

Manal Abd Al-Jabbar Ahmad Mizher

Nationality: Jordanian

Language: Arabic (Native), English (Very good), Melayu (Basic)

DOB: 29/10/1976

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PROFILE:

In my Ph.D. thesis (**specialist in Visual Informatics**), I worked on data protection and cybersecurity, where the thesis focused on two aspects: **Cybersecurity Defence (Encryption), and Industrial (Robotic) Control Systems (ICS) Cybersecurity Protection**. Where I developed three novel systems to mining, summarising, compressing, encrypting, decrypting 3D objects (non-textured/textured, non-animated/animated) which moved by either rigging or kinematics (**Robotic movement protection in cyber security**). Moreover encrypting, decrypting different types of images. I proposed several novel techniques for these systems by using cellular automata and **Matlab & intelligent data analysis**. In addition, my master thesis (MSc) focused on wireless sensors networks and 4G. On the other hand, I have seven (7) years of education in two institutes in Jordan. Within these institutes, I have had the opportunity to deal with students and teach different information technology subjects at different levels. Therefore, I improved my teaching and organizational skills, teamwork, achieve goals under work pressure, attention to detail, and perform the tasks with speed, accuracy, and consider the timetable deadlines. I desire to bring the knowledge and insight gained through these various experiences to your academic staff.

My URLs (Google Scholar): <https://scholar.google.com/citations?user=a0bcF60AAAAJ&hl=en>

(Scopus): <https://www.scopus.com/authid/detail.uri?authorId=56580381000>

(Research gate): <https://www.researchgate.net/profile/Manal-Mizher>

ORCID id: <https://orcid.org/0000-0002-6557-1926>

EDUCATION:

Scientific Degree/	Major/ Specialization	Graduation University	QS World University Rankings (2021)	Country	Language of study	Admission date	Graduation date	Average
Doctor of Philosophy (Ph.D.)	Computer Science (Visual Informatics)	University Kebangsaan Malaysia (UKM)	141	Malaysia	English	21-3-2014	23-12-2020	4 of 4
Master of Science (MSc)	Computer Science (CS)	The university of Jordan	601-650	Jordan	English	2006	31-7-2009	3.81 of 4 (rate Excellent)
Bachelor of Science (BSc)	Computer Science (CS)	Al-Zaytoonah University Of Jordan	-----	Jordan	English	2003	27-5-2005	97.4% (First rank in all semesters & in college)
Diploma	Information Technology (IT)	Al-Zarqa University College	-----	Jordan	Arabic	2001	2003	(First rank in all semesters & in college)

								with average 95.4%, and first rank in (Shamel) exam with average 87.6% (at kingdom level)).
Tawjihe	Scientific Stream	Raya bint Al-hussin High School	-----	Jordan	Arabic	1993	1994	82.4 %

AWARDS AND CERTIFICATES:

Award/Certificate	Place	Date	Country
Latex	UKM University	2014	Putrajaya, Malaysia
Matlab & intelligent data analysis	UKM University	2014	Putrajaya, Malaysia
English Proficiency and Placement Test/ EPPT	UKM University	2014	Malaysia
ICDL	Al al-Bayt University	2010	Jordan
A letter of thanks from the Dean of Faculty Of Economics	Al al-Bayt University	2011	Jordan
TOEFL IPT	The university of Jordan	2009	Jordan
IT Skills, Soft Skills as part of the UNIFEM/Cisco "Achieving E-Quality in the ICT Sector" program	The Hyatt Amman Hotel	2003	Jordan
Cisco Networks	Al-Zarqa University College	2003	Jordan

EXPERIENCE:

Job Title	Employer	Country	Starting date	Ending date	Experience notes
1) Website programmer and designer 2) Lab supervisor 3) Technical support	Al al-Bayt University (Faculty Of Economics and Computer Center)	Jordan	2007	2011	1) Faculty Of Economics website designing and programming www.aabu.edu.jo/facultyoffinance.jsp 2) Hardware and software maintenance (Computer labs). 3) Hardware and software maintenance (Employees PCs and Laptops).
Computer teacher	Al-Rouad center/Zarqa	Jordan	1/7/2006	1/10/2006	Teaching: Assembly lang. , C++ , advanced C++
Computer teacher	Zarqa, Ministry of Education- Ein Ghazal Secondary School	Jordan	2005	2007	Secondary level and Tawjihe class

RESEARCH INTEREST:

Cryptography Systems	3D objects processing (design,	Robotic Movement	Cybersecurity Defence
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	rigging, summarization,.. etc)	Protection	
Wireless Sensor Network	Video Summarization	Data Mining	Machine Learning

Note: References available upon request.

