. 25-32.
- El-Araby, Nahla and Axel Jantsch (2022). "Reliable Power Efficient Systems through Run-time Reconfiguration". In: *2022 20th IEEE Interregional NEWCAS Conference (NEWCAS)*, pp. 347-351. doi: 10.1109/NEWCAS52662.2022.9841986.
- Elaraby, N., E. Kühn, A. Messinger, and S.T. Radschek (2018). "Towards a hybrid verification approach". In: *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 11176 LNCS, pp. 367-386.
- Elaraby, Nahla, David Frismuth, Nilson Neves Filho, and Axel Jantsch (Oct. 2022). "Run Time Power and Accuracy Management with Approximate Circuits". In: *2022 IFIP/IEEE 30th International Conference on Very Large Scale Integration (VLSI-SoC)*. IEEE. doi: 10.1109/vlsi-soc54400.2022.9939639. url: <https://doi.org/10.1109%5C%2Fvlsi-soc54400.2022.9939639>.
- Elderhalli, Y., N. El-Araby, O. Hasan, A. Jantsch, and S. Tahar (2021). "Dynamic Fault Tree Models for FPGA Fault Tolerance and Reliability". In: *Proceedings of IEEE Computer Society Annual Symposium on VLSI, ISVLSI 2021-July*, pp. 194-199.
- Kühn, E., S.T. Radschek, and N. Elaraby (2018). "Distributed coordination runtime assertions for the peer model". In: *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 10852 LNCS, pp. 200-219.
- Shaaban, Abdelkader Magdy, Sebastian Chlup, Nahla El-Araby, and Christoph Schmittner (2022). "Towards Optimized Security Attributes for IoT Devices in Smart Agriculture Based on the IEC 62443 Security Standard". In: *Applied Sciences* 12.11. ISSN: 2076-3417. doi: 10.3390/app12115653. url: <https://www.mdpi.com/2076-3417/12/11/5653>.

Google Scholar

<https://scholar.google.com/citations?user=WZE0ISUAAAAJ&hl=en&oi=ao>

ORCID

<https://orcid.org/0000-0002-6867-8673>

ACHIEVEMENTS

Awards

- Faculty Excellence Award in Canadian International College, 2013
- Ideal Employee Award, 2006

Scholarships

- VLSI Design by Mentor Graphics tools at National Information Technology Institute (NTI), Cairo, Egypt.

PROFESSIONAL SERVICES

Invited Lectures & Keynotes

- Formal Verification: Concepts, Tools and Applications (3rd International Conference on Aerospace, Mechanical and Mechatronics Engineering - ICAMME2023 at Dubai, UAE.)
- Introduction to Formal Verification (Nile University, Cairo, Nov. 2022)
- Programmable Logic Devices & FPGA design, (The Knowledge Hub Universities - Coventry University, Cairo branch, Feb 2022)

Session Chair

- The 11th IEEE International Conference on Computer Engineering and Systems (ICCES 2016)
- The 11th International Conference on Model and Data Engineering MEDI 2022

Technical Reviewer

- Journals: IEEE access, Electronics, IEEE transactions on computers, Journal of cybersecurity and privacy, Neural Computing and Applications
- Conferences: NILES, ICCES, MECO'2015, MEPCON'2018, ICM 2018, ICM 2016, IoTIIP 2023

TPC Member

- International Conference on Model and Data Engineering - MEDI'2022
- Next Generation in Communication, Computer and Network Systems - COMNETSYS2023
- IFIP/IEEE Conference on Very Large-Scale Integration - VLSI-SoC 2023

Habilitation Committee Member of

- Dr. Semeen Rehman, TU Wien 2020
- Dr. Nima Taherinejad, TU Wien 2023

SKILLS



VHDL, Verilog, SystemVerilog, C/C++, L^AT_EX



Python, MatLab



TCL scripting, High Level Synthesis

Languages

- Arabic (native)
- English (Full professional proficiency)
- German (Fluent)

REFERENCES

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