

Ahmed Awad

Curriculum Vitae

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Education

- 2013–2016 **Doctor of Engineering**, *Tokyo Institute of Technology*, Japan
Department: Communications and Computer Engineering
Thesis: Robust Lithographic Mask Generation For Advanced Technology Nodes
Supervisor: Professor Atsushi Takahashi
- 2009–2011 **Master of Computing**, *Birzeit University*, Palestine, *GPA: 90.8% (With Distinction)*
Thesis: Reducing Test Power for Embedded Memories
Supervisor: Dr. Abdallatif Abu-Issa
- 2004–2009 **Bachelor of Computer Engineering**, *Birzeit University*, Palestine, *GPA: 84%*
Department: Computer Systems Engineering

Work Experience & Internships

- 2026–Present **Coordinator of Information Technology Management Master Program**, *An-Najah National University*, Nablus, Palestine
- 2025–2026 **Dean of the Faculty of Information Technology & Artificial Intelligence**, *An-Najah National University*, Nablus, Palestine
- 2023–2025 **Chair of the Department of Information Technology (IT)**, *An-Najah National University*, Nablus, Palestine
- 2022–Present **Associate Professor, Department of Computer Science**, *An-Najah National University*, Nablus, Palestine
- 2022–Present **Coordinator of Cybersecurity & Digital Information Management Master Program**, *An-Najah National University*, Nablus, Palestine
- 2019–2022 **Chair of Computer Science & Information Security Programs**, *An-Najah National University*, Nablus, Palestine
- 2017–2022 **Assistant Professor, Department of Computer Science**, *An-Najah National University*, Nablus, Palestine
Scientific Research Committee Chair; Lecturer in Networks & Information Security
- 2014 **Intern, Memory Lithography Group**, *Toshiba Corporation*, Kanagawa, Japan
Developed OPC algorithms to accelerate mask generation processes.
- 2011–2013 **Quality Assurance Engineer (CISCO Systems)**, *Exalt Technologies*, Palestine
Led testing automation framework for NCS project related to ASR routers.
- 2009–2011 **Quality Assurance Engineer (CISCO Systems)**, *Gsoft Technologies*, Palestine
GUI automation for Positron project related to network flow control.
- 2008 **C++ Programming Instructor**, *Toulkarem Municipality Computer Center*, Palestine
Taught C++ programming courses.

Research Topics & Interests

- Meta-heuristic Optimization Algorithms.
- Lightweight Cryptography
- Network Security Optimization Problems
- Internet of Things (IoT) Routing Protocols
- Binary Decision Diagrams (BDDs) Reordering Optimization
- CAD & VLSI Circuits Design Automation
- Memory Design & Testing
- Soft Errors Sensitivity Analysis

Awards

- 2021 Funded Project Award – An-Najah National University (ANNU-2021-sc0014)
- 2020 Distinction in Academic Assessment – An-Najah National University
- 2020 Funded Project Award – An-Najah National University (ANNU-1920-Sc006)
- 2019 Distinction in Academic Assessment – An-Najah National University
- 2016 TSLDM Best Journal Paper Award – IPSJ Transactions on LSI Systems and Methodology, Vol.10
- 2016 Best Presentation Award – Design Automation Symposium, Japan
- 2015 Best Poster Award – Design Automation Symposium, Japan
- 2015 Best Paper Award – Design Automation Symposium, Japan
- 2013 Japanese Government Scholarship (MEXT)
- 2012 Most Valuable Player – CISCO QA Team
- 2004–2009 Six Times on Honor List – Birzeit University

