MONA ELWAKKAD ZAGHLOUL
Ph.D., Fellow IEEE Life Member

POSITION: Professor
                   Department of Electrical and Computer Engineering
                   Director of the Institute for MEMS/NEMS and VLSI Technologies
                   Web: www.seas.gwu.edu/~mems/
                   The George Washington University
                   Washington, DC 20052
                   Telephone: (202) 994-3772
                   Fax: (202) 994-0227
                   Email: zaghloul@gwu.edu
                   Web: www.ece.gwu.edu/people/mona.htm

CITIZENSHIP: U.S.A.

EDUCATION: Ph.D. Electrical Engineering, 1975
                   University of Waterloo, Waterloo, Ontario, Canada

                   M. Math. Applied Analysis and Computer Science, 1971
                   University of Waterloo, Waterloo, Ontario, Canada

                   M.A.Sc. Electrical Engineering, 1970
                   University of Waterloo, Waterloo, Ontario, Canada

                   B.Sc. Electrical Engineering, 1965
                   Cairo University, Cairo, Egypt

PROFESSIONAL EXPERIENCE

The George Washington University (01/1980-Present):

1989-Present   Professor, Department of Electrical and Computer Engineering,
                 The George Washington University.
2014-Present   Program Director, Engineering Division, Communications, Circuits, Sensors Systems,
                 The National Science Foundation (IPA).
2009-2014   Chairs, Department of Electrical and Computer Engineering,
                 The George Washington University. Under her leadership the ECE Department
                 was awarded 6-year ABET accreditation for the three programs of Electrical Engineering,
                 Computer Engineering, and Biomedical Engineering. The Department hired several new faculty
                 members and several research initiatives were implemented, which resulted in an increase in the
                 total research for the EECS Department.

1996-Present Director of the *Institute of MEMS and VLSI Technology*, The George Washington University, Washington DC.

2003-2004 Sabbatical at the Army Research Laboratory (ARL), Adelphi, MD, working on MEMS mechanical resonators, and RF-MEMS integration

1999-2004 Member of The George Washington Faculty Senate Committee

1999 Sabbatical with the Laboratory of Electronic Instrumentation at the Technical University of Delft, TU Delft, The Netherlands, working on Sensors devices and their circuit interfaces.

1994-1998 Chair, Department of Electrical Engineering and Computer Science, The George Washington University. Under her leadership the EECS Department was awarded 6-year ABET accreditation for the programs of Electrical Engineering and Computer Engineering. The Department hired several new faculty members and several research initiatives were implemented, which resulted in an increase in the total research for the EECS Department.

1987 NASA/ASEE Goddard Space Flight Center Summer Faculty. Research Activity VLSI Analog Circuits Design and Analysis (in particular the design of x-ray detectors and particle detectors (Analog MOS chips) on board of space ships).

1984-2006 Faculty hire and Guest Researcher at the Semiconductor Electronics Division, National Institute of Standards and Technology (NIST), DOC.

1983-1989 Associate Professor, Department of Electrical Engineering and Computer Science, The George Washington University. January-May 1988, Sabbatical with the National Institute of Standards and Technology (formerly the National Bureau of Standards), Gaithersburg, MD.

1980-1983 Assistant Professor, Department of Electrical Engineering and Computer Science, The George Washington University.

Prior Positions (09/1968-01/1980):

1978-1980 Senior Member of Technical Staff, Computer Sciences Corp., Silver Spring, MD. Research and development of software engineering systems and programming languages for NASA Goddard Space Flight Center.

1977-1978 Research Associate, University of Waterloo, Waterloo, Ontario, Canada. Research in circuits and systems theory, computer aided analysis, and design of electronic circuits.

1976-1977 Visiting Scientist, Aalborg University, Aalborg, Denmark. Research in computer aided analysis and design of electronic circuits.

1968-1976 Research Assistant, University of Waterloo, Waterloo, Ontario, Canada. Research and teaching in electronic engineering, computer sciences, and circuit and system theory.

