ADNAN AKHUNZADA, PhD

Professor of Cybersecurity and Artificial Intelligence

AI Security · Resilient Computing & Cybersecurity · Trustworthy AI · Research & Academic Leadership

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LinkedIn | 0000-0001-8370-9290 | Google Scholar | Scopus | Web of Science | DBLP | ResearchGate | GitHub

17+ Years | **$13M+** Research Funded Portfolio | **Stanford/Elsevier Top 2%** Scientist | **Harvard** ILC

200+ Scholarly Works | **6,500+** citations | **44** h-index | **126** i10-index | **U.S.** Patent | **9** PhDs

EXECUTIVE PROFILE

Professor of Cybersecurity and Artificial Intelligence with 17+ years of international experience spanning **academic leadership, research strategy, and program development** across the United Kingdom, Europe, the Middle East, Asia, and New Zealand. Distinguished record of institution-building and academic innovation, including establishing the newly launched **Master of Science in Artificial Intelligence and Cognitive Cybersecurity (M.Sc.)**, founding an undergraduate **Ethical Hacking and Cybersecurity** degree and recruiting its international faculty, and leading curriculum development, quality assurance, and accreditation initiatives across **ABET, NCEAC, and UK quality frameworks**. Former **Executive Director for Research Strategy and Innovation** at Universiti Malaysia Sabah and Chair of the **College Applied Research Committee** at the University of Doha for Science and Technology, with leadership spanning research governance, strategic planning, faculty development, and institutional research capacity.

International research leadership includes serving as **Technical Lead, Work Package Lead, and Co-PI** on multimillion-dollar **EU Horizon 2020 and Swedish Vinnova** research programs in collaboration with **ABB, Ericsson, and Volvo**. Research expertise spans **AI security, trustworthy and generative AI, cyber threat intelligence, secure networked systems, and resilient computing**, supported by **200+ scholarly works, 6,250+ citations, h-index of 43, and an i10-index of 122**. Recognized among the **Stanford/Elsevier World's Top 2% Scientists**, co-inventor of a **granted U.S. patent in post-quantum cryptography**, and supervisor or co-supervisor of **9 completed PhDs**. **Senior Member, IEEE** and member of **Qatar Technical School (QTS) Task Force**.

SELECTED LEADERSHIP & INSTITUTIONAL IMPACT

- **Academic program creation:** Founding Program Director, Bachelor of Ethical Hacking and Cybersecurity, The Knowledge Hub Universities (Coventry University branch campus); led the degree from design to the launch of its inaugural cohort and recruited 10+ international faculty. Director of Academic Programs, COMSATS University Islamabad (2011–2017); led academic strategy, program development, and accreditation for Computer Science programs across seven campuses.
- **Research strategy and governance:** Executive Director, Research Strategy and Innovation, Faculty of Computing and Informatics, Universiti Malaysia Sabah (2020–2022); Chair, College Applied Research Committee, UDST (2023–2024), establishing research clusters, a graduate research policy, and grant-support processes.
- **Accreditation and quality assurance:** ABET (UDST; COMSATS), NCEAC (Team Lead, BS Software Engineering, COMSATS), and UK quality assurance for programs delivered with the University of Bradford, Coventry University, and Glasgow Caledonian University; Outcome-Based Education training for Heads of Department at UMS.
- **International research funding:** Work Package Lead on EU Horizon 2020 ASTRID (total cost EUR 2,932,297.50); Co-PI and Work Package Lead on Vinnova SALLP and SALLPI; technical Work Package Lead on Vinnova IIoTSP (Vinnova funding SEK 24,000,000), with ABB, Ericsson, and Volvo.

- **Talent development:** 9 PhD and 24 research Master's graduates supervised or co-supervised; led faculty development programs, faculty recruitment, and promotion review.
- **Innovation and translation:** Co-inventor, U.S. Patent 10,581,604 B2 (post-quantum cryptography); co-developed the T-eye cyber threat intelligence platform and a QoS-aware fog controller with Ericsson and ABB.
- **National and professional standing:** Member, Qatar Technical School (QTS) Task Force; Senior Member, IEEE; Professional Member, ACM; Member, National CyberWatch Center Curriculum Standards Panel (USA); ERCIM Postdoctoral Fellow.

