

MOHAMMAD ARAFAH

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EDUCATION

Loughborough University

Ph.D. in Cybersecurity and Artificial Intelligence (AI)

Department: Computer Science

Loughborough, UK

Oct 2020 – Nov 2023

The University of Jordan

M.S. in Information Systems; GPA: 3.66/4.00

Specialization Field: Image Processing

Amman, Jordan

Aug 2013 – Aug 2015

Zarqa University

B.S. in Software Engineering; GPA: 84/100

Graduation Project: School Management System

Zarqa, Jordan

Aug 2008 – Aug 2012

EXPERIENCE

University of Petra

Assistant Professor

Amman, Jordan

Jan 2023 – Present, Full-time

- Developed and taught several undergraduate courses in the Information Security Department with 95% student satisfaction rating.
- Published several research papers in reputable journals and conferences, achieving a high number of citations per paper within the AI and cybersecurity fields.
- Served on 3 academic committees and contributed to 4 departmental initiatives, increasing interdepartmental collaboration by 30%.
- Reviewed several student projects and research proposals, helping many students successfully implement AI and cybersecurity solutions.
- Organized 6 workshops and seminars on emerging topics in AI and cybersecurity, with average attendance of many students per session.

Sigma Global Software Solutions

Head of AI / AI Lead & Co-Founder

Amman, Jordan

2024 – Present

- Co-founded an AI-driven software company delivering intelligent solutions across restaurant, retail, and healthcare sectors.
- Leading the design and development of AI-powered products including smart ordering systems, data analytics platforms, call center agents, and healthcare AI applications.

Loughborough University

Ph.D. Researcher

Loughborough, UK

Oct 2020 – Nov 2023, Full-time

- Conducted research on AI-driven anomaly detection for network intrusion using GAN-based architectures, resulting in 4 journal publications in top-tier venues.

University of Petra

Head of Development and Programming

Amman, Jordan

Dec 2019 – Nov 2020, Full-time

- Led a team of 8 software developers in designing and maintaining software solutions, reducing project completion time by 20%.
- Managed the full software development life-cycle for 12 university systems, decreasing deployment time from 6 weeks to 4 weeks.
- Conducted over 50 code reviews and mentored 5 junior developers, resulting in 35% fewer production bugs.

University of Petra

Senior Software Engineer

Amman, Jordan

Nov 2015 – Dec 2019, Full-time

- Designed and developed 15+ high-performance software applications serving over 5,000 users across various university departments.
- Resolved an average of 25 technical issues per month, reducing system downtime by 40% and saving approximately 120 hours annually.

- Implemented 3 new technologies into development workflow, increasing team efficiency by 25% and reducing code redundancy by 35%.

Ministry of Education

Amman, Jordan

Computer Teacher

Aug 2014 – Aug 2015, Full-time

- Developed 15 lesson plans and implemented 10 project-based assessments, resulting in 85% of students demonstrating improved technical skills.
- Collaborated with 6 colleagues to integrate technology into 4 other subject areas, increasing student digital literacy scores by 32%.

Acorna Company

Amman, Jordan

Junior Software Developer

Sep 2012 – Sep 2013, Full-time

- Developed 5 web applications using JavaScript, HTML, and CSS, serving over 500 daily active users.
- Contributed to several RESTful APIs and conducted unit testing on 10 modules, resolving many critical bugs before release.

PUBLICATIONS

Journal Papers

1. An enhanced BiGAN architecture for network intrusion detection. Mohammad Arafah, Iain Phillips, Asma Adnane, Mohammad Alauthman, Nauman Aslam. *Knowledge-Based Systems*, 314, 113178 (2025).
2. Anomaly-based network intrusion detection using denoising autoencoder and Wasserstein GAN synthetic attacks. Mohammad Arafah, Iain Phillips, Asma Adnane, Wael Hadi, Mohammad Alauthman, Abedal-Kareem Al-Banna. *Applied Soft Computing*, 168, 112455 (2024).
3. Evaluating the impact of generative adversarial models on the performance of anomaly intrusion detection. Mohammad Arafah, Iain Phillips, Asma Adnane. *IET Networks*, 1-17 (2023).
4. Efficient Image Recognition Technique Using Invariant Moments and Principle Component Analysis. Mohammad Arafah, Qusay Abu Moghli. *Journal of Data Analysis and Information Processing*, 1-10 (2016).

