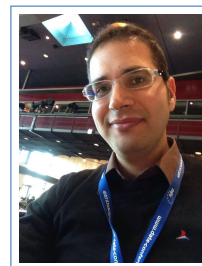


Ahmed Awad

Curriculum Vitae

Nablus
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Education

- 2013–2016 **Doctor of Engineering**, *Department of Communications and Computer Engineering, Tokyo Institute of Technology, Japan.*
- 2009–2011 **Master of Computing**, *Faculty of Graduate Studies, Birzeit University, Palestine, GPA – 90.8% (With Distinction).*
- 2004–2009 **Bachelor of Computer Engineering**, *Department of Computer Systems Engineering, Birzeit University, Palestine, GPA – 84%.*

Doctoral Thesis

- Title *Robust Lithographic Mask Generation For Advanced Technology Nodes*
- Supervisor Professor Atsushi Takahashi
- Description This thesis provides a full Optical Proximity Correction (OPC) engine methodology to heuristically find mask solutions for advanced technology nodes lithographic patterning following a novel fast intensity based algorithm. The proposed algorithm has been found as 2X faster than the fastest algorithm among recent state-of-art algorithms along with generating highly manufactured mask solutions with high robustness against process variations.

Master Thesis

- Title *Reducing Test Power for Embedded Memories*
- Supervisor Dr. Abdallatif Abu-Issa
- Description This thesis proposes a number of algorithms to reduce the consumed power of embedded memories during parallel testing in System on Chip (SoC).

Work Experience & Internships

- 2022-Present **An-Najah National University**, *Coordinator of Cybersecurity & Digital Information Management Master Program*, Nablus-Palestine.
- 2019-Present **An-Najah National University**, *Chair of the Department of Information Technology (IT)*, Nablus-Palestine.

- 2017-Present **An-Najah National University**, *Assistant Professor- Department of Computer Science*, Nablus-Palestine.
Scientific Research committee chair, Lecturer in the department of Networks & Information Security.
- 2014 **Toshiba Corporation**, *Internship with Memory Lithography Group*, Kanagawa-Japan.
Worked as a developer for OPC algorithms to accelerate mask generation process.
- 2011–2013 **Quality Assurance Engineer for CISCO Systems**, *Exalt Technologies*, Palestine.
Worked as testing automation framework leader for NCS project related to ASR routers applications.
- 2009–2011 **Quality Assurance Engineer for CISCO Systems**, *Gsoft Technologies*, Palestine.
GUI Automation for Positron Project related to network flow control.
- 2008 **Programming Languages Training Course Instructor**, *Toulkarem Municipality Computer Center*, Palestine.
C++ programming instructor

Research Topics & Interests

- * **Lightweight Cryptography**
- * **Network Security Related Optimization Problems**
- * **Internet of Things (IoT) Routing Protocols**
- * **Binary Decision Diagrams (BDDs) Reordering Optimization**: Exploiting recent meta-heuristic optimization algorithms in Binary Decision Diagrams (BDDs) reordering to be invested in quantum circuit synthesis, reliability analysis, and software project testing.
- * **Reversible Logic Synthesis and Optimization Algorithms**: Consider optimal synthesis of reversible circuits for future quantum computing.
- * **Computer Aided Design (CAD) Algorithms & Very Large Scale Integration (VLSI) Circuits Design Automation**: Numeric and graphical based algorithms to tackle the continuous shrinkage of Integrated Circuits (ICs) dimensions.
- * **Memory Design & Testing**: Algorithms to optimize the problem of memory design in terms of functionality and power dissipation within a short computation time. This includes 3D memory design and test for advanced technologies.
- * **Soft Errors Sensitivity Analysis**: Algorithms to detect and fix soft errors for Multi-processor System on Chip (MPSoC).