CORE EXPERTISE

AI security and trustworthy AI: AI Security; Generative AI Security; Agentic AI Evaluation; Large Language Models (LLMs); Retrieval-Augmented Generation (RAG); Deepfake Detection; Adversarial Machine Learning; Explainable and Interpretable Machine Learning; Machine Learning and Deep Learning.

Cyber defense: Cybersecurity; Information Security; AI-Driven Cyber Defense; Cyber Threat Intelligence; Intrusion and Malware Detection; Cybersecurity Analytics; Ethical Hacking and Penetration Testing; Digital Forensics; Post-Quantum and Applied Cryptography.

Secure digital infrastructure: IoT, IIoT, and IoMT Security; Edge and Fog Intelligence; Cloud Security; Software-Defined Networking (SDN) Security; 5G and 6G Vehicular Networks; Cyber-Physical Systems; Trusted Computing and Remote Attestation; Security Orchestration.

Leadership: Academic Leadership; Research Strategy and Governance; Research and Grant Management; Work-Package and Project Management; Curriculum Development; ABET and NCEAC Accreditation; Outcome-Based Education; Faculty Development and Recruitment; PhD Supervision; Industry–Academia Partnerships; International Collaboration; Technology Transfer.

ACADEMIC AND LEADERSHIP APPOINTMENTS

Primary Academic and Research Appointments

University of Doha for Science and Technology (UDST) | Doha, Qatar **Jul 2022 – Present**

Professor, Department of Data and Cybersecurity, College of Computing and IT

Research governance, curriculum and accreditation, graduate-research development, and supervision in the College of Computing and IT.

- Chaired the College Applied Research Committee (2023–2024): led research-cluster formation, research workshops, grant-application support, research-ethics compliance, and reporting to college leadership; served concurrently on the Competitive Research Committee that formed the clusters.
- Authored the college MS/PhD research policy supporting the launch of the Master of Science in Artificial Intelligence and Cognitive Cybersecurity (M.Sc. AICC).
- Coordinated the Cyber Innovation and Resilience research group (2023–2024), running fortnightly research seminars and pursuing government, industry, and academic funding partnerships.
- Led ABET accreditation evidence for the Data and Cybersecurity program, mapping course learning outcomes (CLOs) to program educational objectives (PEOs) and student outcomes, as part of the college accreditation effort; the college's B.Sc. programs in Information Systems and Information Technology received ABET accreditation in September 2026.
- Led modernization of the B.Sc. in Data and Cybersecurity toward an applied, industry-aligned model; developed curriculum content in data visualization, AI security, and Industry 4.0; directed the deployment of cybersecurity research laboratories supporting student projects and industry-funded R&D.
- Member, Qatar Technical School (QTS) Task Force (2024): designed ICT courses, competencies, and learning outcomes for students progressing to UDST, and advised on assessment benchmarks and program evaluation.
- Co-led the CCIT Talk Series and organized the University Research Poster Competition (2023); contributed to organizing UDST's International Symposia on Artificial Intelligence (2023) and Cyber Security in Industry (2024).

- Academic Advisor (DACS); faculty search committees for Data Science and AI; mentor junior and senior faculty on outcome-based course design, assessment rubrics, and applied ethical-hacking pedagogy.

Universiti Malaysia Sabah (UMS) | Kota Kinabalu, Malaysia **Oct 2020 – Jul 2022**

Associate Professor → Professor; Executive Director, Research Strategy and Innovation, Faculty of Computing and Informatics

Held remotely from 2021 under COVID-19 international travel restrictions, concurrently with the GCU appointment.

- Led the faculty research roadmap and research framework for MS and PhD programs; supervised doctoral and master's candidates to completion.
- Published 35+ Q1/Q2 journal articles during the appointment, including IEEE Transactions papers; secured a MYR 150,000 research portfolio with Universiti Malaysia Sabah (UMS).
- Directed Computer Science departmental operations, including faculty recruitment and inter-campus coordination; conducted faculty performance evaluations and chaired promotion review panels.
- Designed and led the Faculty Development Program on applied research methods and high-impact publishing; delivered Outcome-Based Education (OBE) training for Heads of Department.
- Revised undergraduate and postgraduate computing curricula in line with national quality guidelines and industry needs; established international partnerships for cybersecurity streams and led the design of cybersecurity research laboratories.

