جامعة العلوم والتقنية في الفجيرة
UNIVERSITY OF SCIENCE & TECHNOLOGY OF FUJAIRAH

CURRICULUM VITAE

PERSONAL INFORMATION	
Name:	Hussein Ibrahim Abulkasim
Nationality:	Egyptian
Job Title:	Assistant Professor
College:	Engineering and Information Technology
Department:	Information Technology
Contact Information:	h.hussein@ustf.ac.ae , Office Phone: 604

EDUCATIONAL BACKGROUND

1. **Doctorate degree:**

   University: South Valley University
   Date of Obtaining degree: October 2016
   Major: Computer Science
   Minor: Cyber security
   Thesis Title: **Securing Cloud Computing using Quantum Cryptography**

2. **Master's degree:**

   University: South Valley University
   Date of Obtaining degree: 2012
   Major: Computer Science
   Minor: Information Security
   Thesis Title: **Steganography based on Gene Expression Programming**

3. **Bachelor's degree:**

   University: South Valley University

   Date of Obtaining degree: 2004 Major: **Computer Science**

PROFESSIONAL EXPERIENCE

From (year)	To (year)	Position	Employer	Country
2023	To present	Assistant Professor	University of Science and Technology of Fujairah	UAE

2022	2023	Assistant Professor	New Valley University	Egypt
2021	2022	Researcher	Wilfrid Laurier University & Toronto Metropolitan University (online agreement contract)	Canada
2019	2021	Research Fellow	Toronto Metropolitan University	Canada
2017	2109	Assistant Professor	New Valley University	Egypt
2104	2017	Lecturer	Assiut University	Egypt
2012	2014	Lecturer	University of Jazan	Saudi Arabia
2010	2012	Security Engineer	Center for Information & Communication Technology	Egypt
2006	2010	Web Developer	South Valley University	Egypt

TEACHING EXPERIENCE (AREA / COURSES)

- Cryptography
- Digital Forensics
- Introduction to cybersecurity
- Ethical hacking
- Wireless security
- Quantum computation and communication
- Introduction in programming
- Object-oriented programming
- Cloud Computing
- Data structure and algorithms
- Genetic Algorithm

- Databases
- Web technology
- Information systems
- Information Technology Project Management
- User Interface Design
- Introduction to information security
- Artificial Intelligence
- Web Developing
- Operating Systems
- Programming languages
- Introduction to computer science
- Mathematical applications using computing
- Web developing
- Database systems
- Programming in JAVA
- The programming language in MATLAB

RESEARCH AREAS AND INTEREST

- Cyber Security
- AI in Cybersecurity
- Quantum Cryptography and Quantum Communication
- Cryptanalysis of Current Quantum Cryptographic Protocols
- Quantum Cryptography for IoT Applications
- Theoretical of Quantum Information
- Security of Satellites and Drones
- Blockchain
- IoT Security

PUBLICATIONS

JOURNAL ARTICLES

2024

- Adil, M., **Abulkasim, H**., Ali, A., Song, H., Farouk, A., & Jin, Z. (2024). Role of 5G and 6G Technologies in Metaverse, Quality of Service Challenges and Future Research Directions. IEEE Network. **IF: 6.8, Q1**. https://ieeexplore.ieee.org/abstract/document/10711848

- Adil, M., Farouk, A., **Abulkasim, H**., Ali, A., Song, H., & Jin, Z. (2024). NG-ICPS: Next Generation Industrial-CPS, Security Threats in the Era of Artificial Intelligence, Open Challenges with Future Research Directions. IEEE Internet of Things Journal. **IF: 8.2, Q1**. https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=6488907

- Farouk, A., Al-Kuwari, S., **Abulkasim, H**., Mumtaz, S., Adil, M., & Song, H. (2024). Quantum Computing: A Tool for Zero-trust Wireless Networks. IEEE Network. **IF: 6.8, Q1**. https://ieeexplore.ieee.org/abstract/document/10574804

- Alhammad, S. M., Ahmed, N., Abbas, S., **Abulkasim, H**., & Elhadad, A. (2024). Robust 3D object watermarking scheme using shape features for copyright protection. PeerJ Computer Science, 10, e2020. **IF: 2.7, Q2**. https://peerj.com/articles/cs-2020/