Awards

- 2021 **Funded Project Award- An-Najah National University**: Awarded fund number ANNU-2021-sc0014 for research projects by An-Najah National University
- 2020 **Distinction in Academic Assessment-An-Najah National University**.
- 2020 **Funded Project Award- An-Najah National University**: Awarded fund number ANNU-1920-Sc006 for research projects by An-Najah National University
- 2019 **Distinction in Academic Assessment-An-Najah National University**.

- 2016 **TSLDM Best Journal Paper Award:** Ahmed Awad and Atsushi Takahashi, "Intensity Difference Map (IDM) Accuracy Analysis for OPC Efficiency Verification and Further Enhancement", IPSJ Transactions on LSI Systems and Methodology, 2017, TSLDM vol.10
- 2016 **Best Presentation Award:** Ahmed Awad and Atsushi Takahashi, "Mask Manufacturability Aware Post OPC Algorithm for Optical Lithography", Design Automation (DA) Symposium, 2015, Ishikawa, Japan.
- 2015 **Best Poster Award:** Ahmed Awad and Atsushi Takahashi, "Mask Manufacturability Aware Post OPC Algorithm for Optical Lithography", Design Automation (DA) Symposium, 2015, Ishikawa, Japan.
- 2015 **Best Paper Award:** Ahmed Awad, Atsushi Takahashi, Satoshi Tanaka, and Chikaaki Kodama, "Mask Optimization With Minimal Number of Convolutions Using Intensity Difference Map", Design Automation (DA) Symposium, pp. 145-150, 2014, Gifu, Japan.
- 2015 **Best Presentation Award:** Ahmed Awad, Atsushi Takahashi, Satoshi Tanaka, and Chikaaki Kodama, "Mask Optimization With Minimal Number of Convolutions Using Intensity Difference Map", Design Automation (DA) Symposium, 2014, Gifu, Japan.
- 2013 **Completion of Japanese Intensive Course**
- 2013 **Japanese Government Scholarship (MEXT)**
- 2012 **Most Valuable Player for CISCO Team QA - SRTG - ASR**
- 2004-2009 **Six Times on the Honor List at Birzeit University.**

Publications

Journal Papers

- [1] Ahmed Awad, Amjad Hawash, and Baker Abdalhaq, , and "A Genetic Algorithm (GA) and Swarm Based Binary Decision Diagram (BDD) Reordering Optimizer Reinforced with Recent Operators", IEEE Transactions on Evolutionary Computation (TECV) (Accepted).
- [2] Baker Abdalhaq, Ahmed Awad, and Amjad Hawash, "A fast Binary Decision Diagram (BDD)-based reversible logic optimization engine driven by recent meta-heuristic reordering algorithms", Microelectronics Reliability, Vol.123, 2021.
- [3] Baker Abdalhaq, Ahmed Awad, and Amjad Hawash, "Reversible Logic Synthesis Using Binary Decision Diagrams (BDDs) With Exploiting Efficient Reordering Operators", IEEE Access, Vol.8, pp.156001-156016, 2020.
- [4] Amjad Hawash, Ahmed Awad, and Baker Abdalhaq, "Reversible Circuits Synthesis Time Reduction Based on Subtree-Circuit Mapping", Applied Sciences, Vol.10, No. 12, 2020.
- [5] Ahmed Awad, Atsushi Takahashi, Satoshi Tanaka, and Chikaaki Kodama, "A Fast Process Variation Aware Mask Optimization Algorithm With A Novel Intensity Modeling", IEEE Transactions on Very Large Scale Integration Systems (TVLSI), Vol.25, No. 3, pp.998-1011, 2017.