Glasgow Caledonian University (GCU) | Glasgow, United Kingdom **2021 – 2022**

Senior Lecturer, Cybersecurity and Ethical Hacking, Department of Networking and Cybersecurity

Full-time appointment, held while the UMS appointment continued remotely.

- Designed and delivered bachelor's and master's curricula in networking and cybersecurity, including postgraduate Research Methodology, for national and international cohorts; developed specialized streams with international partner universities.
- Led and supported cybersecurity laboratory projects; supervised master's and PhD students; organized research seminars, conferences, and guest lectures; contributed to departmental research policy and publication strategy.

Technical University of Denmark (DTU), DTU Compute | Kongens Lyngby, Denmark **Jan 2019 – Apr 2020**

Senior Researcher and Technical Lead, EU Horizon 2020 ASTRID

- Work Package Lead and technical lead on ASTRID (Grant 786922), a multinational consortium developing service-centric cybersecurity for virtualized and distributed systems; architected the security orchestration framework for real-time situational awareness.
- Led development of in-kernel packet inspection and enforcement, TPM-based remote attestation with formal verification, and SDN-enabled micro-security services; managed work-package deliverables against EU reporting timelines.
- Led proposal development for H2020-ICT, Vinnova, and ITEA3 calls on generative AI threats, big-data security analytics, and threat intelligence, with partners including IBM, ABB, Ericsson, and Cisco; delivered workshops on SDN security and adversarial machine learning.

RISE Research Institutes of Sweden (formerly SICS) | Västerås, Sweden **Nov 2017 – Jan 2019**

ERCIM Postdoctoral Research Fellow (Senior Research Fellow)

Competitive ERCIM Fellowship: industrial IoT, cloud and fog security, and secure industrial automation for the Swedish process industry.

- Co-PI and Work Package Lead on the Vinnova-funded SALLP and SALLPI projects, building a national industrial testbed for validation under production conditions.
- Technical Work Package Lead on IIoTSP, integrating 5G and cyber-physical systems for smart manufacturing.
- Implemented the Arrowhead Framework security architecture on Ericsson fog/cloud infrastructure; co-developed QoS-aware fog and edge controllers with ABB and Ericsson; conducted full-lifecycle security assessments with ABB, Ericsson, and Volvo.

COMSATS University Islamabad (CUI) | Islamabad, Pakistan **Sep 2011 – Dec 2017**
Assistant Professor, Department of Computer Science; Director of Academic Programs and Accreditation Lead

- Led the NCEAC accreditation team for BS Software Engineering; served on the ABET committee, applying ABET criteria to the Computer Science curriculum.
- Redesigned the BS Computer Science curriculum to ACM/IEEE Computer Science Curricula 2013; designed master's-level information security modules, including Programming for Security Professionals and Secure Coding.
- Course Director for Software Engineering and Telecommunication Networks; managed departmental operations, resource allocation, and examination moderation; authored the departmental MS/PhD research policy.
- Lead PI, Higher Education Commission (HEC) Start-Up Research Grant; headed the Counseling Committee, introducing class-counseling and conflict-resolution protocols to support retention.

Namal College (Associate College of the University of Bradford, UK) | Bradford, Mianwali **Dec 2008 – Sep 2011**
Lecturer and Quality Assurance Lead

- External Examination Officer for University of Bradford modules, managing scheduling, moderation, and approval to UK quality standards; aligned learning outcomes with teaching activities and introduced formative assessment and industry-based projects.
- Year Tutor and chair of staff–student liaison; Best Teaching Award of the Year.
- Developed and applied a student-centered, reflective teaching approach aligned with University of Bradford pedagogy, ensuring alignment between Intended Learning Outcomes (ILOs) and Teaching–Learning Activities (TLAs).
- Integrated current industry-based research projects into the undergraduate curriculum to strengthen students' technical skills and confidence.

