Curriculum Vitae

Eng. Ghena I. Barakat
Computer Engineering

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Biographical Sketch

Eng. Ghena Barakat holds a Bachelor's and Master's Degree in Computer Engineering from Jordan University of Science and Technology (JUST). She has an impressive track record of approximately six years, actively participating in over 25 projects funded by EU programs & US Projects such as Erasmus+, Prima, ENI CBCMED and STEVENS. These projects have provided her with invaluable experience in various roles, including administrative, technical Assistant, communication manager, and junior project manager. Such diverse roles have honed her skills in project management, effective communication, and collaboration.

In addition to her project management and communication expertise, Eng. Ghena was a qualified lecturer at Luminus Technical University Collage (LTUC) at Abdul Aziz Al Ghurair School of Advanced Computing (ASAC).

Furthermore, she started her work as a researcher on JOint ResoUrce Management in ReconfigurabLE I4.0 Factories (JOULE) Project at the University of Messina.

She also initiated her research endeavors, contributing to a published study featured in the esteemed 13th International Conference on Information and Communication Systems (ICICS), where she presented her findings verbally. Additionally, she is presently concluding work on another research slated for publication in a reputable journal.

Personal Information

Citizenship: Jordanian
Sex: Female
Marital Status: Single
Email: ████████████████████

Education

M.Sc. Computer Engineering
Jordan University of Science and Technology, Al-Ramtha, Jordan,   Feb. 2017 - Mar. 2022
Rating: Very Good

(**Thesis:** "Modeling IoT Botnets using Discrete Event System Specification (DEVS)")
Advisor: Prof. Moath Jarrah, **Co-Advisor:** Prof. Basheer Al-Duwairi

B.Sc. Computer Engineering
Jordan University of Science and Technology, Al-Ramtha, Jordan,   Sep. 2012 - Jan. 2017
Rating: Good

Languages

Fluent in Arabic
Excellent in English

Work Experiences

University of Messina, JOULE Project
Researcher   **Jan. 2024 – Present**
- Carrying out the activity of "Design and implementation of enabling mechanisms for the unified management of IoT resources in 4.0 factories", within the JOint ResoUrce Management in ReconfigurabLE I4.0 Factories (JOULE) Project.

ENI CBCMED Projects,
Junior Project Manager, and Communication Manager,   **Sep. 2021 – Present**
- Financial reporting, Responsible for the project budgets and all the expenditures.
- Progress reporting on all the project activities.
- Progress reporting of the projects (cost, and quality control).
- Communication with partners.
- Schedule and coordinate meetings, appointments, and travel arrangements.

Erasmus plus Projects,
Administrative Research and Technical Assistant,   **Aug. 2017 – Present**
- Financial reporting, Responsible for the project budgets and all the expenditures.
- Progress reporting of the projects (cost, activities, and quality control).
- Contribute to proposal preparation.
- Schedule and coordinate meetings, appointments, and travel arrangements.
- Trainer, Trained two administrative assistants.

- Dissemination material preparation and development of the project's website.

Abdul Aziz Al Ghurair School of Advanced Computing (ASAC)-LTUC,

    Lecturer,   **Oct. 2022 – Oct. 2023**

Courses I teach

- Math for Computing
- Discrete Math
- Software Development Life Cycle
- Cloud Fundamentals
- Application Development
- Programming in Java
- Introduction to Programming Using Java
- Deploying and Operating in the Cloud
- Computer 99

Business Excellence and Management Consortium (BEMCON), Saudi Arabia

    IT, Social Media & Affiliate Marketing Country Lead,   **Feb. 2021 – Oct. 2021**

- Development, maintenance, and updating of Websites in both Languages (Arabic & English).
- Planning, organizing, and end-to-end managing monthly, quarterly, biannual, and annual (Virtual and Non-Virtual) events.
- Collecting, uploading, and managing professional data, documentation, laws, standards, and code of practices
- Coordination, facilitation, and management of all the stakeholders involved and interested parties Related to the conferences.
- Support and assist to Managing Director in managing the day's business operational matters.
- Developing brochures, flyers, posters, and videos (Brand Material).

Training

Al-Hussein Technical University

    National ICT upskilling program,   **Jun. 2020 – Sep. 2020**

An intensive program, focusing on applied technical and employability skills including:

- Cyber Security (180 Hours): basic penetration testing, and hacking.
- English (100 Hours): writing reports, emails, and conversations.
- Soft Skills (80 Hours): life and employability skills such as time management, positive attitude, communication skills and goal setting.