- Elhadad, A., Jamjoom, M., & **Abulkasim, H**. (2024). Reduction of NIFTI files storage and compression to facilitate telemedicine services based on quantization hiding of downsampling approach. Scientific Reports, 14(1), 5168. **IF: 3.8, Q1**. https://www.nature.com/articles/s41598-024-54820-4

- Adil, M., **Abulkasim, H**., Farouk, A., & Song, H. (2024). $ R3ACWU $: A Lightweight, Trustworthy Authentication Scheme for UAV-Assisted IoT Applications. IEEE Transactions on Intelligent Transportation Systems. **IF: 7.9, Q1**. https://ieeexplore.ieee.org/abstract/document/10413491

2023

- Adil, Muhammad, Muhammad Usman, Mian Ahmad Jan, **Hussein Abulkasim**, Ahmed Farouk, and Zhanpeng Jin. ”An Improved Congestion-Controlled Routing Protocol for IoT Applications in Extreme Environments.” IEEE Internet of Things Journal (2023). **IF: 8.2, Q1.**
  https://ieeexplore.ieee.org/abstract/document/10236582

- Adil, Muhammad, Houbing Song, Spyridon Mastorakis, **Hussein Abulkasim**, Ahmed Farouk, and Zhanpeng Jin. ”UAV-Assisted IoT Applications, Cybersecurity Threats, AI-Enabled Solutions, Open Challenges With Future Research Directions.” IEEE Transactions on Intelligent Vehicles (2023). **IF: 14, Q1.**
  https://ieeexplore.ieee.org/abstract/document/10236463

- Adil M., Ahmad M, Liu Y., **Abulkasim H**., Farouk A., Song H. A Systematic Survey: Security Threats to UAV-Aided IoT Applications, Taxonomy, Current Challenges and Requirements with Future Research Directions. IEEE Transactions on Intelligent Transportation Systems. 2022 Nov 11. **IF: 7.9, Q1**.
  https://ieeexplore.ieee.org/abstract/document/9946859

- Alsuqaih HN, Hamdan W, Elmessiry H, **Abulkasim H**. An efficient privacy-preserving control mechanism based on blockchain for E-health applications. Alexandria Engineering Journal. 2023 Jul 15;73:159-72. **IF: 6.2, Q1**.
  https://www.sciencedirect.com/science/article/pii/S1110016823003186

- **Abulkasim H**. Plant Leaf Diseases Classification using Improved K-Means Clustering Mechanism and Support Vector Machine Algorithm for Segmentation. CMC journal 2023, http://dx.doi.org/10.32604/cmc.2023.037310. **IF:2.1, Q2.**
  https://cdn.techscience.cn/files/cmc/2023/TSP_CMC-76-1/TSP_CMC_37310/TSP_CMC_37310.pdf

- Adil M., Ahmad M, Liu Y., **Abulkasim H.**, Farouk A., Song H. A systematic Survey: Security Threats to UAV-aided IoT Applications, Taxonomy, Current Challenges and Requirements with Future. *IEEE internet of things*. **IF: 7.9, Q1**
  doi.org/10.1109/TITS.2022.3220043

2022

- **H Abulkasim**, B Goncalves, A Mashatan, S Ghose. Authenticated Secure Quantum-Based Communication Scheme in Internet-of-Drones Deployment. IEEE Access 2023. **IF: 3.4, Q2**.
  doi.org/10.1109/ACCESS.2022.3204793.

- **Abulkasim H.**, Mashatan, A., Ghose, S., Security improvements for privacy-preserving quantum multiparty computation based on circular structure. *Quantum Information Processing*. 2022 Jan;21(1):1-2. **IF: 2.2, Q2**.
  https://link.springer.com/article/10.1007/s11128-021-03357-w

- **Abulkasim H.**, Alabdulkreem E., Hamad S. Improved Multi-party Quantum Key Agreement with Four- qubit Cluster States. *CMC-COMPUTERS MATERIALS & CONTINUA*. 2022 May 18, 73(1). doi:10.32604/cmc.2022.025727. **IF:2.1, Q2.**
  https://cdn.techscience.cn/ueditor/files/cmc/TSP_CMC-73-1/TSP_CMC_25727/TSP_CMC_25727.pdf