Book Chapters

1. Children in Digital Spaces Safety, Privacy, and Protection in the Age of AI. Ayah Abdullaheem, Mohammad Arafah. *Integrating Parental Consent and Child Engagement With Digital Protection Rules*, 1-30 (2026).
2. AI for Threat Intelligence Integration in Cybersecurity Insurance. Mohammad Arafah, Ahmad Aladawi. *Cybersecurity Insurance Frameworks and Innovations in the AI Era*, 179-226 (2026).
3. Detection and Analysis of AI-Generated Malicious Content. Mohammad Arafah, Abedal-Kareem Al-Banna, Ahmad Aladawi. *Examining Cybersecurity Risks Produced by Generative AI*, 1-42 (2025).
4. AI-Powered Social Engineering and Impersonation Attacks. Mohammad Arafah, Louay Karadsheh, Faisal Aburub, Sabreen Alhariri. *Examining Cybersecurity Risks Produced by Generative AI*, 123-142 (2025).
5. Generative AI and the Evolving Threat Landscape: A Security Professional's Guide. Louay Karadsheh, Jakob E. Barnard, Mohammad Arafah. *Examining Cybersecurity Risks Produced by Generative AI*, 1-28 (2025).
6. Formal Verification Theory for AI-Driven Autonomous Defense Systems. Mohammad Arafah, Louay Karadsheh, Ahmad Almughrabi. *Complexities and Challenges for Securing Digital Assets and Infrastructure*, 1-20 (2025).
7. Cybersecurity in the Age of Digital Transformation: Protecting Assets, Infrastructure, and Innovation. Mohammad Arafah, Abedal-Kareem Al-Banna, Ahmad Aladawi. *Complexities and Challenges for Securing Digital Assets and Infrastructure*, 265-290 (2025).

8. Theoretical frameworks for zero-knowledge proof integration in autonomous defense systems. Mohammad Arafah, Faisal Aburub, Sabreen Alhariri. *AI-Driven Security Systems and Intelligent Threat Response Using Autonomous Cyber Defense*, 1-28 (2025).
9. Cybersecurity for Autonomous Electric Vehicles (EVs). Mohammad Arafah, Ahmad Aladawi, Louay Karadsheh. *AI-Driven Security Systems and Intelligent Threat Response Using Autonomous Cyber Defense*, 439-463 (2025).