AWARDS, RECOGNITIONS, AND PROFESSIONAL ACTIVITIES

1. **Awards and Recognitions:**

   a) **First Prize The George Washington University Research and Development Show February 19, 2014**, For SEAS Graduate Students. Gradate Student: **Bhaven Mehta,** Research **Project**: Highly sensitive gas sensor using plasmonic antennas, Advisor**:** Prof. Mona Zaghloul.

   b) **Third Prize The George Washington University Research and Development Show February 19, 2014, for SEAS Graduate Students. Graduate Students Hasan Goktas**, **Research Project**: The

novel resonator cell (RC) for both portable biosensor and high quality filter for cell phones, Advisor**:** Prof. Mona Zaghloul.

c) IEEE Life Fellow January 2013, IEEE Fellow since 1996 for leadership in education and research in integrated circuit design and their application to neural networks

d) Distinguished Research Award 2010, School of Engineering and Applied Science, The George Washington University, Washington DC, AY 2010-2011

e) Co-Author of Award Paper by the Department of the Navy, paper title "Design and performance of simple, room temperature gallium Oxide Nanowire Gas Sensor", 2010 Annual Research Publications Award Dinner, March 2010. The paper published in the Applied Physical Letters 95,103102, 2009.

f) **Graduate Student Ritu Bajpai** received Second Prize on Whole School of Engineering Research Show case, April 2012. Topic: UV-Assisted ZnO functionalized GaN nanowire devices for Chemical Gas Sensors. **Advisor:** Prof. Mona Zaghloul.

g) Elected IEEE Sensors Council President 2008-2009

h) **Graduate Student Mazdak Taghioskoui received the following awards on the Micro-Plasma work**, Co-Supervised with A. Montaser:

- First-Prize Award for WSE/YEP, 2008 (Washington Society of Engineers/Young Engineer Prize) Paper Competition
- 2008 First-Prize Award for DCCEAS (District of Columbia Council of Engineering and Architectural Societies) Paper Competition
- Best Poster Award (out of 300 posters), 2008 Winter Conference on Plasma Spectrochemistry, Temecula, CA

i) **Honorary Doctorate of Engineering, honoris causa, University of Waterloo, Canada, June 2007**, in recognition of academic career in the international electrical engineering community and in celebration of the University 50th anniversary. **Dr. Zaghloul was the first woman to earn PhD in Engineering at University of Waterloo, Canada, in 1975.**

j) **2007 Best Paper Award in IEEE Sensors Journal**: I. Voiculoescu, M.E. Zaghloul, A. McGill, G. Fedder, " Electrically Actuated Resonant Micro cantilever in CMOS Technology for Detection of Chemical Weapons" the *IEEE Sensors Journal, Special Issue on Sensors for Prevention of Terrorist Acts*, Vol. 5, No. 4, August 2005, pp. 641-647.

k) **Recipient of the IEEE Circuits and Systems Jubilee Golden Medal for outstanding contribution to the IEEE Circuits and Systems Society, May 2000**

l) **Distinguished Lecturer, IEEE Circuits and Systems Society**, 2000-2002

m) **Recipient – Certification of Appreciation from IEEE Circuits and Systems Society for Service as General Chair of the Midwest Symposium on Circuits and Systems 1992.**

2. Professional Activities:

- President of the IEEE Sensors Council, two-years term, 2008, 2009, Past President of the IEEE Sensors Council 2010-2011.
- Member of the IEEE Fellow selection committee for the IEEE Sensors Council, 2009-2010.
- Distinguished Lecturer in DLP for IEEE Sensors council, 2010-2012.
- Member of the IEEE Sensors Conference Technical Program Committee, 2010-present.
- Associate Editor of the *IEEE Journal of Sensors*, 2000- 2007.
- Associate Editor of the *IEEE- Transactions on Circuits and Systems (CAS) I*, 2006-2007.
- Member, Fellow Committee for IEEE Circuits and Systems Society, 2007.
- Chair, Fellow Committee for IEEE Sensors Council 2005, 2006.
- Vice President for Technical Activities, IEEE Circuits and Systems Society, 2000-2002.
- Chair, IEEE-CAS Forum on Nanotechnology and Microsystems**,** May 23-24, 2004
- Member, IEEE Circuits and Systems Society Board of Governors, 1995-1998.