Journal Papers

- [1] Baker Abdalhaq, Ahmed Awad, and Amjad Hawash. "Toward Instance-Aware Swarm Intelligence for TSP via Distance Uniqueness." *IEEE Access*, Vol.14, pp. 25264-25285, 2026.
- [2] Baker Abdalhaq, Amjad Hawash, Ahmed Awad. "Diversity enforced Genetic Algorithm (GA) for Binary Decision Diagram (BDD) reordering" *Applied Soft Computing*, Vol.155, 2024.
- [3] Younes Khdeir and Ahmed Awad. "A Comparison of Heuristic Algorithms for Solving the Traveling Salesman Problem" *An-Najah University Journal for Research - A (Natural Sciences)*, 39(1), pp. 73-80, 2024.
- [4] Mohammed Adnan, Dima Bshara, and Ahmed Awad. "Forensic Analysis of APT Attacks based on Unsupervised Machine Learning" *European Journal of Science and Technology*, 49, pp. 75-82, 2023.
- [5] Ahmed Awad, Amjad Hawash, and Baker Abdalhaq. "A Genetic Algorithm and Swarm Based Binary Decision Diagram (BDD) Reordering Optimizer." *IEEE Transactions on Evolutionary Computation*, vol. 27, pp. 535-549, 2023.
- [6] Baker Abdalhaq, Ahmed Awad, and Amjad Hawash. "A fast Binary Decision Diagram (BDD)-based reversible logic optimization engine." *Microelectronics Reliability*, Vol.123, 2021.
- [7] Baker Abdalhaq, Ahmed Awad, and Amjad Hawash. "Reversible Logic Synthesis Using Binary Decision Diagrams (BDDs) with Efficient Reordering Operators." *IEEE Access*, Vol.8, 2020.
- [8] Ahmed Awad, Atsushi Takahashi, and Chikaaki Kodama. "A Fast Process Variation Aware Mask Optimization Algorithm with a Novel Intensity Modeling." *IEEE Transactions on VLSI Systems*, Vol.25, No.3, 2017.
- [9] Ahmed Awad, Atsushi Takahashi, and Satoshi Tanaka. "Intensity Difference Map (IDM) Accuracy Analysis for OPC Efficiency Verification." *IPSJ Transactions on System LSI Design Methodology*, Vol.10, 2017.

- [10] Ahmed Awad, Atsushi Takahashi, and Chikaaki Kodama. "A Fast Mask Manufacturability and Process Variation Aware OPC Algorithm with Exploiting a Novel Intensity Estimation Model." *IEICE TRANSACTIONS on Fundamentals of Electronics, Communications and Computer Sciences*, Vol.99, 2016.

