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Serag E.-D. Habib

**Summary of
Qualifications**

University Professor with experience in the following areas:

- **VLSI Design**
- **Semiconductor Devices**
- **Computer Architecture**

Experience

Academic Experience

- Apr. 2007 - Present:
Professor Emeritus, Electronics and Communications Department,
Faculty of Engineering, Cairo University, Egypt.
- Nov. 1989 - Apr 2007:
Professor, Electronics and Communications Department, Faculty of
Engineering, Cairo University, Egypt.
- Sept. 97 – Jun. 98:
Head of Electrical Engineering Department, Qatar University, Qatar.
- Sept. 93 – Jun. 98:
Professor, Electrical Engineering Department, Qatar University, Qatar.
- Sept. 1988 - Jun. 1990:
Associate Professor, Electrical Engineering Department, Faculty of
Engineering, Kuwait University, Kuwait.
- Feb. 1984 - Oct. 1989:
Associate Professor, Electronics and Communications Department,
Faculty of Engineering, Cairo University, Egypt.
- Sept. 1981 -Aug. 1983:
Senior Research Fellow, Electrical Engineering Department, University
College of Swansea, Swansea, Wales.
- Dec. 1978 - Jan. 1984:
Assistant Professor , Electronics and Communications Department,
Faculty of Engineering, Cairo University, Egypt.

Professional Consultancy Work

- ❖ Head of the technical consulting Committee for the China-Egypt Sohag Solar Cell and Panel Laboratory from Sept. 2016 to Sept. 2019. This project aims at building a semi-industrial solar cell fabrication facility at Sohag, Egypt. This project is jointly financed by ASRT, Egypt and CETEC48, China. The planned output capacity is solar cells of 1.6 MW peak. During the aforementioned period, this laboratory was built from scratch and commissioned in Sept. 2019.
- ❖ Consulted for the following agencies:
DRTPC (Egypt), Sysdsoft (Egypt), NARSS (Egypt), ASRT(Egypt), FRCU-Supreme council of Universities (Egypt), AOI (Egypt).
- ❖ Chaired the Organizing Committee and Co-chaired the Technical Program Committee of the 15th International Conference on Microelectronics (ICM 2003) that was held in Cairo from 9-11 Dec. 2003.

Education

- **Ph.D. in Electrical Engineering :**
University of Toronto, Toronto, Canada
Date Awarded : 1978
Adviser: Prof. John G. Simmons
Thesis Title: "DC theory of Switching in M-I (Tunnel)-n-p Silicon Devices"
- **M.A.Sc. in Electrical Engineering:**
University of Toronto, Toronto, Canada
Date Awarded: Aug. 1973
Adviser: Prof. S. Dmitrevsky
Thesis Title: "Small Signal Theory and Design of a Self-Oscillating Josephson Mixer at 8 mm"
- **M.Sc. in Solid State Physics:**
American University in Cairo (AUC), Cairo, Egypt.
Date Awarded: 1971
Adviser: Prof. E. Loh
Thesis Title: "On The Physical Properties Associated with Omega Phase in Titanium-Chromium Alloys"
- **B.Sc. in Electrical Engineering (Hons.):**
Electronics & Comm. Eng. Dept., Cairo University, Giza, Egypt.
Date Awarded: July 1968

Honors and Awards

- Received Cairo University's **Appreciation Award** for Engineering Sciences, 2016
- Received the **supervisor prize for the best graduate thesis** of Electronics and Communications department for the combined two calendar years 2010-2012, Faculty of Engineering, Cairo University.
- **Life Senior Member IEEE**
- **Egyptian Legion of Distinction (first class), 1995.**
- **Egyptian State Encouragement Prize, 1985,**
" For his research in semiconductor devices".
- Graduate fellowship, University of Toronto, 1970 -1978

- Graduate fellowship, American University in Cairo, 1968-1970
- B.Sc. in Electrical Engineering with honors, Cairo University, 1968
- Excellence award for 5 consecutive years, faculty of Engineering, Cairo University, 1963-1968
- Secondary School Certificate, 1963, ranked 11th over the state of Egypt.

Initiatives

- Proposed, planned, and led efforts to build the **first IC broker center in Egypt**. In 2015, the Ministry of Higher Education (MOHE) – Egypt, and Cairo University signed an agreement to co-fund this project with a seven Million LE grant. IC broker centers act as strong catalysts for advancing the IC industry. This center aimed – ISA – to transform the IC design activity in Egypt and its Arabic and African circles into an economically viable industry. Unfortunately, this project faced severe financial problem mainly due to Egyptian pound devaluation in Nov. 2016 and budget cuts at MOHE. This project is currently in a stand still conditions since Sept. 2017.
- Led the design, manufacturing and testing of the **first Egyptian processor, code named CUSPARC** for Cairo University SPARC processor 2004-present. My group implemented two versions of this processor (CUSPARC V1 and CUSPARC V2) on Silicon.
- Pioneered – under the leadership of Late Prof. ElSayed A. Talkhan – the **introduction of VLSI Design in Egypt** since 1984.
- Contributed to the **introduction of VLSI Design in Kuwait** (1988 – 1990) and Pioneered **its introduction in Qatar** (1993-1998).
- Raised funds and constructed "**the advanced Electronics lab**" at the Electronics and Communications Department, Cairo University, Egypt in 1992-1993.
- Raised funds, planned, and supervised the **updating of "Hamam Lab for Microelectronics"** at the Electronics and Communications Department, Cairo University, Egypt in 2004.

Significant research contributions
(cf. patent and publication list below)

- Developed the theory of operation of the Metal Insulator Semiconductor Switch (MISS) devices. (Solid-State Electronics vol. 22, 1979 & vol. 23 1980).
- Contributions to theory of Bulk unipolar diodes, triangular barrier diodes, camel diodes, triangular barrier transistor and triangular barrier switch. (IEEE ED vol. 30 1983 & IEE Proc. Pt. I vol. 130, 1983).
- Invented the Accumulation Lateral DMOST (ALDMOST) power MOST transistor. (IEEE EDL vol. 8. 1987 & UK patent GB 2150746 B 1988).
- Developed a new theory for the limiting efficiency of graded bandgap solar cells that shows how bandgap grading can be utilized to enhance the solar cell efficiency over the limit predicted by Shockley and Queisser. (Solar Energy Materials and Solar Cells vol. 14, 1988).
- Led the design, manufacturing and testing of two versions of the first Egyptian processor, code named CUSPARC for Cairo University SPARC processor. (Intl. Conf. Microelectronics ICM 2010, and ICM 2016).
- Introduced the use of Particle Swarm Optimization (PSO) technique for solution of the Hardware/software partitioning problem. (Design Auto. Embed. Systems vol. 15, 2011).
- Currently working on developing IP cores for embedded GPU cores and CNN-based object tracking engines.

Professional Memberships

IEEE Member Since 1973.
IEEE Senior Life Member

Other Technical Activities	<p>Served as a reviewer to several International Journals including:</p> <ol style="list-style-type: none"> 1. IEEE transactions on Electron devices 2. IEEE Electron Device Letters 3. Solid State Electronics 4. Applied Soft Computing 5. IEEE Transactions on Very Large Scale Integration Systems 6. Microelectronics Journal 7. IET Science, Measurement & Technology 8. Microprocessors and Microsystems
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Patents

1. Serag El-Din El-Sayed Habib, "MOS transistor with surface accumulation region", UK. Patent GB 2150746 B, Patent published 24 Feb. 1988.
Available on Espacenet web site:
https://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=19880224&DB=&locale=en_EP&CC=GB&NR=2150746B&KC=B&ND=4#
And on UK Online Patent Information and Document Inspection Service
<https://www.ipo.gov.uk/p-ipsum/Case/PublicationNumber/GB2150746>

IC Tapeouts **Initiated and Led the design and implementation of following circuits on Silicon:**

- 1. Cairo University SPARC (CUSPARC) processor V2.** This processor is an enhanced version of CUSPARC, the first Egyptian processor (See my paper 26th International Conference on Microelectronics [ICM 2016], 17-20 Dec. 2016). This IC was received from IBM Fabrication house on June 2015. The processor is implemented on Silicon using 130 nm technology via a research grant from MOSIS.
- 2. All Digital Delay-Locked Loop (ADDLL).** This IC implements novel techniques for Multi-bit SAR to reduce area of Multi-bit SAR ADDLLs and to prevent harmonic locking (cf. Microelectronics Journal, Vol. 43, page 393–400, 2012). This IC was fabricated at UMC fab. using 130 nm technology via a grant from FabCat program of Technology Innovation and Entrepreneurship Center (TIEC); a the branch of Ministry of Communications and Information Technology (MIST). The Chip was received from fab. house on March 2015.
- 3. MEMS based Vibratory Gyroscope.** This Chip was fabricated at the Yousef Jameel Science and Technology Research Center of AUC, Cairo, Egypt (See my paper : Sensors & Transducers Journal, Vol. 11, April 2011).
- 4. Cairo University SPARC (CUSPARC) processor.** This processor is the first Egyptian processor. IC was received from IBM Fabrication house on Dec. 2010. The processor is implemented on Silicon using 130 nm technology via a research grant from MOSIS.
- 5. Arabic numerals IC.** This Chip implements a binary to Arabic numerals code converter. This simple IC was fabricated via the French CMP IC broker. This chip was designed and implemented at Qatar university in 1994 during my secondment to this university.

