Abdullah M. Heyari

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PERSONAL INFORMATION	**Date of birth:** February 15, 1984.
	Place of birth: Amman, Jordan.
	Nationality: Jordanian.
	Marital status: Single.

EDUCATION

℘ **Saarland University** (March, 2014), Saarbrücken, Germany
M.Sc. in Computer Science, GPA: 1.9[1].

℘ **University of Jordan** (June, 2006), Amman, Jordan
B.Sc. in Computer Science, GPA: 3.14/4.0.

MASTER'S THESIS

TITLE: *A Smoothed-Analytic Approach to The Integer Factoring Problem.*
SUPERVISOR: Professor Markus Bläser.
DESCRIPTION: The thesis consisted of an attempt to address the challenge of establishing a complete smoothed analysis of the integer factoring problem. We investigated the problem by proposing two perturbation models, along with numerical outputs demonstrating how "natural" they might be.

RELEVANT COURSE WORK (MASTER)

CORE COURSES: Optimization, Software Engineering, Artificial Intelligence.
ADVANCED COURSES: Smoothed Analysis.
SEMINARS: Complexity Theory, Algorithms Reading Group, Smoothed Analysis, Scientific Writing.

BACHELOR'S THESIS

TITLE: *On Quantum Algorithms.*
SUPERVISOR: Professor Nadim Obeid.
DESCRIPTION: The thesis consisted of a brief introduction to the topic of quantum computing, along with a survey of three well-known quantum algorithms, focusing on Grover's search algorithm, providing a numerical illustration of its flow. The thesis concluded with a survey of the reasons proposed so far for the paucity of quantum algorithms.

PUBLICATIONS

℘ Abdel-Fattah, F.; Fayyad, S.; Al-Zoubi, S; **Heyari A. M.**, *A Survey of Internet of Things (IoT) Forensics Frameworks and Challenges. IEEE International Conference on Information Technology (ICIT) 2023, Amman, Jordan.*

℘ Abdel-Fattah, F., Fayyad, S., **Heyari A. M.** and Al-Zoubi, H., 2023, August. *A Survey of Internet of Things (IoT) Forensics Frameworks and Challenges.* In 2023 IEEE International Conference on Information Technology (ICIT) (pp. 373-377).

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[1]The German grading system starts from 1.0 (very good) and ends with 4.0 (sufficient).

℘ Mizher, M., Hamdan, S., Mizher, M., Mazhar, A.A., Mimi, H. and **Heyari A. M.**, 2023, August. *Three Dimensional Objects Encryption Algorithms: A Review.* In 2023 IEEE International Conference on Information Technology (ICIT) (pp. 435-440).

℘ Hamdan, S., Mizher, M., Mimi, H., Maria, E.A. and **Heyari A. M.**, 2023, August. *Feature Extraction with Differential Evolution Algorithm.* In 2023 IEEE International Conference on Information Technology (ICIT) (pp. 391-396).

℘ (accepted poster) Knechtel J., **Heyari A. M.**, Elfadel I. M., and Lienig J., *3D Floorplanning with Timing-Driven Voltage Assignment. ACM-IEEE Design Automation Conference (DAC) 2016, Austin, Texas, USA.*

EDITORIAL REVIEWS

℘ Computers & Operations Research, *Elsevier*, 2016.

℘ IEEE Communications Magazine, *IEEE*, 2017.

℘ IEEE International Conference on Information Technology (ICIT) 2023.

WORK EXPERIENCE

℘ **Al-Zaytoona University of Jordan** (`zuj.edu.jo`), Amman, Jordan
LECTURER, October, 2021 – Now
■ **Affiliation:** Department of Cyber Security / Computer Information Systems.
■ **Courses taught:**
  ▶ Introduction to IT
  ▶ Discrete Mathematics
  ▶ Operations Research
  ▶ Theory of Cryptography
  ▶ Principles of Cyber Security (CompTIA Security+)
  ▶ Data and Information Security (CompTIA Security+)
  ▶ Principles of Programming (JAVA)

℘ **New York University Abu Dhabi** (`nyuad.nyu.edu`), Abu Dhabi, UAE
RESEARCH ASSISTANT, March, 2016 – December 31, 2018.
■ **Affiliation:** Department of Mathematics.
■ **Duration:** May 2017 – December 31, 2018.
■ **Topic:** *Numerical solutions for partial differential equations.*
  ▶ **Supervisor:** Professor Nader Masmoudi and Assistant Professor Mohamed Kamel Riahi (external collaborator – Khalifa University, UAE)
  ▶ **Project description:** The project constitutes of writing numerical algorithms in C/C++ utilizing the MPI library to obtain solutions for the 2D case of the Heat Equation. The experiments were run on a high-performance computer (HPC) examining the impact of various parameters on the efficiency and quality of the solution.

■ **Affiliation:** Center for Cyber Security (CCS).
■ **Duration:** March, 2016 – April, 2017.
■ **Topic:** *Cyber attacks and cascading congestion in urban traffic networks.*
  ▶ **Supervisor:** Assistant Professor Saif Jabari.
  ▶ **Project description:** The project corresponds to the collaborative research endeavor between the Center for Cyber Security (CCS) and other departments. The main objective of this project is to model, analyze, and develop analytical bounds on the impact of attacks on traffic network signals given bounds on the noticeability of such attacks. This involved developing models using Graph Theory, applying constraints from Queuing Theory, and experimenting with MATLAB. Also, we used Quadstone Paramics®, an advanced microscopic traffic simulation software package.