PUBLICATIONS:

Journal Articles						
No.	Article Title	Journal Name	Year	Information	Relation	Indexing
1.	An improved simple flexible cryptosystem for 3D objects with texture maps and 2D images	Journal of Information Security and Applications	2019	Vol 47, 390-409, doi: https://doi.org/10.1016/j.jisa.2019.06.005	First author and Corresponding author	Clarivate IF 1.537 (ISI previously) /Scopus
2.	A simple flexible cryptosystem for meshed 3D objects and images	Journal of King Saud University - Computer and Information Sciences	2019	doi: https://doi.org/10.1016/j.jksuci.2019.03.008	First author and Corresponding author	Scopus
3.	Bandwidth Provisioning Scheme for 3D Wireless Sensor Networks	Journal of Theoretical and Applied Information Technology	2015	Vol.75. No.1, pp.(25-35)	First author and Corresponding author	Scopus
4.	A review of video falsifying techniques and video forgery detection techniques	International Journal of Electronic security and digital forensics	2017	Vol.9, No.3, (2017), pp.(191-209)	Co-author	Scopus
5.	Centroid Dynamic Sink Location for Clustered Wireless Mobile Sensor Networks	Journal of Theoretical and Applied Information Technology	2015	Vol.73 No.3, pp.(481-491).	Co-author	Scopus
6-7	Two papers under publishing					
Conference Proceedings						
No.	Proceeding Title	Conference Name	Year	Information	Relation	Indexing
1.	Robotic Movement Encryption Using Guaranteed Cellular Automata	CYBER RESILIENCE CONFERENCE. 2018 (CRC 2018)	2018	IEEE (Putrajaya, Malaysia, 2018, pp. 1-3, doi: 10.1109/CR.2018.8626820 .)	First author and Corresponding author	Scopus
2.	A review of Mobile Cloud Computing in Education during the Covid-19 Pandemic in Jordan	Current Trends in the Middle East: Virtual International Joint Conference on COVID-19 Global Impacts (V-The 4th ICCTME 2021)	2021	Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia	Co-author	Scopus

SKILLS:

- **The ability to teach any subject or work on any project especially which related to my researches:** Machine learning and deep learning using Matlab, and Python.

- **The ability to teach:** Programming languages such as C++, Java, VB, and Multimedia director. Web page design using HTML, DHTML, JavaScript, CSS, and front page. Office programming using VBA, Access, Ms Word etc. and other subjects: Database, Networking, algorithms and data structure.
- **Academic writing:** using Latex, Mendeley, and EndNote.

REFERENCES:

Name	Job Position	University	Contact information
Prof. Dr. Riza Sulaiman	Senior Research Fellow	Universiti Kebangsaan Malaysia	riza@ukm.edu.my (+60193915811)
Prof. Dr. Abdelfatah Aref Tamimi	Dean of Faculty of Science and Information Technology(Previously)	Al-Zaytoonah University of Jordan	drtamimi@zuj.edu.jo (+962 7 9655 9966)
Assoc. Prof. Dr. Ayman M. Abdalla	Associate Professor of Computer Science	Al-Zaytoonah University of Jordan	ayman@zuj.edu.jo (+962 7 7712 9782)
Assoc. Prof. Dr. Ahmad Mazhar	Associate Professor of Multimedia	Luminus Technical University College (LTUC)/ Jordan	Ah.mazhar@yahoo.com (+962789191391)
Asst. Prof. Manar Mizher	Assistant Professor of Mobile Computing	Amman Arab University/ Jordan	manarmizher@gmail.com (+962 7 8911 5778)

Statement of Research Interests

The complexity of cryptography rules and equations often presents a challenge to researchers new to the field, and many previous research approaches lack flexibility in their key length or level of encryption. Consequently, developing a cryptosystem that combines simplicity, flexibility, and reliability is a challenging task, especially for large and complex data items. One type of such complex and large data is the three-dimensional (3D) textured animated object rendered employing a mesh. On the other hand, studies seldom focus on the encryption of these objects due to their complexity, although they are the most applied in applications and although they have many security issues. Therefore, during my Ph.D., I developed three novel excellent systems that obtained high reliability, high flexibility, high performance, and simplicity to understand and applied.

The proposed systems achieved these objectives:

1. A literature review of 3D object encryption algorithms that addresses the limitations of these previous and current algorithms, especially focusing on the 3D meshed objects; refer to Section 2.5 for more details.
2. A novel robust flexible cryptosystem (FcCA) for encrypting images and non-textured non-animated objects using many proposed techniques (expCA, HCA, iDL, Ps) with pure random CA and open boundaries (**Scopus**).
3. Three novel techniques for encrypting and decrypting 3D textured non-animated objects with their histograms (iFcCA) (**ISI, Scopus**).
4. Five novel techniques for encrypting and decrypting two different types of 3D objects with two different kinds of animations: animated 3D textured object by rigging and animated 3D robot-model by kinematics.
5. A novel approach for mining 3D animated objects and then summarising and compressing them and could be used in other applications.