Contributed to the design and implementation of following circuit on Silicon:

- 1. An Interface Circuit for MEMS Gyroscope.** This Chip is an interface circuit for a MEMS gyroscope (See my paper: 8th IEEE International NEWCAS Conference, 2010, Montreal). This chip was fabricated in Xfab using 0.6 μm CMOS technology via grant from King Abdullah University of Science and Technology (KAUST).

Publications
Books

1. Howida Abd Elhalym, Imbaby Ismail Mahmoud and Serag El-Din Habib, "Particle Filters for Object Tracking: Enhanced Algorithm and Efficient Implementations," Lambert Academic publishing, ISBN 978-3-659-24348-6, Published on 2nd of October 2013.
2. Serag Eldin Elsayed Habib and Hassan Youssef, "Electronic Circuits for technical secondary schools", third year, Ministry of Education, State of Qatar, 1995 (in Arabic)
3. "Computer Dictionary", Arabic/English & English Arabic , Al-Ahram Commercial Press, Cairo, Egypt, 1987.

1. **S. E. D. Habib**, Reem I. Sayed, Hisham M. Hamed, Magdi Fikri, "An Efficient ICI Self-cancellation Scheme for High order Constellations," Book Chapter, Chapter 9, pages 111-139, in :Technological Innovation in Engineering Research Vol. 1, by **Rajkumar Venkatesh Raikar** (editor), ISBN 978-93-5547-370-7 (Print), 14 May 2022, Available online : <https://doi.org/10.9734/bpi/tier/v1/2265B>.
2. Hesham. H. Shaker, A.A. Saleh, Mohamed Refky Amin, **S. E. D. Habib**, "Improved Buildup Model for Radiation-Induced Defects in MOSFET Isolation Oxides," Journal of Radiation Research and Applied Sciences, Volume 15, Issue 2, June 2022, Pages 67-75. available online : <https://doi.org/10.1016/j.jrras.2022.04.003>
3. Ahmed M. AbdelTawab, M.B. Abdelhalim, **S.E.D. Habib**. "Moving Object Detection over Wireless Visual Sensor Networks using Spectral Dual Mode Background Subtraction," International Journal of Advanced Computer Science and Applications (IJACSA), Vol. 13, No. 1, 2022.
4. Al-Hussein El-Shafie, Mohamed Zaki, **S. E. D. Habib**, "An Efficient Hardware Implementation of CNN-Based Object Trackers for Real-Time Applications," TechRxiv, https://www.techrxiv.org/articles/preprint/An_Efficient_Hardware_Implementation_of_CNN-Based_Object_Trackers_for_Real-Time_Applications/14445267. April 2021.
5. Ahmed A. Mohsen, Mohamed Zahran, **S. E. D. Habib** and Nageh K. Allam, "Refractory plasmonics enabling 20% efficient lead-free perovskite solar cells," Scientific Reports volume 10, Article number: 6732 (2020). <https://doi.org/10.1038/s41598-020-63745-7>. **This Journal is one of Nature Group Journals.**
6. Hesham. H. Shaker, A.A. Saleh, Mohamed Refky Amin, **S. E. D. Habib**, "Improved Buildup Model for Radiation-Induced Defects in MOSFET Isolation Oxides," <https://arxiv.org/abs/2009.12652>. Archived on 26 Sept. 2020. You can also use the following link alone: <https://arxiv.org/abs/2009.12652>
7. Ahmed Khattab, **Serag E.D. Habib**, Haythem Ismail, Sahar Zayan, Yasmine Fahmy, and Mohamed M. Khairy, "An IoT-based Cognitive Monitoring System for Early Plant Disease Forecast," Computers and Electronics in Agriculture 166 (2019) 105028,
8. Al-Hussein A. El-Shafie and **S. E. D. Habib**, "A Survey on Hardware Implementations of Visual Object Trackers," IET image processing, Volume 13, Issue 6, May 2019, p. 863 – 876.
9. A. S. H. Ahmed, M. M. Aboudina and **S. E. D. Habib**, "Offset Calibration Technique for Capacitive Transimpedance Amplifier used in Uncooled Infrared Detection," Microelectronics Journal, Vol. 53, pages 56-64, 2016.
10. Ahmed M. AbdelTawab, M. B. Abdelhalim and **S. E. -D. Habib**, "Efficient Multi-feature PSO for Fast Gray level object-tracking," Applied Soft computing, Vol. 14, page 317-337, 2014.

11. **S. E. D. Habib**, Reem I. Sayed, Hisham M. Hamed and Magdi Fikri, "New ICI Self Cancellation Scheme for OFDM Systems", International Journal of Computer and Communication Engineering (IJCCE), Vol. 3, Number 1, page 1-5, January 2014. Same paper was presented at 2nd International Conference on Network, Communication and computing (ICNCC-2013), Kuala Lumpur, Malaysia, December 29 -30, 2013
12. Al-Hussein A. El-Shafie and **S. E. D. Habib**, "An All-Digital DLL Using Novel Harmonic-Free and Multi-bit SAR Techniques," Microelectronics Journal, Vol. 43, page 393–400, 2012.
13. Howida Abd El-Latif Abd El-Halym, Imbaby Ismail Mahmoud and **S E. D. Habib**, "Proposed Hardware Architectures of Particle Filter for Object Tracking," EURASIP Journal on Advances in Signal Processing 2012, 2012:17.
14. A. Sharaf, S. Sedky, M. Serry, A. Elshurafa, M. Ashour, **S.E.-D. Habib**, " A Fully Symmetric and Completely Decoupled MEMS-SOI Gyroscope", Sensors & Transducers Journal, Vol. 11, Special Issue, April 2011, pp. 10-22. Selected and republished from TechConnect world conference.
15. M. B. Abdelhalim and **S. E.-D. Habib**, "An Integrated High-Level Hardware/Software Partitioning Methodology", Design Automation for Embedded Systems, Vol. 15, page 19–50, 2011.
16. Muhammad S. Khairy, Mohamed M. Abdallah, and **S. E.-D. Habib**, "Efficient Implementation of MIMO Decoders", Book Chapter, Chapter 20, pages 439-454, in MIMO Systems, Theory and Applications, by H. K. Bizaki "Editor", InTech Education and Publishing, Feb. 2011. Available on line at: <http://www.intechopen.com/articles/show/title/efficient-implementation-of-mimo-decoders>
17. M. B. Abdelhalim and **S. E. -D. Habib**, "Particle Swarm Optimization for HW/SW Partitioning", Book Chapter, Chapter 3, pages 49-76 in Particle Swarm Optimization, by Aleksandar Lazinica "Editor", InTech Education and Publishing, January 2009. Available online at: <http://intechweb.org/book.php?id=155>
18. M. B. Abdelhalim, A. E. Salama and **S. E.-D. Habib**, "Constrained and Unconstrained Hardware-Software Partitioning Using Particle Swarm Optimization Technique," in "Embedded System Design: Topics, Techniques and Trends" by Achim Rettberg; Mauro Zanella; Rainer Domer; Andreas Gerstlauer; Franz Rammig (editors), Springer; 2007. Republished from International Embedded Systems Symposium 2007 (IESS'07), Irvine, CA (USA), May 29 - June 1, 2007.
19. N. H. Rafat, A. M. A. Haleem and **S. E.-D. Habib**, "Numerical Simulation Of The Limiting Efficiency Of The Graded Bandgap Solar Cell," Renewable Energy, Volume 32, p. 21-34, (2007). Available online at www.sciencedirect.com
20. Abdel Hameed Sharaf, Sherif Sedky and **S. E. D. Habib**, "Design and simulation of a decoupled micromachined gyroscope," Journal of Physics: Conference Series 34 (2006) 464–469. Republished from International MEMS Conference (IMEMS 2006), Biopolis, Singapore, 9 - 12 May 2006.