- Associate Editor of *IEEE Transactions on Circuits and Systems (CAS) II for Sensors*, 2000-2002.
- Editor of the *IEEE Circuits and Devices Magazine*, 1999-2000.
- Chair of the IEEE Circuits and Systems Society's Technical Committee of Neural Networks, 1998-1999.
- Founder Chair of the IEEE Circuits and Systems Society's Technical Committee on Micro-Sensors and Actuators, 1999-2000.
- Associate Editor, *IEEE Transactions on Circuits and Systems I for Neural Networks,* 1993-1995.
- General Chair, IEEE Midwest Symposium on Circuits and Systems, Washington, DC, August 1992.
- Member of the IEEE Midwest Symposium on Circuits and Systems Conference Steering Committee, and Microelectronic Education Conference Steering Committees.
- Reviewer – NSF Panels of Technical Proposals, *IEEE Transactions on Circuits and Systems, IEEE CAS Special Issue on Neural Networks, IEEE Computer Magazine,* and *The Circuit and Systems and Signal Processing Journal, IEE Circuits Journal*, NRL, and NIH Technical Panels.

3.   Invited Talks:

1. Invited to be Keynote Speaker for SYLICA Workshop, Brno University of Technology, Czech Republic on October 16, 2014. The trip and the invitation were sponsored by Central European Institute of Technology CEITEC, a scientific center of excellence in the fields of life sciences, advanced materials and technologies. Professor Zaghloul visited the research facilities of CEITEC and toured the clean room and Nano and Micro research laboratories. The groups are working on bio and chemical sensors and there is considerable research overlap between Professor Zaghloul research and the CEITEC researchers. Talk Title: "Nanostructured Sensors for Chemical and Biological Systems"

2. Invited to National Science Foundation to talk about Sensors/ MEMS-NEMS Research Activities, November 19, 2013.
3. Invited to European Space Agency (ESA) to talk about High Power GaN Circuits in Space Applications, September 2, 2013.
4. Invited to Special Session on Bio-Inspired Technology, IEEE MIDWEST Symposium on Circuits and System, August 2013.

5. M.E. Zaghloul, " Flexible Wearable Smart Sensors with Wireless Transmitting and Receiving Signals", Army Research Labs, October 2012.
6. M.E. Zaghloul, " Nanotechnology Realizations of MEMS/NEMS Structures with Applications to Chemical and Bio Sensors", talk to George Town University, November 2012.
7. M.E. Zaghloul Talk to TAU BETA PI, Engineering Honor Society, District 4 Conference, Keynote Speaker, Trends in Nanotechnology, April 16, 2011, The George Washington University, Washington DC.
8. M.E. Zaghloul, Talk to The National Nanotechnology Initiative Network (NNIN), Use of NNIN for fabrication of CMOS –SAW Integrated Devices, April 29th 2008, Stanford University, Palo Alto, CA.
9. M. E. Zaghloul Key note Speaker at the University of Waterloo Graduation Ceremony and Celebration of the 50th year, June 16 2007.
10. M.E. Zaghloul Presented talk at NSF workshop Tunis Titled "Micro Cantilever Gas Sensors   ", Tunis, December 2006.
11. Invited to Plenary Lecture to the 2nd International Meeting on Micro sensors and Microsystems, National Cheng Kung University, Tainan, Taiwan, January 15-16, 2006.

12. Invited to the Institute for Computing, Information and Cognitive Systems ICICS, University of British Columbia, Vancouver, BC, Canada, Distinguished Lecture Series Spring 2003, "MicroElectroMechanical Systems Technology", March 27, 2003.
13. Member of the IEEE-CAS Distinguished Lecturer in the IEEE Distinguished Lecture Program, 2000-2002.
14. M.E. Zaghloul, " Overview of MEMS Technology with applications to RF Communication "' presented as IEE-CAS DLP, for   Southeastern Michigan Section, Chapter I, March 27, 2002.
15. M.E. Zaghloul, "CMOS Implementation of Gas Sensors and their Circuits Interfaces", Presented to the Department of Electrical and Computer Engineering, Oakland University, MI, March 2002.
16. M.E. Zaghloul, " Overview o MEMS Technology with applications to RF Communication", Presented to the Department of Electrical and Computer Engineering, Virginia Tech, VA, April 2002.
17. M.E. Zaghloul, "MEMS, Microsystems and Nanosystems", Plenary Keynote Speaker at the 7th International Workshop on Cellular Neural Networks and their Applications, Frankfurt, Germany, July 2002.
18. Presented Plenary talk at the IEEE MIDWEST Symposium on Circuits and   Systems, Dayton, Ohio, August 2001.