- **Abulkasim H.**, Jamjoom M, Abbas S. Securing Copyright Using 3D Objects Blind Watermarking Scheme. *CMC-COMPUTERS MATERIALS & CONTINUA*. 2022 Apr 21, 72(3), doi:10.32604/cmc.2022.027999. **IF:2.1, Q2.**
  https://cdn.techscience.cn/ueditor/files/cmc/TSP_CMC-72-3/TSP_CMC_27999/TSP_CMC_27999.pdf

2021

- **Abulkasim H.**, Mashatan, A., Ghose, S., Secure multiparty quantum key agreement against collusive attacks. *Nature - Scientific Reports*. 2021 May 4;11(1):1-8. **IF: 3.8, Q1**.
  https://www.nature.com/articles/s41598-021-88837-w

- **Abulkasim, H.**, Mashatan A, Ghose S. Quantum-based Privacy-Preserving Sealed-bid Auction on the Blockchain. *Optik*. 2021 Apr 30:167039. **IF: 6.9, Q1**.
  https://www.sciencedirect.com/science/article/abs/pii/S0030402621007233

2020

- Elhadad, A., Abbas, S., **Abulkasim, H.**, and Hamad, S. (2020). Improving the security of multiparty quantum key agreement with five-qubit Brown states. *Computer Communications*. Volume 159, (2020):155-160. **IF:4.5, Q1**. https://www.sciencedirect.com/science/article/abs/pii/S0140366420301213

- Elhadad, A., Hamad, S., Khalifa, A., and **Abulkasim, H**. (2020). A steganography approach for hiding privacy in video surveillance systems. *Book Chapter: In Digital Media* Steganography (pp. 165-187). Academic Press. https://www.sciencedirect.com/science/article/abs/pii/B9780128194386000177

2019

- **Abulkasim, H.**, Farouk, A., Alsuqaih, H., Hamdan, W., Hamad, S., Mashatan, A., Ghose, S. " Secure dynamic multiparty quantum private comparison". *Nature - Scientific Report*, 9.1 (2019): 1-16. **IF: 3.8, Q1**. https://www.nature.com/articles/s41598-019-53967-9

- **Abulkasim, H.**, and Alotaibi, A. "Improvement on 'Multiparty Quantum Key Agreement with Four-Qubit Symmetric W State'." *Int J. Theo. Phy*. 58.12 (2019): 4235-4240. **IF:1.3, Q3**. https://link.springer.com/article/10.1007/s10773-019-04293-3

- **Abulkasim, H.**, Farouk, A., Alsuqaih, H., Hamdan, W., Hamad, S. and Ghose, S. " Improved Dynamic Multi-Party Quantum Private Comparison for Next Generation Mobile Network." *IEEE Access* (2019): doi:10.1109/ACCESS.2019.2894101. **IF: 3.4, Q2**. https://ieeexplore.ieee.org/abstract/document/8620509

2012 - 2018

- **Abulkasim, H.**, Farouk, A., Alsuqaih, H., Hamdan, W., Hamad, S. and Ghose, S. "Improving the security of quantum key agreement protocols with single photon in both polarization and spatial- mode degrees of freedom." *Quantum Information Processing* 17, no. 11 (2018): 316. **IF: 2.2, Q2.** https://link.springer.com/article/10.1007/s11128-018-2091-7

- **Abulkasim, H.**, Hamad S, Elhadad A. Reply to Comment on 'Authenticated quantum secret sharing with quantum dialogue based on Bell states'. *Physica Scripta*. (2018) Jan 9;93(2): 027001. **IF:2.5, Q2**. https://iopscience.iop.org/article/10.1088/1402-4896/aa9df3/meta

- **Abulkasim, H.**, Hamad S, Khalifa A, El Bahnasy K. Quantum secret sharing with identity authentication based on Bell states. *International Journal of Quantum Information*. June 2017; 15(4), 1750023**. IF:0.7, Q4**. https://www.worldscientific.com/doi/abs/10.1142/S021974991750023X