21. N. H. Rafat, A. M. Abdel Haleem, and **S. E. -D. Habib** "Photon Recycling in the Graded Bandgap Solar Cell," Progress in Photovoltaics, Volume 14, Issue 4, p. 313-320, 2006.
22. G. Gad El Karim and **S. E.-D. Habib**, " An Initialization Technique for the Waveform-Relaxation Circuit Simulation," VLSI Design, vol. 9, 213-218, (1999). This Journal ceased publication.
23. Nadia H. Rafat and **S. E.-D. Habib**, " The limiting Efficiency of bandgap graded Solar Cells", Solar Energy Materials & and Solar Cells, 55, 341-361, (1998).
24. **S. E.-D. Habib** and Nadia H. Rafat, " Novel Bandgap Grading Technique for Enhancing the limiting Efficiency of Solar Cells", Renewable Energy, 10, 129-134, (1997).
25. A. Sadek, **S. E.-D. Habib**, and K. Ismail, " Analytical Model of Si/SiGe Field-Effect Transistors", Solid State Electronics, 38, 1969-1971, (1995)
26. F. Hashim, **S. E.-D. Habib**, and M. Zaki, " A PC Knowledge-Based Environment for VLSI Layout Verification", J. Systems Software, 18, 19-31, (1992)
27. **S. E.-D. Habib** and M. Y. Soliman, " A High Efficiency Si Solar Cell Using Tunnel MIS Front and Back Contacts", Solid State Electronics, 33, 1029-1034, (1990).
28. M. Khalifa, A. El-Morshedy, O. E. Gouda, and **S. E.-D. Habib**, " A New Monitor for Pollution on Power Line Insulators, Part 2: Simulated Field Tests", IEE Proceedings, 135, Pt. C, 24-30, (1988). In 1994, this Journal was renamed IEE Proceedings - Generation, transmission, and distribution. In 2006, it was renamed IET Generation, transmission, and distribution.
29. **Serag E.-D. Habib**, " The ALDMOST: A New Power MOS Transistor", IEEE Electron Device Letters, EDL-8, 257-259, (1987)
30. M. Y. Soliman and **S. E.-D. Habib**, " Surface Recombination Velocity in MINP Solar Cells", Solid State Electronics, 30, 663-666, (1987).
31. Ali A. Abdou and S. E.-D. Habib, " Optically Induced Inversion in the MIS Solar Cell", Solid State Electronics, 29, 751-758, (1986).
32. **S. E.-D. Habib** and M. Khalifa, " A New Monitor for Pollution on Power Line Insulators, Part 1: Design, construction and preliminary tests", IEE Proceedings, 133, Pt. C, 105-108, (1986). In 1994, this Journal was renamed IEE Proceedings - Generation, transmission, and distribution. In 2006, it was renamed IET Generation, transmission, and distribution.
33. **S. E.-D. Habib** and K. Board " Theory of the Triangular-Barrier Switch", IEE Proceedings, 130, Pt. I, 292-296, (1983). In 1994, this Journal was renamed IEE Proceedings - Circuits, Devices and Systems. In 2006, It was renamed IET Circuits Devices & Systems.
34. **Serag E.-D. Habib** and Kenneth Board, "Theory of the Triangular-Bulk Unipolar Diodes including Minority-Carrier Effects", IEEE Transactions on Electron Devices, ED-30, 90-96, (1983).

35. **Serag E.-D. Habib** and Kenneth Board, "Unified Analysis of the Bulk Unipolar Diodes", IEEE Transactions on Electron Devices, ED-30, 86-89, (1983).
36. **S. E.-D. Habib** and A. A. Eltoukhy, "Modelling the Optical MIS thyristor", IEE Proceedings, Vol. 128, Pt. I, 58-60, (1981). In 1994, this Journal was renamed IEE Proceedings - Generation, transmission, and distribution. In 2006, it was renamed IET Generation, transmission, and distribution.
37. **Serag E.-D. Habib** and A. A. Eltoukhy, "A New Surface-States Mode of Switching in M-thin insulator-n-p+ devices", J. Appl. Phys., 52, 3027-3031, (1981).
38. **S. E.-D. Habib** and J. G. Simmons, "Theory of the metal-Insulator-Semiconductor Thyristor", IEE Proceedings, 127, Pt. I, 176-182, (1980). In 1994, this Journal was renamed IEE Proceedings - Generation, transmission, and distribution. In 2006, it was renamed IET Generation, transmission, and distribution.
39. **S. E.-D. Habib** and J. G. Simmons, "Theory of Switching in p-n-insulator (Tunnel)- metal Devices: Thick-tunnel Oxides and Indirect tunnel Effects", IEE Proceedings, 127, Pt. I, 111-118, (1980). In 1994, this Journal was renamed IEE Proceedings - Generation, transmission, and distribution. In 2006, it was renamed IET Generation, transmission, and distribution.
40. **S. E.-D. Habib** and J. G. Simmons, "Theory of Switching in p-n insulator (Tunnel)- metal Devices- II : Avalanche Mode", Solid State Electronics, 23, 497-505, (1980).
41. **S. E.-D. Habib** and J. G. Simmons, "Analytical Expressions for Tunnel Currents in Metal-Insulator-Metal (MIM) and Metal-Insulator-Semiconductor (MIS) Structures in a Two Band Model", Solid State Electronics, 23, 87-92, (1980).
42. **S. E.-D. Habib** and J. G. Simmons, "Theory of Switching in p-n insulator (Tunnel)- metal Devices- part I: Punchthrough Mode", Solid State Electronics, 22, 181-192, (1979).
43. **Serag E.-D. Habib** and S. Dmitrevsky, 'Small Signal Analysis of the Gain and Noise Performance of the Josephson Mixer', J. Appl. Physics, 46, 900-907, (1975).
44. Mohammad M. Khalifa, Ahmed A. Kamal, **Sirag E. Habib**, Sayed A. El-Bedwaih, Gamal S. Fahmy and Mohammed A. Hassan, "Quasi-Peak Measurements and Their Objective Correlation to Acoustical Annoyance of Corona Radio Noise", IEEE Transactions on Power System and Apparatus, July/August, Vol. 90, 1830-1837, (1971). This Transactions splitted into 3 transactions; namely: IEEE Transactions on Energy Conversion, IEEE Transactions on Power Delivery, and IEEE Transactions on Power Systems. The subject of this paper is related more to IEEE transactions on Power delivery.

**Publications
Conference
papers (in
Descending
Order)**

1. Abdulkareem M Abotaleb and S. E. D. Habib, "Design and Implementation Of Cairo University Graphics Processing (CUGPU) Using HLS Approach," 2021 3rd Novel Intelligent and Leading Emerging Sciences Conference (NILES), Cairo, Egypt.
2. Al-Hussein A. El-Shafie, Mohamed Zaki, **S. E. D. Habib**, "Towards an Efficient Hardware Implementation of CNN-Based Object Trackers," 2021

IEEE International Symposium on Circuits & Systems (ISCAS), 22-28 May, 2021, Daegu, Korea.