4.   Member Of Technical Committees and Technical Reviewers Activities:

1. IEEE Sensors Conference   Member of the technical Committee for the years 2010, 2011, 2012, 2013, 2014.
2. BIODEVICE, 2012.
3. IEEE Education Award member, 2012, 2013
4. ECEDHA (ECE Department Head Association) member of award committee, 2011, 2012, 2013.
5. National Science Foundation, Reviewer January 2012, May 2012.
6. IEEE Transaction for Circuits and Systems Journal reviewer.
7. IEEE Sensor Journal reviewer.
8. IEEE Electron Device Letters reviewer.
9. IEEE Microwave Wireless Components Journal reviewer.
10. The National Children Hospital Panel reviewer.
11. IEEE MIDWEST Symposium reviewer, Member of the technical Committee.
12. IEEE Intern Symposium of Circuits and Systems, Member of the technical Committee 2012, 2013, 2014.

CONSULTATION

1984-2010 – The National Institute of Standards and Technology (NIST), Semiconductor Electronic Technology Division. Responsibilities include research and development of VLSI circuits and testing. Neural network algorithms are used to classify chip test structure measurements data and identify various patterns of faulty chips. Design of testing structure circuits for GaAs circuits, SOI circuits. Building wafers for reliability. Designing MicroElectroMechanical Systems (MEMS) for RF-MEMS and microfluidic MEMS. Micro-machining, techniques to develop CMOS sensors implementation and design their interface circuits, other technology for Sensors and Biosensors. Test Structures for Nanometer interconnects of VLSI chips.

RESEARCH ACTIVITIES

Research Interests:

Integrated Sensors and Nanodevices, process technology to realize MEMS/NEMS devices, novel designs of MEMS/NEMS devices and Nano-sensors, RF-MEMS and MEMS Sensors, Biological and Chemical Sensors using Surface Acoustic Wave (SAW) devices and micro/Nano sensors, Smart Sensors and their interface Integrated circuits, digital and analog RF-CMOS Circuits design and analysis, RF GHz circuits design and their implementations; semiconductor devices, design and simulations. Taught MEMS/NEMS courses at GWU for the past many years, and worked with the industry on RF-MEMS devices; familiar with the microfabrication and nanofabrications to realize MEMS/NEMS devices, and Nano electronics devices.

Theses and Dissertations Supervised:

Doctoral Dissertations Supervised at The George Washington University:

1. M. Saidahmed, Analysis of Generalized State-Space for Singular Systems, April 1983.
2. N. Matta, Analysis and Design of Large Scale Interconnected System, April 1985.
3. A. Said, Design of Switched Capacitor Filters, July 1985.
4. E. Konechny, Iterative Improvement in the Design of a Restricted Class of VLSI Macrocells, March 1986.
5. C. Aissi, Testing of Physical Failures in NMOS and CMOS VLSI Combinational and Sequential Circuits, July 1988.
6. Dessa Gobovic, New Physical Fault Simulator for VLSI CMOS Circuits, November 1988.
7. A. K. Elmusrati, Systolic Arrays for Solving Linear Time Invariant Singular Systems, October 1990.
8. F. 1. Hamama, Design of an Adaptive Neural Network, November 1990.
9. G. Moon, VLSI Design of Neural Networks Using Pulse Coded Weights with On Chip Learning Capability, March 1993.
10. H. Ali, CMOS Dynamic Retina with Associative Memory Capabilities, September 1993.
11. C. Hsu, Chaotic Neural Networks Analysis and Implementation, July 1995.
12. S. Habib, Continuous Time Neural Networks for System Identification and Control, July 1996
13. V. Milanovic, Broadband Microwave Power Sensor in CMOS Technology, December 1998.
14. P. Thaker, Register Transfer Level Fault-Modeling for VLSI Design Validation and Test, March 2000.
15. M. Ozgur, CMOS-Based Monolithic MEMS Technology and its Application in Microwave Systems, April 2000.
16. J. Wiley, Convex Hull Metrics and Neural Classifiers, April 2001.
17. Angela Rasmussen, Implementation and Modeling of Microfluidic Components realized Using CMOS Technology, May 2001.
18. Nadine Guillame, Non Contact Electrical Metrology Sensor for Chrome Photo Masks, May 2002.
19. M. Afridi, Monolithic CMOS Gas Sensor with Interface Circuits, August 2002
20. Ioana Voiculesco, Design and Development of MEMS Devices for Detection of Hazardous materials, December 2004.
21. Arif Emre Yrimbock, Modeling, Simulation, and Measurements of Nano-Scale Copper thin Films, June 2007.
22. Onur Tigli, Novel SAW Devices in CMOS for Biosensor Applications: Design, Modeling, fabrication and Characterization, December 2007.
23. Anis Nordin, Design, Implementation and Characterization of Temperature Compensated SAW Resonators in CMOS technology for RF Oscillators, January 2008.