Jordan University of Science and Technology

Information Technology & Communications Center   Jun. 2019 – Jun. 2020

Hardware maintenance for University Labs PCs and their accessories including:

- Repairing and replacing broken parts of computers and their accessories
- Implementing new labs with all the needed devices
- Solving Software issues

Jordan University of Science and Technology

Information Technology & Communications Center   Sep. 2016 – Dec. 2016

Practical Training includes:

- Developing and managing the center website.
- Implementing a security system.
- Working on 3D printers and Laser cutter machines.

Key Competencies and Skills

Engineering Skills

- Programming Languages: Python, Java, C, C++, C#.
- Penetration Testing, Vulnerability Assessment & Networking.
- Embedded Systems: VHDL.
- Excellent knowledge in working with windows and Linux/Unix platforms.
- Computer Maintenance: Hardware and Software maintenance.

Soft Skills

- Training skills.
- Excellent communication, leadership, and interpersonal skills.
- Management skills, Reporting, and ability to work with a team.
- High level of motivation and self-drive.
- Problem Solving and Handling Pressure.
- Coordinating Events, Attention to detail, Deadlines, and Scheduling.
- Financial management including Budgeting.

Research Interests

I have a broad interest in Network Security; however, what fascinates me the most is the Internet of Things (IoT). All applications of the Internet of Things (IoT) possess an inherent security issue. Each device connected to the Internet is under threat of being hacked and all data being transformed, analyzed, or stored by them can be compromised, furthermore, they can be hijacked and recruited in other synchronized attacks carried out by Botnets.

Due to the importance of these devices' security, my research has focused on predicting the spreading behavior, trying to minimize the damage as much as possible before the network is infected, and the botnet spreads. We proposed two models designed based on the life cycle of Mirai and Torii IoT botnets. One of the two models was designed to predict the behavior within a static population network, while the other one was designed to predict the behavior within a dynamic population network.

Employing the Discrete Event System Specifications (DEVS) environment for modeling and simulation of the proposed models, we conducted experiments with various scenarios, based on different values for the included rates, leading to predicting the flow of the IoT devices in the network throughout the different states of the proposed models.

We were able to predict the spreading behavior and the possible way to minimize the infection by either rebooting or patching the infected devices based on the case the network has.

The emergence of Industry 4.0 will revolutionize the way companies manufacture, improve, and distribute their products, that is built around the connectivity concept, upgrading these machines with cyber-physical technology allowing them to join the network, giving them the ability to share and exchange production information seamlessly.

The systems security breaches in this case have more complicated consequences than the downtime or loss of connectivity, where unauthorized access to the production machines (connected to the Internet) can cause physical damage to the machine and its products or it could cause leakage of confidential industrial design.

Extending my research work to include improving the security level of industrial manufacturing network devices on specific by using different AI methods to detect botnet and DDoS attacks will result in determining the best method that may secure and protect the system from being hacked or from unauthorized access beside the recovery of the network in case of being infected.

Publications

- G. Barakat, B. Al-Duwairi, M. Jarrah and M. Jaradat, "Modeling and Simulation of IoT Botnet Behaviors Using DEVS," 2022 13th International Conference on Information and Communication Systems (ICICS), 2022, pp. 42-47, doi: 10.1109/ICICS55353.2022.9811164.

Conferences and presentations

- The 13th International Conference on Information & Communication Systems.

Funded Projects

Below is a list of funded projects I worked on from August 2017 until now:

- Jordan Coordinator Assistant of an EU-JO project on "Euro-Mediterranean Network Facilitating Market Uptake of Innovations from SMEs/ EMPHASIS," ENI CMC MED-EU, 2021 (~EURO 900,000).
- Jordan Coordinator Assistant of The Stevens Initiative- sponsored by the U.S. Department of State on "Global Scholars Achieving Career Success (GSACS)," 2021, (~$ 1,000,000).
- JUST Coordinator of an EU-JO project on "Vocational Training Diploma on Electrical and Hybrid Vehicles / ECO-CAR," ERASMUS+-EU, 2021 (EURO 1,000,000).
- Jordan Coordinator Assistant of an EU-JO project on "Urban sustainable development SOLutions Valuing Entrepreneurship/U-Solve," ENI CMC MED-EU, 2020 (~EURO 3,000,000).
- Jordan Coordinator Assistant of an EU-JO project on "Mediterranean Youth, NEETs, and women advancing Skills, Employment, and Awareness in the blue and green economy/MYSEA," ENI CMC MED-EU, 2020 (~EURO 3,000,000).
- Jordan Coordinator Assistant of an EU-JO project on "Trace & Trust Hubs for MED food Med Food/TTHubs," PRIMA-EU, 2020 (~EURO 1,600,000).
- Project Coordinator Assistant of an EU-JO project on "Establishment of Intercalated Program in Basic Medical Sciences in Jordan/ iBMS-JO," ERASMUS+-EU, 2019 (EURO 1,000,000).
- JUST Coordinator Assistant of an EU-JO Project on "Developing Multidisciplinary Diploma on Art Therapy in Health Education"-Healing," ERASMUS+-EU, 2019 (~EURO 900,000).
- JUST Coordinator Assistant of an EU-JO Project on "Enhancing Teaching, Learning, and Graduate Employability through University-Enterprise Cooperation/ELEGANT," ERASMUS+-EU, 2019 (~EURO 1000,000).
- Jordan Coordinator Assistant of an EU-JO project on "Fostering innovation in the Jordan and Moroccan textile industry/FOSTEX," ERASMUS+-EU, 2018 (~EURO 1,000,000).
- Jordan Coordinator Assistant of an EU-JO project on "Innovations in Water Education Programs: Enhancing Water Security and Socio-economic