3. Hesham. H. Shaker, A. A. Saleh, Mohamed Refky Amin, **S. E. D. Habib**, "New Proposed Methodology for Radiation Hardening By Design of MOS Circuits," International Conference on Microelectronics (ICM 2020), 14-17 Dec. 2020, Amman, Jordan.
4. Al-Hussein A. El-Shafie, Mohamed Zaki and **S. E. D. Habib**, "Fast CNN-Based Object Tracking Using Localization Layers and Deep Features Interpolation," 15th International Wireless Communications and Mobile Computing Conference (IWCMC), Tangier, Morocco, 24-28 June 2019.
5. **S. E. D. Habib**, Mohamed Wagih I Ismail, Ahmed Ibrahim S. Khalil, Ezz El-Din O. Hussein, Alhassan F. Khedr, Safaa A. Abdelfattah, Ahmed Reda , and Mohamed Elgendy.."Cairo University SPARC V2 (CUSPARC V2) PROCESSOR," 28th International Conference on Microelectronics (ICM 2016), 17-20 Dec. 2016, Cairo, Egypt.
6. Islam Shaboon, Wael Fikry, and **Serag E.D. Habib**, "Series Resistance and Carrier Tunneling of Compact Model for Double Gate Nanoscale Transistors," Accepted for 2016 IEEE 59th International Midwest Symposium on Circuits and Systems (MWSCAS), 16-19 October 2016, Abu Dhabi, United Arab Emirates (UAE).
7. Ahmed Hamed, Rania Hassan; Mohamed B Abdelhalim and **S. E. D. Habib**, "ANSI C Front-End Enhancement for CUPSHOP HW/SW Partitioning Tool," 3rd International Conference on Advances in Computational Tools for Engineering Applications (ACTEA'16), Notre Dame University, Lebanon, July 13-16, 2016.
8. Rania Hassan; Ahmed Hamed; Mohamed B Abdelhalim; **S. E. D. Habib**, "Core and Back-End Enhancements for CUPSHOP HW/SW Partitioning Tool," 27th International Conference on Microelectronics (ICM 2015), Casablanca, Morocco, December 20-23, 2015.
9. Safaa A. Mohammed, Sameh A. Ibrahim, **S. E.-D. Habib**, "6-Gb/s Serial Link Transceiver for NoCs," 2015 IEEE International Conference on Electronics, Circuits, and Systems (ICECS 2015), Cairo, Egypt, December 06-09, 2015.
10. Muhammad R. Soliman, Hossam A. H. Fahmy and **S. E.-D. Habib**, "NoC-based Many-Core Processor Using CUSPARC Architecture," 26th International Conference on Microelectronics (ICM 2014), 14 – 16 December 2014, Doha, Qatar.
11. Rania O. Hassan, M. B. Abdelhalim and **S. E.-D. Habib**, "Reliable Pre-scheduling Delay Estimation for Hardware/Software partitioning," IEEE 56th Intl Midwest Symposium on Circuits & Systems (MWSCAS 2013), August 4-7, 2013, Columbus, Ohio, USA.
12. Al-Hussein A. El-Shafie and **S. E. D. Habib**, "A Novel N-bit SAR Implementation for All-Digital DLL Circuits" 22 International Conference on Microelectronics (ICM'10) 19 – 22 December 2010, Cairo, Egypt.

13. Amr A.Z. Suleiman, Alhassan M. Khedr and **S. E. D. Habib**, "ASIC Implementation of Cairo University SPARC "CUSPARC" Embedded Processor" 22 International Conference on Microelectronics (ICM'10) 19 – 22 December 2010, Cairo, Egypt.
14. Ezz El-Din O. Hussein, Shoukry I. Shams, Mohamed I. Ali, Amr A. Z. Suleiman, Khalid ElWazeer, Ehab A. Sobhy, Ahmad A. I. Ibrahim, Ahmed M. G. Ibrahim, Mohamed S. Khairy, Mohamed F. Fouda, Al-Hussein A. El-Shafie, Ahmed H. M. Hareedy, El-Sayed A. E. Ahmed, Ahmed R. Zakaria, Khalid M. El-Galaind, Amr A. El Sherief, and **S. E.-D. Habib**, "CUSPARC IP Processor: Design, Characterization and Applications", 22 International Conference on Microelectronics (ICM'10) 19 – 22 December 2010, Cairo, Egypt.
15. Howida A. Abd El-Halym, Imbaby I. Mahmoud, **Serag E.-D. Habib**, "Efficient Hardware Architecture for Particle Filter Based Object Tracking", 2010 IEEE International Conference on Image Processing (ICIP 2010), Sept. 26-29, Hong Kong
16. Mohannad Elsayed, Ahmed Emira, Sherif Sedky, **S. E. D. Habib**, "A Single-Ended CMOS Sensing Circuit for MEMS Gyroscope with Noise Cancellation", 8th IEEE International NEWCAS Conference, June 20 – 23, 2010, Montreal, Canada.
17. A. Sharaf, S. Sedky, M. Serry, A. Elshurafa, M. Ashour, **S. E. D. Habib**, " A Fully Symmetric and Completely Decoupled MEMS-SOI Gyroscope", TechConnect World Conference and Expo 2010, June 21-25, 2010 , Anaheim, California, U.S.A.
18. Khaled ElWazeer, Mohamed Khairy, Hossam Fahmy and **S. E. D. Habib**, "FPGA Implementation of an Improved Channel Estimation Algorithm for Mobile WiMAX", The International Conference on Microelectronics (ICM'09) 19 – 22 December 2009, Marrakech, Morocco.
19. Abdelmohsen Khater, Mohamed Khairy and **Serag E. -D. Habib**, "Efficient FPGA Implementation for the IEEE 802.16e Interleaver", The International Conference on Microelectronics (ICM'09) 19 – 22 December 2009, Marrakech, Morocco.
20. Howida Abd El-Halym, Imbaby I. Mahmoud, Ahmed AbdelTawab, **Serag E.-D. Habib**, "Appraisal of an Enhanced Particle Filter For Object Tracking", IEEE International Conference on Image Processing (ICIP 2009) , Cairo, Egypt • November 7-11, 2009.
21. Mostafa E. A. Ibrahim, Markus Rupp and **S. E. D. Habib**, "Performance and Power Consumption Trade-offs for a VLIW DSP", International Symposium on Signals Circuits and Systems (ISSCS 2009), July 9-10, 2009, Iasi, Romani.
22. Mostafa E. A. Ibrahim, Markus Rupp, and **S. E. D. Habib**, " Compiler-Based Optimizations Impact on Embedded Software Power Consumption", Proceedings of the joint conference NEWCAS and TAISA, NEWCAS-TAISA' 09, Toulouse, France, June 28 – July 1, 2009.

23. Mohamed S. Khairy, Mohamed M. Abdallah, **S. E. D. Habib**, "Efficient FPGA Prototyping of Fixed Sphere Decoder for MIMO Systems", IEEE International Conference on Communications (ICC'09), June 14-18, 2009, Dresden, Germany.
24. Howida A. Abd El-Halym, Imbaby I. Mahmoud, A. AbdelTawab and **S. E.-D. Habib**, "Particle Filter versus Particle Swarm Optimization for Object Tracking", Thirteen international conference on Aerospace Sciences & Aviation Technology, ASAT – 2009, May 26 – 28, 2009, Cairo, Egypt.
25. Mohamed S. Khairy, Mohamed M. Abdallah, **S. E. D. Habib**, "Efficient FPGA Prototyping of Fixed Sphere Decoder for MIMO Systems", 3rd International Design and Test Workshop (IDT'08), December 20-22, 2008, Monastir, Tunisia.
26. Mostafa Ibrahim, Markus Rupp, and **S. E. D. Habib**, "Power Consumption Model at Functional Level for VLIW Digital Signal Processor", DASIP 2008 Conference on Design and Architectures for Signal and Image Processing, Université Libre de Bruxelles, Belgium, November 24 -26, 2008.
27. Wael El Manhaway, Wael Fikry, **Serag Habib**, "New Model of Ultra Short Symmetric Double Gate MOSFET", 21st Canadian Conference on Electrical and Computer Engineering (IEEE CCECE 2008), Niagara Falls, Ontario, Canada, 4-7 May, 2008.
28. M .B. Abdelhalim, **S. E.-D. Habib**, "Fast FPGA-Based Area and Latency Estimation for a Novel Hardware/Software Partitioning Scheme", 21st Canadian Conference on Electrical and Computer Engineering (IEEE CCECE 2008), Niagara Falls, Ontario, Canada, 4-7 May, 2008.
29. M .B. Abdelhalim, **S. E.-D. Habib**, "Fast Hardware Upper-Bound Power Estimation for a Novel FPGA-Based HW/SW Partitioning Scheme", IEEE Computer Society International Symposium on VLSI (ISVLSI'08), Montpellier, France, 7-9 Apr. 2008
30. Abdelhameed Sharaf, Sherif Sedky, Mahmoud A. Ashour and **S. E. D. Habib**, "MEMS-Based Gyroscope: Design, Analysis and Simulation", 2nd Multifunctional Nanocomposites & Nanomaterials: International Conference & Exhibition, Sharm El Sheikh, Egypt, January 11-13, 2008.
31. M. K. Elbidweihy, A. N. Hafez, N. A. Ghamry, **S. E.-D. Habib**, "A Novel All Digital Delay Locked Loop (ADDLL)", International Conference on Microelectronics 2007 (ICM 2007), Cairo, Egypt, 29-31 Dec. 2007.
32. M .B. Abdelhalim and **S. E.-D. Habib**, "Modeling Communication Cost and Hardware Alternatives in PSO Based HW/SW Partitioning", International Conference on Microelectronics 2007 (ICM 2007), Cairo, Egypt, 29-31 Dec. 2007.
33. M .B. Abdelhalim and **S. E.-D. Habib**, "Fast FPGA-Based Delay Estimation for a Novel Hardware/Software Partitioning Scheme", IEEE International Design and Test Workshop (IDT'07), Cairo, Egypt, 16-18 Dec. 2007.
34. M. B. Abdelhalim, A. E. Salama and **S. E.-D. Habib**, "Hardware Software Partitioning using Particle Swarm Optimization Technique", The 6th IEEE