24. Jerry C. Wu, Systematic Analysis of CMOS-MEMS Inductors with Application to Mixer Matching Circuits, November 2008.
25. Shumin Zhang, Design and Development of RF CMOS MEMS Switches for Configurable RF circuits, January 2009
26. S. Arnold, Silicon Nanometer wire for enhanced Gas Sensors in CMOS technology (with NRL), January 2010.
27. Thomas Farmer, Millimeter Wave High Voltage High Power Amplifier Implementation in Silicon Germanium Technology, April 2010.
28. Hsu-Cheng Ou, Design of the One –Pole Synchronous LINB3 Surface Acoustic Wave Resonator with Sensing Applications, April 2010.
29. Chia-Pin Chang, Design Development and Testing of Fluorescence-based Microfluidic System for Uric Acid Analysis of Clinical Samples, December 2010.
30. Robert Proie, Development of a Piezoelectric MEMS Switch Architecture for Low Power, Radiation Hardened and Highly Integrable Mechanical Logic, May 2011.
31. M. Taghioskoui, Design and Implementation of Microdevices for Plasma Generation, September 2011.
32. R. Bajpai, UV-Assisted GaN Nanowire Devices for Alcohol Sensing, May 2012.
33. Bowei Zhang, CMOS Biosensors for Portable Molecular Diagnostic System, August 2012.
34. Bhaven Mehta, Chemical Gas sensor based on Optical Nano antennas using Graphene, January 2015.
35. Hasan Goktas, Design, Fabrication and Characterization of CMOS-MEMS Novel Resonator with Embedded Heater for Filter, and Temperature Sensors Applications, January 2015.

Master's Theses Supervised at The George Washington University:

1. D. Gobovic, Fault Diagnosis of Nonlinear Circuits, May 1985.
2. D. Rhee, Computer Simulation Studies of Photomultiplier, December 1986.
3. K. Benatchba, Algorithm for Testing Physical Failures in VLSI Digital Circuits, December 1989.
4. G. Moon, VLSI Implementation of Neural Type Cell, July 1990.
5. K. Shaffer, Implementation of a Neural Network Based Intelligent Controller Using VLSI Technology, March 1991.
6. R. Yentis, VLSI Implementation of a Cellular Neural Network for Solving Partial Differential Equations, September 1994
7. C. Zincke, MicroElectroMechanical Heating Element Structure Characterization and Control, October 1995.
8. V. Milanovic, Design and Fabrication of Micromachined Microwave Transmission Lines in CMOS Technology, November 1996.
9. S. Arnold, Hardware Implementation of Complex SAR Software Algorithm, Dec.2001.
10. A. Nurashikin Nordin, CMOS Design and Implementation of Sigma – Delta Analog –to- Digital Data converter for MEMS Devices, July 2002
11. Harry Shaw, MEMS Structures for Electrophoretic and Dielectrophretic Separation of Particles by Contactless electrodes, December 2005.
12. Y. Wu, Field Programming Gate Array (FPGA) Security and Reliability, December 2005.
13. A. Gupta, A 400 MHz Delta –Sigma ADC for Band-Pass IF Digitization Around 100MHz with Excess Loop Delay Compensation, August 2010.
14. Ken McKnight, 5GHz Doherty Amplifier Designed in Triquent GaAs Process, December 2010.
15. Scott Trocchia, A RF Graphene FET Large -Signal Compact Model Compatible with Circuit Simulators, June 2012.
16. Qiuchen Yuan, A high Resolution Time- to- Digital Converter on FPGA for Time Correlated Single Photon Counting, August 2012.