- [6] Ahmed Awad, Atsushi Takahashi, Chikaaki Kodama. "A Fast Mask Manufacturability and Process Variation Aware OPC Algorithm With Exploiting A Novel Intensity Estimation Model", IEICE Trans. Fundamentals, Vol.E99-A, No.12, pp.2363-2374, 2016.
- [7] Ahmed Awad, Atsushi Takahashi, Satoshi Tanaka, and Chikaaki Kodama, "Intensity Difference Map (IDM) Accuracy Analysis for OPC Efficiency Verification and Further Enhancement", IPSJ Transactions on System LSI Design Methodology, Vol.10, pp.28-38, February 3, 2017 (**Best Paper Award**)
- [8] Ahmed Awad and Abdallatif Abu-Issa, "Low Power Address Generator for Memory Built-In Self Test", The research bulletin of Jordan ACM, 2(3), pp. 52-56, 2011

Conference Proceedings

- [1] Kareem Abu Raad, Heba Takruri Tamemi, Manar Rabayah, Mai Kanaan, and Ahmed Awad, " A Low Cost Blockchain-Based Framework for Preserving Critical Data in Health-Care IoT Systems Using Classification", Proc. The Fourth IEEE International Workshop on Secure Smart Societies in Next Generation Networks SECSOC, 2022, UK (Will appear soon).
- [2] Abdul Kareem Suleiman, Alaa Kayed, Rashid Abu Shamat, Vatsal Jagni, Israa Obaid, and Ahmed Awad, "A Passive OS-Fingerprinting framework using honeypot", Proc. 2022 IEEE ASU International Conference in Emerging Technologies for Sustainability and Intelligent Systems (ICETISIS) -, 2022, Bahrain (Will appear soon).
- [3] Hanan Sawalmeh, Manar Malayshi, Sujood Ahmad, and Ahmed Awad, "VPN Remote Access OSPF-based VPN Security Vulnerabilities and Counter Measurements", Proc. 2021 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies (3ICT), pp. 236-241, 2021, Bahrain.
- [4] Mona Khammash, Rawan Tammam, Abdallah Masri, and Ahmed Awad, "Elliptic Curve Parameters Optimization for Lightweight Cryptography in Mobile-Ad-Hoc Networks", Proc. 18th IEEE International Multi-Conference on Systems, Signals and Devices (SSD'21), pp. 63-69, 2021, Monastir, Tunisia.
- [5] Qossay Ismai, Osama Saleh, Mohammed Hashayka, Ahmed Awad, Amjad Hawash, and Othman M.M Othman, "Improve the Firewall Accuracy By using Dynamic Ontology ", Proc. ACM International Conference on Future Networks and Distributed Systems (ICFNDS), pp. 1-5, 2020, St.Petersburg, Russia.
- [7] Abdel-Nasser Ateeq, Israa Obaid, Ahmed Awad, and Othman M.M Othman, "Lifetime Enhancement of WSN Based on Improved LEACH with Cluster Head Alternative Gateway", Proc. ACM International Conference on Future Networks and Distributed Systems (ICFNDS), pp.1-6, 2020, , St.Petersburg, Russia.
- [8] Baker Abdalhaq, Ahmed Awad, and Amjad Hawash, "A Swarm Based Binary Decision Diagram (BDD) Reordering Optimizer For Reversible Circuit Synthesis ", IEEE 15th International Conference on Design & Technology of Integrated Systems in Nanoscale Era (DTIS), 2020, Marrakesh, Morocco.