International Workshop on System-on-Chip for Real-Time Applications, Cairo, Egypt, 27-29 December 2006

35. Abdel Hameed Sharaf, Sherif Sedky and **S. E. D. Habib**, "Complete Analysis of a Novel Fully Symmetric Decoupled Micromachined Gyroscope", The 4th IEEE International Conference on MEMS, Nano and Smart Systems, Cairo, Egypt, 27-29 December 2006
36. Amr A. Hamid, **Serag E.-D. Habib**, and M. Hashim, "Autonomous UAV Fuzzy Logic Navigation and Obstacle Avoidance Controller", 11th International Conference on Aerospace Science and Aviation Technology, 17-19 May 2005, Cairo, Egypt.
37. Nivin A. E. Ghamry, Hamed A. Elsimary, and **Serag E.-D. Habib**, "Hardware Implementation of a New Adaptive 1D Wavelet Coding Algorithm", International Conference on Electrical, electronic, and Computer Engineering (ICEEC'04), Sept 5-7, 2004, Cairo, Egypt.
38. Imbaby I. Mahmoud, Howida A. Abd El-Halym, and **S. E.-D. Habib**, "Hardware development and Implementation of an object Tracking Algorithm," Proceedings of the International Conference on Microelectronics (ICM03), p. 330, 9-11 Dec 2003, Cairo, Egypt.
39. Ahmed Salah, Ashraf Adel, Ahmed Ezeldin, Ahmed Ali, Ahmed Hussein, and **Serag E.-D. Habib**, " Design and Implementation of an Area-Efficient MEMS-based IR Static Earth Sensor," Proceedings of the International Conference on Microelectronics (ICM03), p. 143, 9-11 Dec 2003, Cairo, Egypt.
40. N. H. Rafat, A. M. Abdel Haleem, and **S. E.-D. Habib**, " Numerical Simulator for Graded-Bandgap Solar Cells", Proceedings of the International Conference on Microelectronics (ICM03), p. 291, 9-11 Dec 2003, Cairo, Egypt.
41. **S. E.-D. Habib**, M. B. AbdelHalim, A. E. Salama, A. Darwish, A. M. Galal, and E. A. Talkhan, " FPGA-based MPEG2 Decoder," Proceedings of the International Conference on Microelectronics (ICM02), p. 194, 11-13 Dec 2002, Beirut, Lebanon.
42. Nivin A. E. Ghamry, Hamed A. Elsimary, and **Serag E.-D. Habib**, " Signal Compression Using a New Adaptive Wavelet Technique," Proceedings of the International Conference on Microelectronics (ICM02), p. 169, 11-13 Dec 2002, Beirut, Lebanon.
43. Nivin A. E. Ghamry and **S. E. D. Habib**, " An Efficient FPGA Implementation of a Wavelet Coder/Decoder", Proceedings of the International Conference on Microelectronics (ICM'00), p. 269, Oct 31- Nov. 2, 2000, Tehran, Iran.
44. Hassan A. Yousef, **Serag Habib**, Osama Al-Assiry, and Khalid Al-Hitmi, " Fuzzy Obstacle Avoidance Control of a moving Vehicle", The 1998 International Conference on Communication, Computer, and Power (ICCCP'98), Muscat, Oman, Dec. 7-10, 1998.
45. Akaram A. Essa, M. R. El-ghoneimy, M. F. Abu El Yazaid and **S. E.-D. Habib**, " A Single FPGA Speech Synthesis Chip and its application to an

Arabic Speech Talking Watch”, ICECS'94 conference, Cairo, Egypt, 19-22 Dec. 1994.

46. **S. E.-D. Habib** and Nadia H. Rafat, “ Enhancement of the Limiting Efficiency of Solar Cells via Bandgap grading”, 11th European Photovoltaic Solar Energy Conference, Montreux, Switzerland, 12-16 October 1992.
47. F. Hashim, M. Zaki and **S. E. D. Habib**, “ A PC Based VLSI Layout Verification Package”, 1991 International Conference on Microelectronics (ICM'91), Cairo, Egypt, Dec. 21-23, 1991.
48. **S. E.-D. Habib**, “ Improved Structure of the Accumulation Lateral DMOST”, International Symposium on Power Semiconductor Devices & ICs (ISPSD), Tokyo, Japan, 3-6 April 1990.
49. Ghada A. Badawi, **S. E.-D. Habib** and M. I. El-Masry, “ Symbolic Generation of Delay Equations for VLSI Transistor Sizing”, 1990 International Conference on Microelectronics (ICM'90), Damascus, Syria, Dec. 21-23, 1990.
50. G. J. Al-Karim, **S. E. D. Habib** and E. A. Talkhan, “ CUWORX: an Experimental Waveform Relaxation Simulator”, 1988 International Conference on Microelectronics (ICM'88), Algiers, Algeria, Nov. 5-7, 1988.
51. M. Khalifa, **S. E. D. Habib**, A. El-Morshedy and O. E. Gouda, “ An Intelligent monitor for external insulation of high voltage power networks”, Cigré Symposium, Vienna, Switzerland, 5-7 May 1987.
52. **S. E. D. Habib** and S. Embabi, “ Lateral Power MOSFET with an Improved on-Resistance”, The second International Conference of Semiconductor Devices and Processes, University College of Swansea, Swansea, U.K., 21-23 July 1986.
53. Ali A. Abdou and **S. E. D. Habib**, “ Optically Induced Inversion in the MIS Solar Cell”, The first International Conference of Semiconductor Devices and Processes, University College of Swansea, Swansea, U.K., 1984.
54. **S. E. D. Habib** and K. Board, “ Breakdown Voltage of Resurfed LDMOS High Voltage FETs with Field Shaping surface Layers”, European Solid State Device Research Conference (ESSDERC '83), Kent, U.K., 13-16 Sept. 1983.
55. **Serag E D Habib** and A A El Toukhy, “ A New Mode of Switching in M-thin Insulator-n-p+ Devices”, European Solid State Device Research Conference (ESSDERC '80), York University, York, U.K., 14-19 Sept. 1980.

Publications
*Student
papers
supervised*

1. Mohamed S. Khairy, Mohamed Fatouh, Ahmed Gamal, Ahmed Atef, Karim Ahmed, Ihab Sobhy, Mohamed Ismail, Shoukry Ibrahim, Hesham Wafeek, Mohamed A. Khairy "An Embedded 32-bit SPARC Processor Design", First workshop in VLSI Technology and EDA Tools, Arab Academy for Science and Technology (AAST), Cairo Branch, Engineering Collage, 4 Dec. 2005.
2. G. F. Zaki, R. A. Girgis, W. W. Moussa and W. R. Gobran, "Using HW/SW Co-design to Implement an Embedded Face Recognition/Verification System on an FPGA" Won first prize from Handasa Arabia for ICM 05 conference. Published at Proceedings of the International Conference on Microelectronics 2007 (ICM 2007), Cairo, Egypt, 29-31 Dec. 2007.