17. Boqun Dong, Modeling and Simulation of InAS/GaAs Quantum Dot Solar Cells in Silvaco TCAD, October 11, 2013.
18. William Gibbs, Design For Test for OSU Standard Cell Library Used at GWU, May 18, 2014.
19. Chris Reilly, MEMS Capacitor Sensing for Position Detection of Movable Objects, September 29, 2014.

Dissertations in Progress:

1. Kevin Dobson, High Frequency Analog to Digital Converters with application to RF Receiver/Transmitters.
2. Ken McKnight, Design Of Integrated Microwave Circuits in GaAs, (collaboration with the ARL).
3. Asha Rani, GaN Chemical Gas Sensors (collaboration with NIST).
4. Shiqi Guo, GaN Characterizations (collaboration with NIST).
5. Boqun Dong, Modeling and Simulation and building Quantum Dot Solar Cells (collaboration with GWU Physics Department, and with University of Arkansas Physics Department).
6. Leo De La Cruz, Modeling and Application of Phase shift materials (collaboration with the ARL).

TEACHING ACTIVITIES

The GW VLSI and MEMS, and Nano-electronics Educational Programs, 1984-Present:

Professor Zaghloul proposed and initiated the VLSI teaching program at the George Washington University and is teaching several of the analog and digital VLSI design and testing courses. She established a well-equipped VLSI laboratory at the Department of Electrical and Computer Engineering at GW. She is responsible for the VLSI education software tools, upgrading testing equipment to accommodate VLSI design and testing courses in the Electrical and Computer Engineering Department. The laboratory was initiated by Professor Zaghloul to educate GWU students in designing and testing IC chips, and to send chips to MOSIS since 1984-present. As part of this program, several projects with teaching as well as research chips were designed and fabricated through the MOSIS facility under her supervision. Successful analog and digital chips were designed and tested in the GW VLSI Laboratory as a part of this program. In addition, micro sensor chips were designed and implemented using the facility of the VLSI Laboratory. The laboratory is equipped with commercial IC design CAD tools (CADENCE) as well as a testing facility that includes CASCADE probing machines and analog and digital testing equipment. In the Fall of 1999, Professor Zaghloul taught the first MEMS/NEMS course at the George Washington University. Students learn the design and technology of MEMS /NEMS devices. Designs were sent to the foundry for fabrication. Several other MEMS courses were introduced. All the courses result in projects to be fabricated through the outside companies and national laboratories.
In Fall 2011, Dr. Zaghloul introduced new course on Nano-Electronics as graduate/ Undergraduate course. The course have laboratory in which the students learn the basic nanofabrication process and learn techniques to characterize Nano-structures in the lab. In addition to teaching lectures of the theoretical fundamental of Nano-electronics and introduction of the students to recent research topics for nanomaterial with applications to development of Nano-devices for future circuits applications.
Professor Zaghloul supervises the Computer Tools and Design software for teaching the MEMS /NEMS classes at GWU. In addition many research projects were implemented using the VLSI and MEMS/NEMS design tools under the supervision of Dr. Zaghloul.

Courses Taught and Introduced at GW:

Taught and introduced many courses at The George Washington University; more than 20 courses and course modifications such as: Basic Circuit Theory, Linear Systems, Nonlinear Circuits Theory, Neural Network Analysis and Design, Introduction to VLSI Design and Simulation, VLSI Fabrication Techniques, Testing and Simulation of VLSI Circuits tools, Linear Systems Theory, Graph Theory and Applications, Computer Aided Analysis and Design of VLSI System (using software such as Microsim, Verilog, CADENCE, Analog Artists, Tanner tools, and many other academic tools), Design, Analog MOS VLSI Circuits for Signal Processing, Digital Filters, RF- Microwave Circuits Design using software such as EDS, CADENCE- Specter, Introduction to MEMS/NEMS Design and Applications (using MEMS CAD tools such as Coventor, and Ansys). Introduced new area courses such as: Introduction to Nanotechnology, and Introduction to Nano electronics. The Following is a list of courses developed and taught:

1. ECE 4140 Introduction to VLSI Systems.
2. ECE 4150 Testing and ASIC Design of VLSI Systems.
3. ECE 4160 Introduction to Nano electronics.
4. ECE 6213 VLSI Circuits.
5. ECE 6214 Advanced VLSI System Designs.
6. ECE 6215 Introduction to MEMS.
7. ECE 6216 RF CMOS Circuits.
8. ECE 6218 Introduction to Analog VLSI Design.