Development in the Eastern Mediterranean under Climate Change/WaSec," Erasmus+-EU, 2018 (~EURO 810,000).

- Jordan Coordinator Assistant of an EU-JO project on "Promotion Youth Employment in Remote Area in Jordan/JOBJO," ERASMUS+-EU, 2018 (~EURO 700,000).
- Jordan Coordinator Assistant of an EU-JO project on "MediTec- Training for Medical Education via Innovation e-Technology," ERASMUS+-EU, 2017 (~EURO 1,000,000).
- Jordan Coordinator Assistant of an EU-JO project on "INNOLEA- Innovation for the Leather Industry in Jordan and Egypt," ERASMUS+-EU, 2017 (~EURO 1,000,000).
- JUST Coordinator Assistant of an EU-JO project on "HEBA- High level Renewable and Energy Efficiency Master Courses," ERASMUS+-EU, 2017 (~EURO 1,000,000).
- JUST Coordinator Assistant of an EU-JO project on "MEDACCR- On-Line Quality Assurance and EUR-ACE Accreditation of Engineering Programmes in Mediterranean Area," ERASMUS+-EU, 2017 (~EURO 650,000).
- Project Coordinator Assistant of an EU-JO project on "FOODQA - Fostering Academia-Industry Collaboration in Food Safety and Quality," ERASMUS+-EU, 2016 (~EURO 1,000,000).
- JUST Coordinator Assistant of an EU-JO project on "Development of environmental engineering courses and injection of climate change concept for undergraduate curriculum: EU experience for Jordan and Syria "EGREEN"," ERASMUS+-EU, 2016 (~EURO 1,000,000).
- JUST Coordinator Assistant of an EU-JO project on "Developing an MSc Programme in Climate Change, Sustainable Agriculture and Food Security (CCSAFS)," ERASMUS+-EU, 2016 (~EURO 1,000,000).
- Applicant of EU, and Jordanian team to promote innovation in the higher education in Jordan: "Promotion of Innovation Culture in the Higher Education in Jordan (INVENT)", ERASMUS+-EU, 2015 (~EURO 900,000).
- Local Coordinator Assistant of EU, and Jordanian team to enhance graduates' skills to meet the market needs: "Vocational training center for undergraduate university students and teachers in Jordan (VTC)", ERASMUS+-EU, 2015 (~EURO 1,000,000).
- Member of EU, and Jordanian team to develop higher education in Jordan by using mobile technology: "Improving Higher Education Quality in Jordan using Mobile Technologies for Better Integration of Disadvantaged Groups to Socio-economic Diversity - mEQUITY", ERASMUS+-EU, 2015 (~EURO 1,000,000).

- Local Coordinator Assistant of EU, Mediterranean countries, and Jordanian team to develop skills in the field of integrated energy: "agreement Developing skills in the field of integrated energy planning in Med landscapes ENEPLAN", ERASMUS+-EU, 2015 (~EURO 1,000,000).
- Member of EU, Palestine, and Jordanian team to modernize teaching methods in Jordan and Palestine: "Modernization of Teaching Methodologies in Higher Education: EU experience for Jordan and Palestinian Territory, (METHODS)", ERASMUS+-EU, 2015 (~EURO 1,000,000).
- Local Coordinator Assistant of EU, Mediterranean countries, and Jordanian team to develop a master's degree in energy management: "Smart Control Systems for Energy Management: New Master Degree (SEM-SEM)", ERASMUS+-EU, 2015 (~EURO 1,000,000).

References

- Prof. Fahmi Abu Al-Rub, Manager of International Funded Projects, Irbid – Jordan. Email: abualrub@just.edu.jo
- Prof. Moath Jarrah, Professor of Computer Engineering, M. Sc. Advisor, Jordan University of Science and Technology (JUST), Irbid – Jordan. Email: mjarrah@just.edu.jo
- Prof. Basheer Al-Duwairi, Professor of Network Engineering & Security, M. Sc. Co-Advisor, Jordan University of Science and Technology (JUST), Irbid – Jordan. Email: basheer@just.edu.jo