Invited WorkShop Talks

1. **Serag E. D. Habib**, "Microelectronics Activities at Cairo University: History and Roadblocks," invited Talk (online), ChipEXPO 2020 exhibition, Moscow, 15-17 Sept. 2020.
2. **S. E. D. Habib**, "A New IC Broker Center in Egypt," A special talk, 28th International Conference on Microelectronics (ICM 2017), 10-12 Dec. 2017, Beirut, Lebanon.
3. **Serag E. D. Habib**, "Electronic Design at Cairo University: History and Lessons" invited Talk, Technology Innovation and Entrepreneurship Center (TIEC) workshop on "Empowering Egypt Electronics Design Ecosystem", 25th June 2012, Smart Village, Giza, Egypt.
4. **Serag E. D. Habib**, "CUSPARC: The Cairo University SPARC Processor", Mentor Higher Education Program Meeting, 26 Dec 2006, NTI, Cairo Egypt.
5. K. board and **S. E. D. Habib**, " 2-Dimensional, Off-State Modelling of Semiconductor Devices", Finite Element Colloquium on " semiconductor Device Modelling", Rutherford Appleton Laboratory, Didcot, Oxfordshire, U.K., 12 Jan. 1983

Published Articles (in Arabic)

١. سراج الدين حبيب "علم الإدارة 'المصرى' "، مجلة الكهرباء العربية، العدد ١٠٢، أكتوبر/ديسمبر ٢٠١٠ .
 ٢. سراج الدين حبيب " الجامعات الحكومية : موروث ثقيل ومستقبل ملبد "، مجلة الكهرباء العربية، العدد ٨٦، أكتوبر/ديسمبر ٢٠٠٦ .
 ٣. سراج الدين حبيب " قيم التقدم والنجاح "، مجلة الكهرباء العربية، العدد ٨٣، يناير/مارس ٢٠٠٦ .
 ٤. سراج الدين حبيب و نادية رأفت ، " رؤية لمسار تطوير صناعة الإلكترونيات الدقيقة في مصر"، ورشة العمل المصرية الأولى عن التقدم في النماذج الإلكترونية، جامعة عين شمس، ٢٨ سبتمبر ٢٠٠٢
- The First Egyptian Workshop on the Advancement of Electron Devices**
٥. سراج الدين السيد حبيب ، " حول مستقبل الصناعات الإلكترونية في دول مجلس التعاون الخليجي"، ندوة أفاق تطور الإلكترونيات في دول مجلس التعاون الخليجي، كلية الهندسة، جامعة قطر، الدوحة - قطر ، ٩ أبريل ١٩٩٦
 ٦. خالد عز الدين أسماعيل و سراج الدين السيد حبيب، " الأبعاد التكنولوجية للأمن القومي العربي"، الفصل الخامس عشر من كتاب " الأمن القومي العربي : أبعاده ومتطلباته"، الناشر : معهد الدراسات والبحوث العربية -المنظمة العربية للتربية والثقافة والعلوم - ١٩٩٣ .

Theses Supervised

1. Ahmed Abd El-Mohsen Mohamed, "Lead-Free Perovskite Solar Cells," M.Sc. thesis, March 2022, Joint supervision with Dr. Mohamed Bayoumy Zahran and Dr. Nageh K. Allam

2. Al-Hussein Abdelmoneim Taha El-Shafie, "Fast CNN-Based Object Tracking with online training," Ph.D. thesis, October 2020, joint supervision with Dr. Mohamed Zaki Abdelmegeed.
3. Hesham Hassan Hassan Salah El Din Shaker, "Predictive circuit modeling of total ionizing dose effects on bulk CMOS technologies," M.Sc. thesis, June. 2019, joint supervision with Dr. Mohammed Refky Amin and Dr. Alaa Abd El Wahab Saleh, June 2019.
4. Safaa Ahmed Mohammed AbdEIFattah, "6-Gb/s Serial Link Transceiver for NoCs," M.Sc. thesis, July. 2016, joint supervision with Dr. Sameh Ibrahim, July 2016
5. Mohamed Youssef Hassan Sayed, "Compact Model for Double gate Tunnel Field-Effect Transistor," Cairo University, Engineering Mathematics and Physics Department, M.Sc. thesis, Nov 2015, Joint supervision with Dr. Nadia Rafat.
6. Ahmed Ibrahim Samir Khalil, "Proposed Open GL GPU Architecture and Implementation of Line rasterization Algorithm," July. 2015, joint supervision with Dr. Hossam Ali Fahmy.
7. Mohammed Wagih Emam Ismail, "Design of Time based Analog to Digital Converter (TB-ADC): New Design Methodology for Voltage-to-Time Converter (VTC) Circuits," July 2015, Joint supervision with Dr. Hassan Mostafa.
8. Rania Osama Hassan Hassan, "Back-End Enhancements for Cairo University Hardware/Software Partitioning Tool (CUPSHOP)," Jan. 2015, Joint supervision with Dr. Mohamed Bakr. Abdelhalim.
9. Ahmed Hamed Fatehy Hamed, "Front-End Enhancements for Cairo University Hardware/Software Partitioning Tool (CUPSHOP)," Jan. 2015, Joint supervision with Dr. Mohamed Bakr. Abdelhalim.
10. Reem Ibrahim Sayed El-Halwany, "NEW ICI SELF CANCELLATION SCHEME FOR OFDM SYSTEMS," Ph.D. thesis, July. 2014, joint supervision with Dr. Magdy Fikry and Hisham Hamed..
11. Islam El-Sayed Ali Shaboon, "A Compact Model for Nanoscale Transistors," M.Sc. thesis, Mar. 2014, joint supervision with Dr. Wael Fikry Farouk.
12. Mina Mofreh Gad Elsayed Abdallah, "An All-Digital Semi-Blind Clock and Data Recovery System," M.Sc. thesis, Jan. 2014, joint supervision with Dr. Ahmed Ahmed Eladawy Emira and Dr. Ahmed Nader Mohieldin.
13. Muhammad Refaat sedky Soliman, "NoC-Based Many-Core Processor Using CUSPARC," Cairo University, M.Sc. thesis, Aug. 2013, joint supervision with Dr. Hossam Ali Fahmy.
14. Mohamed Mahmoud Mohamed Farag, "ASIC Design of the OpenSPARC T1 Processor Core," Cairo University, M.Sc. thesis, Jan. 2013, joint supervision with Dr. Hossam Ali Fahmy.

15. Ezzeldin Omar Ahmed Hussein Hamed, "ASIC Design of All Digital PLLs for Processor-Clock Generation", Cairo University, M.Sc. thesis, Aug. 2012, joint supervision with Dr. Hanan Ahmed Kamal.
16. Alhassan Mohamed Fattin Mohamed Zaki Khedr, "Enhanced Performance of Cairo University SPARC Processor at 65nm node", Cairo University, M.Sc. thesis, Aug. 2011.
17. Amr AbdulZahir Mohammad Suleiman, "Fabrication and Testing of CAIRO University SPARC "CUSPARC" Processor", Cairo University, M.Sc. thesis, Aug. 2011.
18. Ahmed Mohamed Abdel Tawab Hamed, "Particle Swarm Optimization Algorithms for Object Tracking," Cairo University, M.Sc. thesis, July 2011, Joint supervision with Dr. Mohamed Bakr.
19. Abdelhameed Elsayed Hamed Sharaf, "MEMS-Based Inertial Sensors: Design and Implementation," Ph.D. thesis, Cairo university, July 2011, Joint supervision with Dr. Sherif Sedky and Dr. Mahmoud Ashour.
20. Enas Ashraf Ahmed Ibrahim, "Design and FPGA Implementation of an Ultra WideBand (UWB) PHY Layer" Cairo University, M.Sc. thesis, Mar. 2011, Joint supervision with Dr. Hisham Hamed.
21. Mohamed Hamdy Merzban, "Development of a Dual-core 64-bit MultiProcessor based on the OpenSPARC design" Cairo University, M.Sc. thesis, Feb. 2011.
22. Mohannad Yomn Abdellatif Elsayed, "A Single-Ended CMOS Sensing Circuit for MEMS Gyroscope with Noise Cancellation", M.Sc. thesis, Cairo university, Aug. 2010, Joint supervision with Dr. Sherif Sedky and Dr. Ahmed Emira.
23. Howida A. Abd El-Halym, "Particle Filters for Object Tracking: Enhanced Algorithm and Efficient Implementations", Ph.D. thesis, Cairo university, July 2010, Joint supervision with Dr. Imbabi Mahmoud
24. Alhussein Abdelmoneim Taha Elshafie, "A Fast-Locking Wide-Range All-Digital DLL", M.Sc. thesis, Cairo University, Apr. 2010. This thesis received the best graduate-thesis prize of Electronics and Communications department for the combined two calendar years 2010-2012. This prize is offered by the Centre for advancement of Post-Graduate Studies and research in Engineering Sciences (CAPSCU), Faculty of Engineering, Cairo University.
25. Mostafa Elsayed Ahmed Ibrahim, "Power/Energy Estimation and Optimization for Software-oriented Embedded Systems", Ph.D. thesis, Cairo University, Nov. 2009. Joint supervision with Dr. Markus Rupp and Dr. Hossam Aly Fahmy.
26. Ghada Mohamed Awad ElGindy, "Standard-Compliant Decimal Floating Point Adder/Subtractor", M.Sc., Cairo University, Nov. 2009. Joint supervision with Dr. Hossam Aly Fahmy.