PUBLICATIONS AND PATENTS

Books:

1. *"Silicon Implementation of Pulse Coded Neural Networks,"* co-editor, M. E. Zaghloul, J. Meador and R. W. Newcomb, Kluwer Academic Books, 1994.
2. " Nano cantilever Beams: Modeling, Fabrication and Applications", Co-editor, Ioana Voiculescu, and Mona Zaghloul (Editors), Pan Stanford Publishing, Singapore, 2015.

Book Chapters:

1. "Physical Fault Modeling and Simulation of VLSI MOS Circuits," Chapter 1 in *"VLSI Fault Modeling and Testing Techniques,"* G. W. Zobrist, editor, Ablex Publishing Corp., Norwood, NJ, 1993.

2. "Design of Pulse Coded Neural Networks with Learning on the Chip and Using Modified Neural Type Cells," Chapter 7 in *"Silicon Implementation of Pulse Coded Neural Networks,"* M. E. Zaghloul, J. Meador, and R. W. Newcomb, editors, Kluwer Academic Books, 1994.

3. "Chaotic Neural Network Architecture," with C. Hsu and H. Szu, Chapter 7 in *"Handbook of Neural Network and Fuzzy Logic*," C. C. Chen, editor, McGraw-Hill, 1996.

4. "Applications of MicroElectroMechanical Systems", with D. Nagel, Chapter 2 in *"The Electrical Engineering Handbook,"* Wai-Kai Chen, editor, Academic Press, 2003.

5. "MEMS Designs and Applications, an Introduction", Chapter 10 in *"Mechanical Engineering Handbook,"* Myer Kutz, editor, Wiley publishing, 2005.

6. "Integrated Chemical Sensors", with Ioana Voiculucu, Chapter 11 in *"Chemical Sensors, Comprehensive Sensor Technologies,"* GhenadII Korotcenkov, editor, Publisher, Momentum Press, 2011.

7. Dobson K, Ahmadi S., Zaghloul M.," A480 MHZ band-pass Sigma delta analog to digital modulator with active inductor based resonators", Chapter 1 in Lecture Notes in Electrical Engineering, 247 LNEE, pp. 1-11, DOI: 10.1007/978-94-007-6818-5-1. Springer Science, 2014, pp1-11, Chapter 1.

8. Ritu Bajpai, Mona Zaghloul, Abhishek Motayd, Albert Davydov, "Nanocantilever beam for gas sensing applications", Chapter 5 , Applications of Nano cantilever in Gas Sensors, " Nano cantilever Beams: Modeling, Fabrication and Applications", Co-editor, Ioana Voiculescu, and Mona Zaghloul (Editors), Pan Stanford Publishing, Singapore, 2015.

Journal Special Issues Co-Edited:

1. IEEE Sensors Journal, Special Issue on "Integrated Multisensory Systems and Signal Processing," Volume 2, Number 6, December 2002.

2. IEEE Transaction on Very Large Scale Integration (VLSI) Systems, Special Issue on "Nano Electronic Circuits and Systems," Volume 12, Number 11, November 2004.

3. IEEE Transactions on Circuits and Systems, Special Issue on "Smart Sensors," Volume 54, Number 1, January 2007.

Refereed Journals Papers:

1. M. E. Zaghloul and P. R. Bryant, "Error Bounds on Solution Errors of Nonlinear Networks when Using Approximate Element Characteristics," *IEEE Transactions on Circuits and Systems,* Jan. 1980, CAS-27.

2. M. E. Zaghloul and W. Truszkowski, "Semantic Definitions of Spacecraft Command and Control Languages Using Hierarchical Graphs," *AIAA Journal of Guidance and Control,* Jan. /Feb. 1983, pp. 26-32.