Conference Papers

1. Analyzing Digital Media Preferences of Parents in Jordan: A Machine Learning Approach to Content Classification. Ayah Abdulraheem, Mohammad Arafah, Shatha Abdelrahim. *ICCIAA*, 1-7 (2025).
2. Intelligent Age Group Classification System for Animated Films Using Hybrid Machine Learning Models. Ayah Abdulraheem, Mohammad Arafah, Ahmad Aladawi. *ICCIAA*, 1-5 (2025).
3. Enhanced Autism Spectrum Disorder Detection in Toddlers Using Machine Learning and Deep Learning Approaches: A Comparative Study. Wael Hadi, Eleni Mangina, May Alnashashibi, Farzin Matin, Mohammad Arafah, Abedal-Kareem Al-Banna. *ICCIAA*, 1-5 (2025).
4. Enhanced Stroke Prediction Through Autoencoder-Based Feature Compression and Ensemble Classification. Ghayda Al-Hyasat, Mohammad Arafah, Louay Karadsheh, Ahmad Aladawi. *ICCIAA*, 1-5 (2025).
5. ClearFlow: Empowering Fluent Communication Through RAG-Based Text Generation for People Who Stutter. Abedal-Kareem Al-Banna, Mohammad Arafah, Mohammad Al-habahbeh, Mohammed Abu-Arqoub, Mohammad AlShaikh-Hasan. *ICCIAA*, 1-5 (2025).
6. Advancing IoV Security Through Machine Learning: Design and Evaluation of the CICIoV2024 Benchmark Dataset. Mohammad Arafah, Asma Adnane, Wael Hadi, Ghayda Al-Hyasat, Mohammad Al-Habahbeh. *ICCIAA*, 1-5 (2025).
7. Autism Spectrum Disorder Prediction Using Machine Learning Classifiers. Faisal Aburub, Wael Hadi, Abedal-Kareem Al-Banna, Mohammad Arafah. *ICCR* (2024).
8. Empowering Learning Analytics with Business Intelligence. Nuha El-khalili, Muhammad Abu Arqoub, Mohammad Al-shaikh Hasan, Abed Alkarim Banna, Mohammad Arafah. *ICCR* (2024).
9. The Impact of Stuttering Event Representation on Detection Performance. Abedal-Kareem Al-Banna, Hui Fang, Ahmad F Shubita, Mohammad Arafah, Amani Eqteeshat, Saif B Abuaisheh. *ICCR* (2024).

TEACHING COURSES

Programming for Data Science
 Data Visualization
 Data Structures and Algorithms
 Information & Network Security Programming
 Secure Wireless Application Programming
 Programming Language 1 and 2
 Information Technology Fundamentals
 Introduction to Data Communication & Networking

Data Mining
 Big Data
 Cybersecurity Fundamentals
 Linux Security Fundamentals
 Software Development Security
 Programming for Engineers
 Internet Programming
 Introduction to Web Design

SKILLS

Programming Languages: Python, C#, Java, MATLAB, SQL

Technologies: TensorFlow, PyTorch, OpenCV, Scikit-Learn, Flask, Django, Git, Docker, AWS, MySQL, MariaDB

Domain Knowledge: Machine Learning, Deep Learning, Generative Modelling, Anomaly Detection, Computer Vision

Methodologies: Object Oriented Programming, Design Pattern, Agile, Scrum, DevOps, Cybersecurity Practices

ACADEMIC ADMINISTRATIVE ROLES

Assistant Director of E-Learning | University of Petra (2023 – Present)
Faculty Council Member | University of Petra (2023 – Present)
Peer Reviewer | Springer, Elsevier, Nature (2020 – Present)

PROFESSIONAL CERTIFICATIONS

PCEP – Certified Entry-Level Python Programmer (PCEP-30-02) | Python Institute (2026)
Data Manipulation with Pandas | DataCamp (2021)
Machine Learning for Everyone | DataCamp (2021)
Introduction to Python | DataCamp (2021)
Intermediate Python | DataCamp (2021)
Introduction to Data Science in Python | DataCamp (2022)

FACULTY TRAINING PROGRAMS DELIVERED

Python Programming | University of Petra (2024)
Introduction to Artificial Intelligence | University of Petra (2024)
AI Tools for Scientific Research and Academic Reports | University of Petra (2024)
AI Applications in Nutrition | University of Petra (2024)
AI Applications in Civil Engineering | University of Petra (2025)
Statistical Analysis for Research using AI Tools | University of Petra (2025)
Accelerating Scientific Research using Claude | University of Petra (2025)
Statistical Analysis using SPSS | University of Petra (2025)

PROJECTS

University of Petra Systems | *UOP*

- Delivered 5 major systems (instructor profiles, placement tests, transportation, embassy) serving 10,000+ users, reducing administrative processing time by 35%.

Acorna ERP System | *Acorna*

- Contributed to an ERP solution integrating 6 business functions (finance, HR, inventory, sales, procurement, CRM), achieving 95% client satisfaction and 40% improvement in operational efficiency.