Conference Papers

- [1] Jana Taha, Ramah Hawash, Ahmed Awad, and Amjad Hawash. "Content and Activity Based Friends Suggestion in an Annotation System." *Conference Proceedings*, 2024.
- [2] Dyaa Al-Dein Tummazeh, Manar Eyad Harb, Yara Sholi, Ahmed Awad, and Amjad Hawash. "Ontological-based Intrusion Detection System (IDS): A Comparative Study." *Conference Proceedings*, 2023.
- [3] Ihsan Shakhsheer, Islam Mashaqi, Mohammed Abdallah, and Ahmed Awad. "Automated Forensic Analysis Following Memory Content Using Volatility Framework." *Conference Proceedings*, 2023.
- [4] Ahmed Awad and Younes Khdeir. "A Comparison of Heuristic Algorithms for Solving the Traveling Salesman Problem." *Conference Proceedings*, 2023.
- [5] Majd Shunnar, Amaal Othman, and Ahmed Awad. "A Study to Improve Image Steganography Using Linear Feedback Shift Register." *Conference Proceedings*, 2022.
- [6] Mohammad Smadi, Mohammad Hawash, Omar Daqqa, Amjad Hawash, and Ahmed Awad. "A New Annotation System for Dynamic Web Pages Driven by NLP." *Conference Proceedings*, 2022.
- [7] AbdulKareem Suleiman, Alaa Kayed, Rashid Abu Shamat, Vatsal Jagni, Israa Obaid, and Ahmed Awad. "A Passive OS-Fingerprinting Framework Using Honeypot." *Conference Proceedings*, 2022.
- [8] 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." *Conference Proceedings*, 2022.
- [9] Hanan Sawalmeh, Sujood Ahmad, Manar Malayshi, and Ahmed Awad. "VPN Remote Access OSPF-Based VPN Security Vulnerabilities and Counter Measures." *Proceedings of the International Conference on Innovation and Intelligence for Informatics, Computing and Technologies (3ICT)*, 2021.
- [10] Mona Khammash, Rawan Tammam, Abdallah Masri, and Ahmed Awad. "Elliptic Curve Parameters Optimization for Lightweight Cryptography in Mobile-Ad-Hoc Networks." *Proceedings of the 18th IEEE International Multi-Conference on Systems, Signals and Devices (SSD)*, 2021.
- [11] Qossay Ismai, Osama Saleh, Mohammed Hashayka, Ahmed Awad, Amjad Hawash, and Othman M. M. Othman. "Improve the Firewall Accuracy by Using Dynamic Ontology." *Proceedings of the ACM International Conference on Future Networks and Distributed Systems (ICFNDS)*, 2020.
- [12] Abdel-Nasser Ateeq, Israa Obaid, Othman M. M. Othman, and Ahmed Awad. "Lifetime Enhancement of WSN Based on Improved LEACH with Cluster Head Alternative Gateway." *Proceedings of the ACM International Conference on Future Networks and Distributed Systems (ICFNDS)*, 2020.
- [13] Baker Abdalhaq, Ahmed Awad, and Amjad Hawash. "A Swarm Based Binary Decision Diagram (BDD) Reordering Optimizer for Reversible Circuit Synthesis." *Proceedings of the IEEE International Conference on Design & Technology of Integrated Systems in Nanoscale Era (DTIS)*, 2020.
- [14] Thaer Thaher, Baker Abdalhaq, Ahmed Awad, and Amjad Hawash. "Whale Optimization Algorithm for Traffic Signal Scheduling Problem." *Conference Proceedings*, 2019.
- [15] Ahmad Lhwani, Abed-Alrhman Mosallam, Aws Alawneh, Ahmed Awad, and Othman M. M. Othman. "A Low Power Boundary Nodes Detection Algorithm for Wireless Sensor Networks (WSNs)." *Proceedings of the ACM International Conference on Future Networks and Distributed Systems (ICFNDS)*, 2019.