- **Abulkasim, H.**, Hamad S, El Bahnasy K, Rida SZ. Authenticated quantum secret sharing with quantum dialogue based on Bell states. Physica Scripta. 2016 Jul 12;91(8):085101**. IF:2.6, Q2**. https://iopscience.iop.org/article/10.1088/0031-8949/91/8/085101/meta

- Marghny H. Mohamed and **Abulkasim, H**. Article: Data Hiding by LSB Substitution using Gene Expression Programming. *International Journal of Computer Applications* 45(14):13-20, May 2012. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=dc000a67b713f76b3637e6de6d9ca206112c7765

CONFERENCES

- **Invited Speaker (online)** Quantum-based Cyber security: Opportunities and Challenges. Laser, Optics, and Photonics (GEMLOP22) on Jul 28-30, 2022, Amsterdam, Netherlands
- **Speaker (Panel 1- Quantum cybersecurity: Douglas Stebila - University of Waterloo, Hussein Abulkasim - Ryerson University, Michele Mosca - University of Waterloo)**: The Smart Cybersecurity Network (Serene-risc) 2020 Annual, October 21-22, 2020, in

Montréal, Canada. https://www.serene-risc.ca/en/events/workshops/2020-serene-risc-workshop

- Invited Researcher IBM conference CASCON |EVOKE Nov. (2019), Markham, Ontario, Canada.
- **Speaker**, Quantum cryptography for optimal secure computations: Blockchain technology Symposium 18 Feb, University of Toronto. 2020 Toronto, Canada.
- **Speaker**, Quantum cryptography for optimal secure computations: Blockchain technology Symposium 18 Feb, University of Toronto. 2021 Toronto, Canada.
- **Presenter,** Secure quantum private computations: CRL Research Exhibit, December 04, 2019, Ryerson University, Toronto, Canada.
- **Section Organizer**: Minisymposium "Quantum Information and Quantum Computation" at the V AMMMCS international Conference on Aug 18-23 (2019), Wilfrid Laurier University, Waterloo, Canada.

BOOKS AND BOOK CHAPTERS

Elhadad, A., Hamad, S., Khalifa, A., & **Abulkasim, H**. (2020). A steganography approach for hiding privacy in video surveillance systems. In Digital Media Steganography (pp. 165-187). Academic Press.

https://www.sciencedirect.com/science/article/abs/pii/B9780128194386000177

PROFESSIONAL AND ACADEMIC ACTIVITIES

- **Member of the Study Plans and Program Accreditation Committee**
- **Head of the Digitization Committee (2023-2024):** University of Science and Technology of Fujairah.

Scientific activities:

- **A reviewer** for many highly impact journals, such as Scientific Reports, Quantum Information Processing, IEEE Transactions on Industrial Informatics, IEEE Intelligent Transportation Systems, IEEE Internet of Things Journal, IEEE Access, Physical Review A, IEEE transactions on information theory and others.

- **Associate Editor**: Journal of IET quantum communication.

- **Editorial Board Member**: Journal of Complex and Intelligent Systems.
- **Lead Guest Editor (SI):** Electronics: Recent Trends and Applications in Cybersecurity.
- **Lead Guest Editor (SI):** Sustainability: Recent Trends and Applications in Intelligent Systems for Sustainability.
- **Lead Guest Editor (SI):** Multimedia tools and applications: Recent Advances in Multimedia Information Security: Cryptography and steganography
- **Research Group Leader:** leading a group of researchers at Ryerson University (currently Toronto Metropolitan University) to conduct research on employing quantum technology for security communication systems funded by NXM (a partner of Space X).

Theses and Graduation Projects Supervision

- **Master and Doctorate Theses**: I have supervised two master's theses.
- **Graduation Projects Supervision**: I have supervised many graduation projects and some of them have been awarded valuable prizes for example:

    - (*Asseel ElHabash & Aisha Abdel Ghani)* A Blockchain-Based Approach Based on Elliptic Curve Cryptography for Securing Healthcare Systems. ***Awarded the best research work*** at the 15th Annual Undergraduate Research Conference on Applied Computing (URC 2024), Hosted by The College of Technological Innovation at Zayed University.
    - (*Aisha Rashed & Aishah Elhammadi*) Hiding secret data in Images based on LSB Steganography (2023-2024).
    - (*Shouq Shahab & Maryam Ebraheim*) Real-Time Ambulance Health Data Transmission System (2023-2024).
    - (*Reim & Rouzan Alaa*) Privacy-preserving Federated Learning for detecting False Data Injection Attacks on IoT infrastructure (2023-2024).