Concurrent, Visiting and Adjunct Appointments

Whitecliffe – Technology and Innovation | Remote | Christchurch, New Zealand **2023 – Present**
Adjunct Professor, Graduate Research

- Supervise Master's research in applied AI and cybersecurity, including generative AI security, adversarial machine learning, and agentic AI evaluation; guide research quality, ethics and integrity, and publication strategy; contribute to Applied AI and Cybersecurity program streams.

Mälardalen University (MDU) | Västerås, Sweden **2018 – 2021**
Adjunct Visiting Professor and External Expert in Cybersecurity

External cybersecurity expertise, interdisciplinary research collaboration, and industry-oriented research on cybersecurity, AI, and cyber-resilience.

The Knowledge Hub Universities (TKH), Coventry University Branch Campus | Hybrid **2018 – 2019**
Founding Program Director, Ethical Hacking and Cybersecurity

Concurrent academic leadership appointment.

- Established the Bachelor of Ethical Hacking and Cybersecurity from inception with Coventry University (UK), directing curriculum design, administration, and the launch of the inaugural cohort; recruited 10+ international cybersecurity faculty.
- Designed an applied, industry-aligned curriculum with streams in network security, information security, and IT/software engineering; built industry partnerships for internships and applied projects; established penetration-testing laboratories and a research seminar series.

Doctoral Research Appointment

University of Malaya | Kuala Lumpur, Malaysia **Sep 2013 – Dec 2016**
Research Assistant, Centre for Mobile Cloud Computing Research (C4MCCR), Faculty of Computer Science and Information Technology
Doctoral research and major contributions in mobile cloud computing and network security, concurrent with PhD studies.

RESEARCH FUNDING, GRANTS AND INNOVATION

Amounts are taken from funders' official records where available and labelled as total project cost or funder contribution. Role = the candidate's role.

Competitive Research Funding

- **ASTRID: Addressing Threats for Virtualised Services**
  Work Package Lead (DTU) | European Commission, Horizon 2020, Grant 786922 | **Total cost EUR 2,932,297.50** | May 2018 – Jun 2021 | CORDIS
- **IIoTSP: Industrial Internet of Things, Services and People**
  Technical Work Package Lead (RISE) | Vinnova / PiiA 2015-06741, coordinated by ABB | **Vinnova funding SEK 24,000,000** | Jan 2016 – Jul 2019 | Vinnova
- **SALLP: Smart Automation Living Lab for Process Industry**
  Co-PI and Work Package Lead | Vinnova / PiiA 2017-02445, coordinated by RISE | **Vinnova funding SEK 1,864,541** | May 2017 – Oct 2018 | Vinnova
- **SALLPI: SALLP Implementation**
  Co-PI and Work Package Lead | Vinnova / PiiA 2018-04498, coordinated by RISE | **Vinnova funding SEK 5,858,153** | Dec 2018 – Nov 2019 | Vinnova
- **Faculty Research Excellence Initiative (Cybersecurity and Innovation)**
  Lead | Universiti Malaysia Sabah | **MYR 150,000** | 2020 – 2022
- **Towards Secure Design and Development of Southbound API Using a Commercial SDN Controller**
  Lead PI | Higher Education Commission of Pakistan, SRGP 21-1674/SRGP/R&D/HEC/2017 | **PKR 1,000,000** | 2017

Patents and Intellectual Property

- **Co-inventor**, U.S. Patent 10,581,604 B2, "Post-Quantum Cryptographic Communication Protocol," granted 3 March 2020 (Application 15/871,853; pre-grant publication US 2019/0116035 A1); assignee: COMSATS Institute of Information Technology.

Research Translation and Industry Collaboration

- Co-developed the T-eye proactive cyber threat intelligence platform, benchmarked against IBM QRadar (*Journal of Parallel and Distributed Computing* 124:47–59, 2019).
- Co-developed a QoS-aware fog computing controller with Ericsson and ABB for process-industry automation (*Journal of Network and Computer Applications* 165:102674, 2020).
- Industrial research partners across funded projects: ABB, Ericsson, Volvo, IBM, and Cisco.