- [16] Raghad Jawabreh, Narmeen Darawshe, Othman M. M. Othman, and Ahmed Awad. "FogNetwork Orchestration for Heterogeneous Networks." *Proceedings of the ACM International Conference on Future Networks and Distributed Systems (ICFNDS)*, 2019.
- [17] Amjad Hawash, Ahmed Awad, and Baker Abdalhaq. "Towards Reducing Reversible Circuit Synthesis Time." *Proceedings of the IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT)*, pp. 538–543, 2019.
- [18] Ahmed Awad, Baker Abdalhaq, Amjad Hawash, and Douglas Johnson. "A Comparative Analysis of Binary Decision Diagram Reordering Algorithms for Reversible Circuit Synthesis." *Proceedings of the IEEE Symposium Series on Computational Intelligence (SSCI)*, pp. 104–111, 2018.
- [19] Hala Jodeh, Aisha Mikkawi, Ahmed Awad, and Othman M. M. Othman. "Comparative Analysis of Routing Protocols for Under-Water Wireless Sensor Networks." *Proceedings of the ACM International Conference on Future Networks and Distributed Systems (ICFNDS)*, 2018.
- [20] AbedAlqader Swedan, Ahmad N. Khuffash, Othman M. M. Othman, and Ahmed Awad. "Detection and Prevention of Malicious Cryptocurrency Mining on Internet-Connected Devices." *Proceedings of the ACM International Conference on Future Networks and Distributed Systems (ICFNDS)*, 2018.
- [21] Ahmed Awad and Atsushi Takahashi. "A Lithographic Mask Manufacturability and Pattern Fidelity Aware OPC Algorithm." *Proceedings of the IEEE International Symposium on VLSI Design, Automation and Test (VLSI-DAT)*, 2016.
- [22] Ahmed Awad, Atsushi Takahashi, and Chikaaki Kodama. "A Fast Manufacturability Aware Optical Proximity Correction (OPC) Algorithm with Adaptive Wafer Image Estimation." *Proceedings of the Design, Automation and Test in Europe Conference (DATE)*, 2016.
- [23] Ahmed Awad and Atsushi Takahashi. "Mask Manufacturability Aware Post OPC Algorithm for Optical Lithography." *Proceedings of the IPSJ System LSI Design Methodology (SLDM) Workshop*, 2015.
- [24] Ahmed Awad and Atsushi Takahashi. "A Fast Lithographic Mask Correction Algorithm." *IEICE Technical Report, VLSI Design Technologies (VLD) Workshop*, 2015.
- [25] Atsushi Takahashi, Ahmed Awad, Yukihide Kohira, Tomomi Matsui, Chikaaki Kodama, Shigeki Nojima, and Satoshi Tanaka. "[Invited] Multi Patterning Techniques for Manufacturability Enhancement in Optical Lithography." *Proceedings of the International Conference on Integrated Circuits, Design, and Verification (ICDV)*, 2014.
- [26] Ahmed Awad, Atsushi Takahashi, Satoshi Tanaka, and Chikaaki Kodama. "A Fast Process Variation and Pattern Fidelity Aware Mask Optimization Algorithm." *Proceedings of the IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, 2014.
- [27] Ahmed Awad, Atsushi Takahashi, Satoshi Tanaka, and Chikaaki Kodama. "A Process Variability Band Area Reduction Algorithm for Optical Lithography." *Proceedings of the Workshop on Advanced Patterning Solutions*, 2014.
- [28] Ahmed Awad, Atsushi Takahashi, Satoshi Tanaka, and Chikaaki Kodama. "Mask Optimization with Minimal Number of Convolutions Using Intensity Difference Map." *Proceedings of the IPSJ Design Automation Symposium (DAS)*, 2014.
- [29] Ahmed Awad, Atsushi Takahashi, Satoshi Tanaka, and Chikaaki Kodama. "A New Intensity Based Edge Placement Error Optimization Algorithm for Optical Lithography." *Proceedings of the Workshop on Circuits and Systems (KWS)*, 2014.
- [30] Ahmed Awad, Abdallatif Abu-Issa, and Said Hamdioui. "Reducing Test Power for Embedded Memories." *Proceedings of the IEEE International Symposium on Defect and Fault Tolerance in VLSI and Nanotechnology Systems (DFTS)*, 2011.
- [31] Ahmed Awad and Abdallatif Abu-Issa. "Low Power Address Generator for Memory Built-In Self Test." *Proceedings of the ACM Conference on Innovation in Computing and Engineering Machinery (CICEM)*, 2011.

Teaching

Courses taught include: Computer Programming, Data Structures & Algorithms, High Performance Computing, Optimization Algorithms, Computer Organization & Assembly, Digital Logic Design, Network Administration, Wireless Systems & Security, Cryptography & Network Security, and Advanced Routing & Switching, Advanced Topics in Cybersecurity, Internet of Things (IoT) Design, Internet of Medical Things (IoMT).

Supervision

- Master Thesis: Machine Learning Algorithms for Predicting Student's Academic Performance In Educational Data Mining
- Master Thesis: Laws for Protecting Integrated Circuits (ICs) Copyrights
- Master Thesis: Backlog Changes Optimization for Scrum Process in Software Engineering Companies
- Supervised multiple undergraduate graduation projects

Computer Skills

Programming	C, C++, Java, Verilog, VHDL, nesC, Assembly, HTML, JavaScript, PHP, XML, RDF, OWL, Tcl
Software	Lithosim, Inkscape, Qtplot, Eclipse, MATLAB, MAX+plus, LaTeX, Pspice, OrCad, Xilinx ISE, Wireshark, GNS3, NS2, SeleniumRC
Operating Systems	Windows, Linux, TinyOS, Salvo

Languages

Arabic	Mother tongue
English	Excellent
Japanese	Very Basic

Interests

Sports, Programming, Reading, Teamwork.