27. Khaled Mohamed ElWazeer, "VLSI Implementation of OFDM Channel Estimation", M.Sc., Cairo University, July 2009. Joint supervision with Dr. Mohamed Khairy and Dr. Hossam Aly Fahmy.
28. Muhammad Sayed Khairy Abd El Ghaffar, "Implementation of Fixed Sphere Decoder for MIMO Systems", M.Sc., Cairo University, Jan. 2009. Joint supervision with Dr. Mohamed Abdullah.
29. Amr Mohamed Ahmed Mohamed Hussien, "Implementation of Convolutional Turbo codes and Timing / Frequency tracking for Mobile WiMAX", M.Sc., Cairo University, Sept. 2008. Joint supervision with Dr. Mohamed Khairy and Dr. Hossam Aly Fahmy.
30. Ahmed Mohamed Mahmoud Mohamed (Bayoumi), "New Techniques For Optimizing The Output Electrical Power From MEMS Piezoelectric Power Generators", M.Sc., Cairo University, Sept. 2008. Joint supervision with Dr. Sherif Sedky.
31. Mohamed Bakr Abdelhalim Osman, "An Integrated High-Level Hardware/Software Partitioning Methodology", Ph.D., Cairo University, Jul. 2008. Joint supervision with Late Dr. Ali Ezzat Salama.
32. Ahmed Mohamed Alaa Eldin Abbas Mohamed Helmy, "Design and simulation of MEMS thermoelectric scavengers", M. Sc., Cairo University, Jul. 2008. Joint supervision with Dr. Sherif Sedky.
33. Khaled Salah Mohammed, "Design and FPGA Implementation of a Non-data Aided Bluetooth 2.0 Transceiver", M. Sc., Cairo University, Jun. 2008. Joint supervision with Dr. Hisham Mohamed Fathy Hameed.
34. Mohamed Gamal El-Din Ahmed Egila, "ASIC Implementation of an All Digital Delay Locked Loop (ADDLL)", M. Sc., Cairo University, Jun. 2008. Joint supervision with Dr. Nivin Abu El-Hadid El-ghamry
35. Hany Gamal El-Din Mohamed Bakir, "RF Modeling and Characterization of Deep Submicron MOS Transistors", M. Sc., Cairo University, Nov. 2007. Joint supervision with Dr. Wael Fekry.
36. Abd-Elmohsen Abd-Elrazik Abd-Elmohsen Khater, "Simulation and Implementation of the timing synchronization, cell identification, and FFT for the OFDMA-based mobile WiMAX 802.16e", M. Sc., Cairo University, Sept. 2007. Joint supervision with Dr. Mohamed Khairy.
37. Mohamed Ismail Ali, "Simulation and implementation of the frequency synchronization and viterbi decoding for the ofdma-based mobile WiMAX 802.16e", M. Sc., Cairo University, Aug. 2007. Joint supervision with Dr. Mohamed Khairy.
38. Youssef Nagy Naguib, "Speeding up SystemC Simulations Using Process Splitting", M. Sc., Cairo University, July 2007. Joint supervision with Dr. Rafik Gendy.
39. Hesham Ahmed Fouad Mohamoud Diab, "Characterization and Extraction of Deep Sub-Micron MOSFETs", M. Sc., Cairo University, March 2007. Joint supervision with Dr. Wael Fekry.

40. Wael Mohamed AbdelRahman Mahmoud El Manhawey, "Modeling and Simulation of Double Gate MOSFETs", M. Sc., Cairo University, Feb. 2007. Joint supervision with Dr. Wael Fekry.
41. Mohammed Talaat Faraag Ali, "design of Uncooled Infrared Imagers", M. Sc., Cairo University, June 2006. Joint supervision with Dr. Sherif Sedky
42. Amr Abd ElHamid Mohamed, "Autonomous UAV Fuzzy Controller With Obstacle Avoidance Capabilities Based On Opto-Electronic Sensors", M. Sc., Cairo University, May 2006. Joint Supervision with Dr. Mohamed Hashem AbdElAziz and Dr. Ayman Hamdy Kassim.
43. Islam Sherif El-Basil, "Design and Implementation of Tunable Bandpass Sigma Delta Modulator for Analog to Digital Conversion" M.Sc., Cairo University, May 2006. Joint supervision with Dr. Magdy Fikry
44. Walied Abdel Hamied Haggag, "Optimization and Performance Limits of Uncooled Infrared Detectors" M.Sc., Cairo University, April 2006. Joint supervision with Dr. Sherif Sedky
45. Bassem Fahmy Tadross, "Managing Static Leakage due to Gate Tunneling currents in Sequential Circuits", M.Sc., Cairo University, Jan 2006. Joint supervision with Dr. Rafik Gendy
46. Sherif Amin Tawfik Naguib, "Hardware Algorithms for Division, Square Root and Elementary Functions", M.Sc., Cairo University, Aug. 2005. Joint supervision with Dr. Hossam Aly Fahmy.
47. Abdelhameed Elsayed Hamed Sharaf, "MEMS-Based Vibratory Gyroscope", M.Sc., Cairo University, Feb. 2005. Joint supervision with Dr. Sherif Sedky and Dr. Karam Amin Ali Sharshar.
48. Yassin Tawfik Abbas Ahmed, "A novel Algorithm for satellite attitude determination using star sensors", M.Sc., Cairo University, Jan. 2005.
49. Moatasem Bellah Momtaz Ahmed, "3 Axis Fluxgate Magnetometer for Attitude Determination of LEO Satellites", M.Sc., Cairo University, Aug. 2004.
50. Mostafa Kadry El-Bedweihy, "A Novel Digital DLL for USB 2.0 Transceiver", M.Sc., Cairo University, Oct. 2003.
51. Nivin Abo El Hadid Mohamed Ghamry, "A New Adaptive Approach for Signal Compression Using Wavelets", Ph.D., Cairo University, July 2003. Joint supervision with Dr. Afaf Abd El Fattah Abd-Allah and Dr. Hamed A. Elsimary
52. Ashraf Mohamed Abdel-Haleem, "Limiting Efficiency of the Graded Bandgap Solar Cell", M.Sc., Cairo University, April. 2003. Joint supervision with Dr. Nadia Rafat.
53. Howida Abd Al-Latif Abd-Alhalym, " Algorithmic and Hardware Development of a Modified Object Tracking Technique", M.Sc., Cairo University, July 2002. Joint supervision with Dr. Sherif Abd El Azzam and Dr. Imbabi Mahmoud.
54. Akram Ahmed M. M. Essa, " A single FPGA Speech Synthesis Chip and its Application to an Arabic Talking Watch", M.Sc., Cairo University, 1995. Joint supervision with Dr. Mohammed Fathy Abou Elyazied.