RESEARCH IMPACT AND SCHOLARLY METRICS

- **Scholarly record:** 237+ works indexed in ORCID; 202 verified publications listed below (159 journal articles, 36 conference papers and book chapters, 2 other publications, and 5 preprints). At least 123 of the 159 journal articles (77%) appeared in Q1 journals (SCImago Journal Rank 2025, best quartile).
- **Citations:** 6,250+ citations; h-index 43; i10-index 122 (Google Scholar).
- **Recognition:** Stanford University–Elsevier World's Top 2% Scientists (2023).
- **Venues include:** ACM Computing Surveys; IEEE Communications Magazine; IEEE Internet of Things Journal; IEEE Transactions on Intelligent Transportation Systems; International Journal of Computer Vision; Artificial Intelligence Review; Computer Science Review; Journal of Network and Computer Applications; Journal of Industrial Information Integration; Future Generation Computer Systems.

- **Research themes:** AI for cybersecurity (threat intelligence, intrusion and malware detection for IIoT and SDN); security of AI (generative AI threats, AI-generated text and deepfake detection, agentic AI evaluation); secure networked systems (SDN, fog and edge, 5G and 6G vehicular networks, UAVs); applied and post-quantum cryptography; applied machine learning in healthcare (including IoMT and health digital twins) and sustainability.

EDUCATION

University of Malaya | Kuala Lumpur, Malaysia **2016**
PhD, Computer Science (Network Security)
Bright Spark Scholarship. Dissertation: A Controller-Agnostic Random Oracle-Based Intrusion Detection Method in Software-Defined Networks. University ranked 56th in the QS World University Rankings 2026.

National University of Sciences and Technology (NUST) | Islamabad, Pakistan **2010**
MS, Computer Science (Information Security)
NUST Talent Scholarship.

Gomal University | Dera Ismail Khan, Pakistan **2005**
BS, Computer Science (with Distinction)
University Gold Medal; Class Merit Scholarship.

SELECTED PUBLICATIONS

Ten representative works; complete list in the final section. (c) = corresponding author.

1. Kehkashan T., Abdullah M., Al-Shamayleh A.S., Ivković N., Ismail N.A., **Akhunzada A.**, et al. "From benchmarks to deployment: a comprehensive review of agentic AI evaluation." *Artificial Intelligence Review* 59:167, 2026. (c) DOI: 10.1007/s10462-026-11571-0
2. Polamarasetti A., Ahmad S., Zaman M., Ahmad R., Hussain A., **Akhunzada A.** "Cascaded cross-attention vision transformers with wavelet-based encodings for deepfake detection." *International Journal of Computer Vision* 134:221, 2026. DOI: 10.1007/s11263-026-02806-2
3. Ibrar W., Mahmood D., Al-Shamayleh A.S., Ahmed G., Alharthi S.Z., **Akhunzada A.** "Generative AI: a double-edged sword in the cyber threat landscape." *Artificial Intelligence Review* 58:285, 2025. (c) DOI: 10.1007/s10462-025-11285-9
4. Kehkashan T., Riaz R.A., Al-Shamayleh A.S., **Akhunzada A.**, et al. "AI-generated text detection: a comprehensive review of methods, datasets, and applications." *Computer Science Review* 58:100793, 2025. (c) DOI: 10.1016/j.cosrev.2025.100793
5. Malik J., **Akhunzada A.**, Al-Shamayleh A.S., Zeadally S., Almogren A. "Hybrid deep learning based threat intelligence framework for Industrial IoT systems." *Journal of Industrial Information Integration* 45:100846, 2025. (c) DOI: 10.1016/j.jii.2025.100846
6. Bibi I., **Akhunzada A.**, Kumar N. "Deep AI-powered cyber threat analysis in IIoT." *IEEE Internet of Things Journal* 10(9):7749–7760, 2023. (c) DOI: 10.1109/JIOT.2022.3229722
7. Murtaza F., **Akhunzada A.**, Islam S., Boudjadar J., Buyya R. "QoS-aware service provisioning in fog computing." *Journal of Network and Computer Applications* 165:102674, 2020. (c) DOI: 10.1016/j.jnca.2020.102674
8. Haider S., **Akhunzada A.**, Mustafa I., Patel T.B., Fernandez A., Choo K.-K.R., Iqbal J. "A deep CNN ensemble framework for efficient DDoS attack detection in software defined networks." *IEEE Access* 8:53972–53983, 2020. DOI: 10.1109/ACCESS.2020.2976908
9. Sookhak M., Gani A., Talebian H., **Akhunzada A.**, Khan S.U., Buyya R., Zomaya A.Y. "Remote data auditing in cloud computing environments: a survey, taxonomy, and open issues." *ACM Computing Surveys* 47(4):1–34, 2015. DOI: 10.1145/2764465
10. **Akhunzada A.**, Ahmed E., Gani A., Khan M.K., Imran M., Guizani S. "Securing software defined networks: taxonomy, requirements, and open issues." *IEEE Communications Magazine* 53(4):36–44, 2015. (c) DOI: 10.1109/MCOM.2015.7081073