- [9] Thaer Thaher, Baker Abdalhaq, Ahmed Awad, and Amjad Hawash, "Whale Optimization Algorithm for Traffic Signal Scheduling Problem ", Proc. International Conference on Innovative Computing and Cutting-edge Technologies (ICICCT), 2019, Istanbul, Turkey.
- [10] Raghad Jawabreh, Narmeen Darawshe, Othman M.M Othman, and Ahmed Awad, " Fog Computing Orchestration ", Proc. ACM International Conference on Future Networks and Distributed Systems (ICFNDS), 2019, Paris, France.
- [11] Ahmad Lhwani, Abed-Alrhman Mosallam, Aws Alawneh, Ahmed Awad, Othman M.M Othman, "A Low Power Boundary Nodes Detection Algorithm for Wireless Sensor Networks (WSNs)", Proc. ACM International Conference on Future Networks and Distributed Systems (ICFNDS), 2019, Paris, France.
- [12] Amjad Hawash, Ahmed Awad, and Baker Abdalhaq, "Towards Reducing Reversible Circuit Synthesis Time ", Proc. IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT), pp. 538-543, 2019, Jordan, Amman
- [13] Ahmed Awad, Baker Abdalhaq, Amjad Hawash, and Douglas Johnson "A Comparative Analysis of Binary Decision Diagram Reordering Algorithms for Reversible Circuit Synthesis", Proc. IEEE International Symposium Series on Computational Intelligence (SSCI), pp. 104-111 ,2018, Bengaluru, India
- [14] Hala Jodeh, Aisha Mikkawi, Ahmed Awad, and Othman Othman "Comparative Analysis of Routing Protocols for under-Water Wireless Sensor Networks", Proc. ACM International Conference on Future Networks and Distributed Systems (ICFNDS), 2018, Amman, Jordan.
- [15] AbedAlqader Swedan, Ahmad N. Khuffash, Othman Othman, and Ahmed Awad "Detection and Prevention of Malicious Cryptocurrency Mining on Internet-Connected Devices", Proc. ACM International Conference on Future Networks and Distributed Systems (ICFNDS), 2018, Amman, Jordan.
- [16] Ahmed Awad and Atsushi Takahashi, "A Lithographic Mask Manufacturability and Pattern Fidelity Aware OPC Algorithm", Proc. the 2016 International Symposium on VLSI Design, Automation and Test (VLSI-DAT 2016), pp.D3-7-1-4, Hsinchu, Taiwan.
- [17] Ahmed Awad, Atsushi Takahashi, and Chikaaki Kodaman, "A Fast Manufacturability Aware Optical Proximity Correction (OPC) Algorithm with Adaptive Wafer Image Estimation", Proc. IEEE/ACM Design Automation and Test in Europe Conference & Exhibition (DATE), pp. 49-54, 2016, Dresden, Germany.
- [18] Ahmed Awad and Atsushi Takahashi, "Mask Manufacturability Aware Post OPC Algorithm for Optical Lithography", Proc. IPSJ Design Automation (DA) Symposium, pp. 119-124, 2015, Ishikawa, Japan.
- [19] Ahmed Awad and Atsushi Takahashi, "A Fast Lithographic Mask Correction Algorithm.", IEICE Technical Report (VLD2014-153). pp. 1-6, 2015, Okinawa, Japan.

- [20] Ahmed Awad, Atsushi Takahashi, Satoshi Tanaka, and Chikaaki Kodaman, "A Fast Process Variation and Pattern Fidelity Aware Mask Optimization Algorithm", Proc. IEEE/ACM International Conference on Computer Aided Design (ICCAD), pp.238-245, 2014, San Jose, USA (**Top Conference in Computer Aided Design**).
- [21] Atsushi Takahashi, Ahmed Awad, Yukihide Kohira, Tomomi Matsui, Chikaaki Kodama, Shigeki Nojima, and Satoshi Tanaka, "Multi Patterning Techniques for Manufacturability Enhancement in Optical Lithography", Proc. the 2014 International Conference on Integrated Circuits, Design, and Verification, pp. 117-122, 2014, Hanoi, Vietnam.
- [22] Ahmed Awad, Atsushi Takahashi, Satoshi Tanaka, and Chikaaki Kodaman, "A Process Variability Band Area Reduction Algorithm For Optical Lithography", Proc. the 2014 IEICE Society Conference, p. 50, 2014, Tokushima, Japan.
- [23] Ahmed Awad, Atsushi Takahashi, Satoshi Tanaka, and Chikaaki Kodaman, "Mask Optimization With Minimal Number of Convolutions Using Intensity Difference Map", Proc. IPSJ Design Automation (DA) Symposium, pp. 145-150, 2014, Gifu, Japan (**Best Paper Award**).
- [24] Ahmed Awad, Atsushi Takahashi, Satoshi Tanaka, and Chikaaki Kodaman, "A New Intensity Based Edge Placement Error Optimization Algorithm for Optical Lithography", Proc. the 27th Workshop on Circuits and Systems. pp. 422-427, 2014, Awaji, Japan.
- [25] Ahmed Awad, Abdallatif Abu-Issa, and Said Hamdioui "Reducing Test Power for Embedded Memories", Proc. IEEE International Symposium on Defect and Fault Tolerance in VLSI and Nanotechnology Systems (DFTS), pp. 112-119, 2011, Vancouver, Canada.
- [26] Ahmed Awad and Abdallatif Abu-Issa, "Low Power Address Generator for Memory Built-In Self Test", Proc. 2011 ACM conference on Innovation in Computing and Engineering Machinery (CICEM), pp. 52-56, 2011, Amman, Jordan.