3. M. E. Zaghloul, "Linear Programming Technique to Determine Solution Errors in Piecewise Linear Resistive Networks," *AEU, Electronics and Communication,* April 1983, pp. 85-92.

4. M. E. Zaghloul, "Worst Case Analysis of Resistive Networks Using Linear Programming Approach," *The Franklin Institute Journal,* Oct. 1983, pp. 339-351.

5. M. E. Zaghloul and R. Newcomb, "Semi state Implementation: Differentiator Example," *Circuits, Systems, and Signal Processing Journal, Special Issue on Semi state Systems,* 1986, 5(1), pp. 171-183.

6. M. E. Zaghloul and N. Matta, "Near Optimum Design Scheme of Linear Time Invariant Large-Scale Systems," *The AIAA Journal of Guidance and Control,* May/June 1986, pp. 374-376.

7. A. Said and M. E. Zaghloul, "Stray-Free Switched Capacitor General Biquad Block," *IEE Proceedings-G Electronic Circuit and Systems,* June 1986, 133, Part G (3), pp. 154-158.

8. M. E. Zaghloul and D. Gobovic, "Single Fault Diagnosis of Nonlinear Resistive Networks," *IEE Proceedings-G Electronic Circuit and Systems,* Feb. 1987, 134, Part G (1), pp. 16-22.

9. M. E. Zaghloul, "Testability Measures for the Design of Digital ICs," *VLSI System Design,* Sept. 1987, pp. 98-108.

10. A. Said and M. E. Zaghloul, "Stray Free Switched Capacitor Loop Biquad that Realizes Different Generic Transfer Functions," *Journal of the Franklin Institute,* 1989, 26(2), pp. 273-279.

11. M. E. Zaghloul, D. Khera, C. Reeve, and L. Linholm, "Machine Learning Approach to Classify Test Structure Data of Lithography Manufacturing Process," *IEEE Transactions on Semiconductor Manufacturing,* May 1989, 2(2), pp. 47-53.

12. D. Rhee and M. E. Zaghloul, "Computer Aided Simulation Study of Photomultiplier Tubes," *IEEE Transactions on Electron Devices,* Sept. 1989, 36(9), pp. 205-210.

13. G. Moon, M. E. Zaghloul, and R. W. Newcomb, "An Enhancement-Mode MOS Voltage Controlled Linear Resistor with Large Dynamic Range", IEEE Transactions on Circuits and systems, Oct. 1990, *CAS 37(12), pp.1284-1288.*

14. M. E. Zaghloul and D. Gobovic, "Fault Modeling of Physical Failures in CMOS VLSI Circuits," *IEEE Transactions on Circuits and Systems,* Dec. 1990, CAS 37(12), pp. 1528-1543.

15. M. E. Zaghloul and D. Gobovic, "Fault Simulation of VLSI CMOS Circuits," *IEE Journal on Computers and Systems, Proceedings-E,* July 1991, 138(4), pp. 203 -212.

16. G. Moon, M. E. Zaghloul, and R. W. Newcomb, "VLSI Implementation of Synaptic Weights and Summation in Pulse Coded Neural-Type Cells," *IEEE Transactions on Neural Networks,* May 1992, 3(3), pp. 394-403.

17. J. Marshall, M. Parameswaran, M. E. Zaghloul, and M. Gaitan, "Methodology for the Computer Aided Design of Micro machine Devices in a Standard CMOS Process," *IEEE Circuits and Devices,* Nov. 1992, 8(6).

18. H. Szu, C. Hsu, P. Thaker, and M. Zaghloul, "Image Wavelet Transforms Implemented by Discrete Wavelet Chips," *Journal of Optical Engineering,* July 1994, 33(7), pp. 2310-2325.

19. V. Milanovic, M. E. Zaghloul, "Improved Masking Algorithms for Chaotic Communication," Electronic Letters, Jan. 1996, 32(1), pp. 11-12.

20. R. Yentis and M. E. Zaghloul, "VLSI Implementation of a Cellular Neural Network for Solving Partial Differential Equations," *IEEE Transactions on Circuits and Systems,* 43(8), Aug. 1996, pp. 687-690.

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