TECHNICAL SKILLS

Programming Language:

• Java, Python, MATLAB

Web Developing:

• HTML, XHTML • MS SharePoint • JavaScript, JQuery • CSS Technique • PHP • ASP.net

Database

• SQL, MySQL, Oracle

Open-Source Tools and Frameworks

- Hadoop Ecosystem, TensorFlow, Google colab.

ADMINISTRATIVE ACTIVITIES & COMMUNITY SERVICES

- **UAE Hackathon 2025**: Hackathon organizer and coordinator at the University of Science and Technology of Fujairah with the UAE Hackathon team.
- **Program Coordinator**: Computer Science Program, New Valley University, 2018-2019.
- **Head of Digitization Committee**: University of Science and Technology of Fujairah, UAE, from September 2023 to August 2023.
- **Committee Member**: Committee of IT deployment at the University of Science and Technology of Fujairah.
- **Committee Member**: Committee of Distance Learning at the University of Science and Technology of Fujairah.
- **Committee Member**: Committee of Study Plan and Programs at the University of Science and Technology of Fujairah.
- **Committee Member**: Committee of Teaching and Learning Resources at the University of Science and Technology of Fujairah.
- **Presenter**: Presenting many seminars about Cybersecurity , AI, Quantum computing and other IT topics within the UAE community.
- **University Portal Webmaster**: New Valley University, from March 2022 to December 2023.

FUNDED PROJECTS

- Multiparty Quantum Communications and Cryptography for IoT-Blockchain Applications, Funded by the Academy of Scientific Research and Technology (ASRT), Egypt, Project No. 6626 from 2019-2020, Role: PI, budget: 100000 EGP.
- Authenticated Secure Quantum-Based Communication Scheme in Internet-of-Drones Deployment, Funded by NXM Lab Inc, Canada.
- Secure multiparty quantum key agreement against collusive attacks, funded by the Natural Sciences and Engineering Research Council of Canada and NXM Labs Inc, Canada.
- Quantum-based Cybersecurity, Funded by Princesses Nourah bint Abdulrahman University, KSA, Role: researcher, 100000 SR.
- Robust 3D object watermarking scheme using shape features for copyright protection, Funded by Princesses Nourah bint Abdulrahman University, KSA. Project # PNURSP2024R442, Role: researcher, 25000 SR.
- Reduction of NIFTI files storage and compression to facilitate telemedicine services based on quantization hiding of downsampling approach, Funded by Princesses Nourah bint Abdulrahman University, KSA. Project # PNURSP2024R104, Role: researcher, 25000 SR.
- An efficient privacy-preserving control mechanism based on blockchain for E-health applications, Funded by Princesses Nourah bint Abdulrahman University, KSA. Project # PNURSP2023R 269, Role: researcher, 25000 SR.
- Plant Leaf Diseases Classification Using Improved K-Means Clustering and SVMAlgorithm for Segmentation, Funded by Princesses Nourah bint Abdulrahman University, KSA. Project # PNURSP2023R104, Role: researcher, 25000 SR.
- Securing Copyright Using 3D Objects Blind Watermarking Scheme, Funded by Princesses Nourah bint Abdulrahman University, KSA. Project Project # PNURSP2022R104, Role: researcher, 25000 SR.
- Improvements on new quantum key agreement protocol with five-qubit Brown states, Funded by Princesses Nourah bint Abdulrahman University, KSA. Project Project # PNURSP2021R123, Role: researcher, 25000 SR.

MEMBERSHIPS & SCIENTIFIC ACOUNTS

- IEEE Membership: Member number: 97806139.
- Google Scholar Account:

  https://scholar.google.com/citations?user=q1PtbgcAAAAJ&hl=en.

  (h-Index: 14; Citations; 589)
- Scopus Account:

  https://www.scopus.com/authid/detail.uri?authorId=57190442051.

  (H-Index: 11; Citations 405)