Book Chapters

- [1] Ahmed Awad, Atsushi Takahashi, and Chikaaki Kodama, "Optical Proximity Correction (OPC) Under Immersion Lithography.", Lithography, InTech Open Science, ISBN: 978-953-51-5613-0, 2017.

Poster Presentations

- [1] Ahmed Awad, Atsushi Takahashi, and Chikaaki Kodama, "A Fast Lithographic Mask Manufacturing Cost Aware Optical Proximity Correction (OPC) Algorithm With Process Variability Consideration.", IEEE/ACM Workshop on Variability Modeling and Characterization (VMC), 2015, Austin, USA.
- [2] Ahmed Awad and Atsushi Takahashi, "Mask Manufacturability Aware Post OPC Algorithm for Optical Lithography", IPSJ Design Automation (DA) Symposium, 2015, Ishikawa, Japan (**Best Poster Award**).
- [3] Ahmed Awad and Atsushi Takahashi, "A Fast Process Variation and Pattern Fidelity Aware Mask Optimization Algorithm", Student Research Forum, IEEE/ACM Asia and South Pacific Design Automation Conference (ASP-DAC), 2015, Chiba, Japan.

- [4] Ahmed Awad and Atsushi Takahashi, "A Fast Mask Optimization Algorithm for Optical Lithography", 11th IEEE Transdisciplinary-Oriented Workshop for Emerging Researchers, 2014, Tokyo, Japan.
- [5] Ahmed Awad, Atsushi Takahashi, Satoshi Tanaka, and Chikaaki Kodama, "Mask Optimization With Minimal Number of Convolutions Using Intensity Difference Map", Design Automation (DA) Symposium, 2014, Gifu, Japan.

Teaching Courses

Computer Programming, Data Structures & Algorithms, , High Performance Computing, Optimization Algorithms, Computer Organization & Assembly Language, Digital Logic Design, Network Administration, Wireless Systems & Security, Computer Networks, Web Services Security, Probability & Queuing Theory, Cryptography & Network Security, Network Design & Simulation, Distributed Graph Algorithms for Computer Networks, Network Administration Lab, Network Design & Simulation Lab, Advanced Routing & Switching, Network Security Lab, Advances in CyberSecurity.

Supervision

- [1] Master Thesis Supervisor: Laws fro Protecting Integrated Circuits (ICs) Copyrights
- [2] Master Thesis Supervisor: Backlog Changes Optimization for Scrum Process in Software Engineering Companies.
- [3] Graduation Projects Supervisor for Undergraduate Students.

Computer skills

Programming Languages :C, C++, java, Verilog, VHDL, nesC, Assembly, HTML, javascripts, PHP, XML, RDF, OWL, tcl

Softwares :Lithosim, Inkscape, Qtiplot, Eclipse, Matlab, Maxplus, L^AT_EX, MS-Office, Pspice, BosonSimulator, OrCad, Xilinx ISE, Wireshark, VisioModeler, GNS3, NS2, Maven, TestNG, SeleniumRC.

Operating Systems :Windows, Linux, TinyOS, Salvo

Languages

Arabic **Mothertongue**
 English **Excellent**
 Japanese **Very Basic**

Interests

- Sports
- Reading
- Programming
- Team Working