℘ **Masdar Institute of Science and Technology** (`masdar.ac.ae`),
Abu Dhabi, UAE[1]
RESEARCH ENGINEER, October, 2014 – February, 2016.
■ **Project:** *Predictive Shimming.*
■ **Duration:** 2 months (January 1, 2016 – February 25, 2016). *My work on this project ended by resignation which took effect on February 25, 2016.*

  ▶ **Supervisors:** Associate Professor Mahmoud Rasras, Associate Professor Zyar Aung, and Associate Professor Wei Lee Woon.

  ▶ **Project description:** The project is funded by STRATA (a Mubadala company) and jointly administered by Masdar Institute and STRATA. The main objective is to automate a particular step in the manufacturing process of some airplane parts. My role in the project involved data mining and dealing with robots.

■ **Project:** *Smart Mobile Application for Vehicles and Transportation Systems.*
■ **Duration:** 45 days (November 17, 2015 – December 31, 2015).

  ▶ **Supervisor:** Assistant Professor Sid Chi-Kin Chau.

  ▶ **Project description:** The project is funded by Masdar Institute and administered by the iSmart department. It targets the challenge of optimizing the cost of vehicle sharing among two passengers such that they reach a mutual satisfaction.

■ **Project:** *Thermal Management of 3D ICs with Multiple Voltage Domains.*
■ **Duration:** 7 months (March 1, 2015 – September 30, 2015).

  ▶ **Supervisors:** Professor Ibrahim (Abe) ElFadel and Dr. Johann Knechtel.

  ▶ **Project description:** The project is funded by Masdar Institute and administered by the iMicro department. It targets the challenges in constructing 3D integrated circuits (ICs). My role was to introduce techniques to improve the performance of the computational task of handling a multi-objective optimization problem of the several parameters involved. The problem is handled using Simulated Annealing.

■ **Project:** *Information and Decision Architectures for Robustness, Resilience, and Risk Mitigation in Power Grids* (The Flagship Project).
■ **Duration:** 4 months (October 18, 2014 – February 18, 2015).

  ▶ **Supervisors:** Associate Professor Jacob Crandall and Associate Professor Khaled Elbassioni.

  ▶ **Project description:** The project is jointly administered by faculty members from Masdar and from MIT[2], and is funded by Masdar Institute according to the Masdar-MIT agreement. My role was to apply techniques from Graph Theory, Game Theory, Complexity Theory, and Optimization to model and analyze the problem of protecting power grids using MATLAB.

℘ **Oasis Establishment for Electronic Technologies** (`samsync.com`),
Amman, Jordan
BUSINESS DEVELOPMENT OFFICER, March, 2008 – September, 2009.
Oasis is an authorized distributor of SAMSUNG computer-related products, an Intel Premier Provider, and the launcher of the first Jordanian-made computer brand name, SAMsync.
■ **Duties included:** studying, preparing offers for, and following-up with government

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[1]In 2017, Masdar Institute was merged with Khalifa University (`ku.ac.ae`).
[2]Massachusetts Institute of Technology, Cambridge, Massachusetts, USA.

and corporate tenders, and negotiating bids. Communicating with local and oversees vendors/distributors of computer components. Proposing product specifications and pricing. Handling financial claims paid by Intel Corp. to its premier partners (ECAPs, BDFs, and MDFs).

℘ **Ketab Technologies Ltd.** (`ketabtech.com`), Amman, Jordan
RESEARCH AND DEVELOPMENT OFFICER, September, 2006 – September, 2007.
Ketab is a technology company specialized in e-learning and human-computer interaction, was founded in 2004, and is a top 10 finalist in the MIT[2] *Arab Business Plan Competition.*
■ **Duties included:** gathering ideas, investigating their novelty and non-obviousness aspects, searching for prior art, and preparing technical description for subsequent writing of provisional patent applications. Testing the reliability of the software produced at Ketab Technologies and writing testing reports and user manual. Testing and configuring digital pens (pen-like devices equipped with processor, memory, and pattern reading optics. They communicate with host computers via Bluetooth radio).

℘ **Computer and Communication Systems Co.** (`ccs.com.jo`), Amman, Jordan
TRAINEE AT THE HARDWARE DEPARTMENT, April, 2006 – June, 2006.
The training included technical support and maintenance of computers and related hardware.

SKILLS

℘ Programming languages: C++, C, Java.

℘ Mathematical packages: MATLAB and Macaulay2.

℘ Operating systems: Experience in using and troubleshooting Microsoft Windows. Familiar with various Linux distributions and Apple Mac OS.

℘ Office and typesetting packages: LaTeX, Microsoft Office.

INTERESTS

℘ Quantum computing and its relevant security aspects. This includes post-quantum cryptography along with the opportunities and threats introduced by the power of quantum computation.

℘ The integer factoring problem, its hardness, and its relevance to quantum computing, cryptography and security.

℘ Computer hardware and usage models. Including high performance CPUs and high-speed Internet which enabled the transition from personal computers to smartphones, and from local to cloud computing.

℘ A general interest in pure mathematics and theoretical computer science.

℘ Basic interest in typesetting.

LANGUAGES

℘ Arabic: fluent (native speaker).

℘ English: fluent.

℘ German: basic (successfully passed the language course DaF1 offered by MPII[3]).

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[3]Max Planck Institute for Computer Science, Saarbrücken, Germany.