6. One suggested case of a cryptosystem for encrypting robotic movements as a step for detecting threads in real cyber society (**Scopus, IEEE**).
7. A small dataset of 3D animated textured objects will be provided (Mizher 2019).

The findings from this research work confirmed that:

- 1) FcCA novelty includes using a combination of aspects including a random configuration with open boundary conditions, g -th order memory independent-cell technique, and classification of two parts of the encryption key into subkeys. FcCA performs encryption of images and 3D objects with flexible techniques that employ CA. FcCA has a significantly larger keyspace than previous high impact research. For example, when encrypting a 256×256 grayscale image, the keyspace range in previous work was between 2100 and 2512 while FcCA provides a flexible keyspace of up to 226,818,168.
- 2) iFcCA system fully encrypts 3D textured objects with their UV maps—the missing part of encrypting textured objects in the system of previous studies. iFcCA presents two new techniques: random dynamic intersected start points (rDL) and selective masking for plain data histogram (sHist).
- 3) SCEAT3D can compete with human users as it can reduce the size of encrypted data while preserving the quality and integrity of the sequence of motion. Results demonstrate how the proposed descriptors by SCEAT3D preponderate humans, where the highest average for ratefinal was 61.2% and it was obtained only once, while three descriptors surpassed this average with 63.3%, 61.6%, and 61.5% by MAE, MAE–, and |Corrcoef|, respectively. Consequently, SCEAT3D can reduce the time and space complexity of the whole encryption system compared with iFcCA.
- 4) EncKin encrypts robotic movements and keyframes points by using the iFcCA cryptosystem to encrypt these movements efficiently for detecting threads in real cyber society. This method is distinguished by its simplicity, high degree of scrambling, high key robustness, and high resistance against brute-force attack. This is due to its utilisation of the iFcCA cryptosystem in the encryption of keyframe points.
- 5) This research highlighted the encryption of non-traditional data as a new field of cryptography that handles different types of 3D object animation techniques with applications in the data mining of animated 3D objects. In addition, it provided a standard dataset of 3D objects to be used as a benchmark or a test suite by future researchers.

On the other hand, I am a co-author on video falsifying techniques and video forgery detection project at UKM with one published article and two articles still under review and writing. For future work, I have the ability to teach any subject or work on any project especially which related to my researches.

With best regards,

Manal Mizher

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(Cover Letter)

To whom it may concern

Dear Sir \ Madam,

As my resume indicates:

- 1- I worked on data protection and cybersecurity, where the thesis focused on two aspects: Cybersecurity Defence (Encryption), and Industrial Control Systems (ICS) Cybersecurity.
- 2- During my Ph.D. study, I developed three systems to mining, summarising, compressing, encrypting, decrypting 3D objects (non-textured/textured, non-animated/animated) which moved by either rigging or kinematics (robotic movement protection in cyber security). Moreover encrypting, decrypting different types of images.
- 3- I proposed several novel techniques for these systems.
- 4- I am a member and a first author on a 3D objects encryption project at IIR.4 institute – UKM University.
- 5- I am a co-author on video falsifying techniques and video forgery detection techniques at IIR.4 institute – UKM University.
- 6- My previous researches focused on wireless mobile sensors networks.

In addition, I have two years of educational experience in Ministry of Education- Ein Ghazal Secondary School (Jordan), and more than four years in Al al-Bayt University (Jordan). I used to teach information technology subjects in the two different levels. From my work in Ein Ghazal Secondary School, I have sharpened my organizational skills, enhanced ability with teamwork, improved the ability to achieve goals under work pressure, attention to detail, and perform the tasks with speed, accuracy, and consider of the timetable deadlines. In my past work at Al al-Bayt University I have gained experience in hardware and software maintenance, teaching some of CS courses, designing a website for the college, correcting students' exams and projects, dealing with students, and much more. Combine all of this experience with my natural talents (a hard worker, an excellent researcher), and with my work ethic, you have a well-rounded candidate you will be proud to have on your staff.

I am sure you are aware of the good researcher, teaching experience, flexibility, focus, and teamwork such job requires. I want to bring the knowledge and insight gained through these various experiences to your team.

I have enclosed my resume for your review. It is my sincere hope that we will meet for an interview to discuss any questions you may have. Of course, feel free to call or e-mail me to schedule an interview.

Thank you for your time and consideration.

With best regards,

Dr. Manal Mizher

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