55. Nadia Hussein Rafat, "Theoretical and Experimental Investigation of Multi-Junction Compound Semiconductor Solar Cells", Ph.D., Cairo University, 1995. Joint supervision with Dr. Ahmed El-Sadek.
56. Ihab El-Sayed Talkhan, "SOI JFET Devices: Modeling, Characterization and Logic Applications", Ph.D., Cairo University, 1993. Joint supervision with Dr. Abdallah Khalil.
57. Ghada A. Badawi, "Symbolic Generation of Delay Equations for VLSI Transistor Sizing", M. Sc., Kuwait University, Joint supervision with Dr. M. I. El-Masry. Although this thesis was completely written and was ready for defense, it was not granted due to the Iraqi invasion of Kuwait.
58. Fawzy Hashim Aly, "A CAD tool for VLSI layout checking and extraction", M.Sc., Cairo University, July 1989. Joint supervision with Dr. M. Zaki Abdel Maged.
59. George Jonaris Gad El-KArim, "Large Scale Circuit Simulation", M.Sc., Cairo University, July 1988. Joint supervision with Dr. E. A. Talkhan.
60. Gamal M. Saad El-Din, "2D Analysis of a Power LDMOST with reduced process Sensitivity", M.Sc., Cairo University, 1987. Joint supervision with Dr. Ahmed A. Kamal.
61. Mohamed Yehia Soliman, "The MINP High Efficiency Silicon Solar Cell", M.Sc., Cairo University, 1987. Joint supervision with Dr. Ahmed A. Kamal.
62. Sherif Hassan Kamel Embabi, "A New Integrable Type of Power MOS Transistors" M.Sc., Cairo University, 1986. Joint supervision with Dr. E. A. Talkhan.
63. Ali Abd ElAziz Ali Abdou, "An Improved Analysis of the MIS Solar Cell", M.Sc., Cairo University, 1983. Joint supervision with Dr. Ahmed A. Kamal.
64. AbdElShafy AdbelRaouf EIToukhy "Surface States, and Optical Radiation Effects on the P-N-I (tunnel)-M Switching device", M.Sc., Cairo University, 1979. Joint supervision with Dr. M. S. Metwally.

Funded or
contracted
Research
Projects

1. Cloud-based Integrated Platform for Monitoring Pests, Salinity and Efficient Irrigation in Olive Precision Farming
Joint Egyptian Spanish Research project
Funding Agency : Itida – Egypt, CDTI - Spain
PI : Dr. Ahmed Khattab.
My Role : Consultant for precision Agriculture station design and implementation
Period : Dec. 2019 – present
Budget : 6 565 588 EGP + 323 563 €
2. Joint Chinese-Egyptian PV lab. in Sohag
Funding Agency : STDF, Egypt and MOST, China
PI : Dr. Amr Amin
My Role : Head of the consultants committee.
PI from Sept. 2018 to March 2019.

- Period : 2016 – Sept 2019
 Budget : LE 30 Millions + \$ 0.75 Millions
3. Integrated Monitoring System for Plant Disease Forecast
 Funding Agency : STDF
 PI : Dr. Mohamed Khairy
 My Role : group leader for hardware design
 Period : Apr. 2015 – Apr. 2019
 Budget : LE 2,027,200 L.E.
 4. Establishment of a Regional Integrated-Circuits broker Center
 Funding Agency : Ministry of Higher Education & Cairo University
 My Role : PI
 Period : 2015 – present (halted. See Initiatives section.
 page 3 of this CV).
 Budget : LE 7,000,000
 5. Design and Implementation of PicoSatellite (EgyCubeSat-1)
 Funding Agency : EU-Egypt Innovation Fund
 PI : Dr. Amal Zaki
 My Role : Project partner
 Period : 2009 - 2010
 Budget : € 360,000 (EURO)
 6. VHDL implementation of a Bluetooth 2.0 PHY layer
 Funding Agency : SySDsoft Inc., Egypt.
 My Role : Group leader for PHY layer design
 Period : Jan 2006 – June 2006
 Budget :
 7. Design and Implementation of a Magnetometer and sun sensor
 Funding Agency : National agency For remote Sensing And Space
 Sciences (NARSS)
 My Role : PI
 Period : 2003 - 2005
 Budget : LE 100,000
 8. Preliminary Design of an Egyptian Satellite: Electrical, Electronic and
 Energy Subsystems
 Funding Agency : Academy of Scientific Research and Technology
 (ASRT)
 PI : Prof. Magdi Fikry Ragai
 My Role : Group leader for Solar Power subsystem
 Period : 1999 - 2001
 Budget : LE 350,000
 9. Applying FPGA technology in Local Electronic Products
 Funding Agency : University Linkage Program, Supreme Council of
 Universities.
 PI : Prof. E. A. Talkhan
 My Role : Group leader
 Period : 1998 – 2002
 Budget :
 10. Industrial Electronic Controller

Funding Agency : Foreign Relations Co-ordination Unit (FRCU),
 Supreme Council of Universities.
 PI : Prof. E. A. Talkhan
 My Role : Group leader
 Period : 1991 - 1992
 Budget :

11. Design of a Prototype Digital Exchange

Funding Agency : Development Research and Technological Planning
 Center (DRTPC), Cairo University
 PI : Prof. E. A. Talkhan
 My Role : Team member
 Period :
 Budget :

12. Transfer of VLSI Technology

Funding Agency : Foreign Relations Co-ordination Unit (FRCU),
 Supreme Council of Universities.
 PI : Prof. E. A. Talkhan
 My Role : Group leader
 Period : 1985 - 1988
 Budget :

13. Pollution Flashover of High Voltage Insulators

Funding Agency : Foreign Relations Co-ordination Unit (FRCU),
 Supreme Council of Universities.
 PI : Prof. M. M. Khalifa
 My Role : Electronics Group leader
 Period : 1984 - 1987
 Budget :

14. Electrochemical Conversion and Storage of Solar Energy

Funding Agency : Academy of Scientific Research and Technology
 (ASRT)
 PI : Prof. A. A. Kamal
 My Role : Team member
 Period : 1979 – 1981
 Budget : LE 72,000

**Awards for
 B.Sc.
 Projects
 Supervised**

- **IbTIECar 2018 Competition**, Second prize for IC Design Track:
 “**Cairo University Graphics Processing Unit (CUGPU)**”, Abd
 ElRahman Qotb, Mohamed AbdElMajeed, Mohamed Khalil, Mostafa
 AbdElmaqsoud, Sabry Ali Sabry.
- **IbTIECar 2017 Competition**, Second prize for IC Design Track:
 “**Cairo University Graphics Processing Unit (CUGPU)**”, Ahmed
 Waheed, Bassem Yasser, Mahmoud Kishky, Moataz Eltahan, Omar
 Mohamed and Alaa Sayed, Alaa Khairallah, Alaa Ashraf, Ahmed
 Kassem, and Hadder Mahmoud
- **Made in Egypt Competition 2016**: Third place for Cairo University Graphics
 Processing Unit (CUGPU).
 “**CUGPU: Cairo University Graphics Processing Unit**”, Ahmed
 Shaban Ismail , Ahmed Usama, Abd Ulkareem Abutaleb, Khaled
 Mosaad Saad, Hisham Awad, Mohamed Ayman Mohamed.
- **Egyptian Engineering Day 2010 Best Electronics Award**

"Payload (Imaging) Subsystem for Egypt Cubesat" Alaa Abu ElAlaa, Doaa Khattab, Doaa Fathy, Rania Hassan and Rehab Kotb.

- **Dr. Saad Eldin Youssef Mahmoud Award** for the "Best Graduation Project in Communications", in the Egyptian Engineering Day 2008:
"CUSPARC v. 2.0" by Ezz El-Din Omar Ahmad, Amr Saleh Khalil, Amr Abdul Zahir Mohammad, Amr Ali El Sherief and Karim Ahmed Tarek Raouf Amin.
- **Egyptian Engineering Day 2006 Award**
"MPEG2 decoder using HW/SW codesign" by Zyad Mohammed, Amr Touson, Mahmoud Roshdy, and Tarek El Deeb
- **Egyptian Engineering Day 2006 Award**
"Testing and Verification of Cairo University SPARC Processor using a Wi-Fi Embedded Application" Khalid El Wazeer, Khalid El Glaind, Amaged Kamal, Ahmed Ragab, Mahmoud Mostafa
- **International Electronics Design Contest IEDCS05** organized jointly between the IEEE co-sponsored International Conference on Microelectronics (ICM'2005) and the non-profit organization Handasa Arabia:
Best student paper Award
"Using HW/SW Co-design to Implement an Embedded Face Recognition/Verification System on an FPGA" by G. F. Zaki, R. A. Girgis, W. W. Moussa and W. R. Gobran.
Available online at :
http://www.handasarabia.org/mambo/index.php?option=com_content&task=view&id=73&Itemid=51&lang=en