DOCTORAL AND POSTGRADUATE SUPERVISION

PhD graduates (9): Qurat-Ul-Ain; Jahanzeb Malik; Ikram ul Haq; Zulfiqar Ali; Ihsan Ali; Abdul Jabbar; Ashraf Ullah; Misbah; Tanveer Khan.

PhD candidates in progress (5): Said Bakhshad; Iram Bibi; Shahzana Liaqat; Taimoor Khan; Amal.

Research Master's graduates (24): Faizan Murtaza; Shahzeb Haider; Tanveer Khan; Sidra Aslam; Aqeb Yahya; Anam Nazir; Nighat Usman; Said Bakhshad; Jahanzeb Malik; Iram Bibi; Tooba Hassan; Soneila Niazi; Shahzana Liaqat; Zeeshan Bhatti; Nasir Khan; Faisal Jutt; Taimor Khan; Sehreen; Sabeeh Kokar; Dua Malik; Safoora Qurban; Malik Hassan; Ayesha Aslam; Nargis.

Research Master's in progress (2): Sarmad; Semal Niazi.

Selected supervised research projects: Augmented proactive cyber threat intelligence; flow-based intrusion detection using deep ensemble CNNs; secure southbound APIs for SDN; dynamic remote data auditing in computational clouds; IoT-centric mining of malicious frequent patterns; intelligent task scheduling in fog computing; BCH-code cryptosystems for smart communities; QoS-aware fog service provisioning; privacy-aware blockchain in social IoT; deep learning intrusion detection in SDN; software-defined green fog and edge computing; real-time bot detection; elliptic-curve secure communication; Android OS security and theft recovery; secure LAN messaging.

TEACHING AND CURRICULUM LEADERSHIP

AI and data: Introduction to AI; Artificial Intelligence; Machine Learning; Python for AI; Agentic AI; Generative AI Threats; Emerging Topics in Cybersecurity and AI; Data and Cybersecurity Visualization; Introduction to Data and Cybersecurity; Database Systems.

Cybersecurity: Applied Cryptography; Cryptanalysis; Secure System Engineering; Secure Network Design; Application Security; System Security; Language-Based Security; Program Analysis; Programming for Security Professionals; Penetration Testing and Ethical Hacking; Digital Forensics; Information Security Essentials; Information Security Management; Telecom Security; Physical and Operational Security; Industrial IoT Security.

Computing foundations: Advanced Operating Systems; Advanced Computer Networks and Security; Wireless Communication Networks; Networks and Communications; Large-Scale Distributed Systems; Modelling, Analysis and Formal Verification; Programming Languages; Data Structures; Design and Theory of Algorithms; Research Methodology.

Curriculum and pedagogy: Program design for bachelor's and master's degrees in data and AI-driven cybersecurity; ACM/IEEE curriculum alignment; outcome-based course design; formative assessment; industry capstones.

INSTITUTIONAL SERVICE AND ACADEMIC ADMINISTRATION

- Chair, College Applied Research Committee (2023–2024); Member, Competitive Research Committee; Coordinator, Cyber Innovation and Resilience research group, UDST.
- Member, Qatar Technical School (QTS) Task Force, State of Qatar (2024).
- Faculty search committee member, Data Science and AI; Academic Advisor, DACS, UDST.
- ABET accreditation work, UDST and COMSATS; NCEAC accreditation team lead, COMSATS.
- Faculty performance evaluation and promotion review, UMS.
- Head, Counseling Committee (Software Engineering and Telecommunication Networks), COMSATS.
- External Examination Officer, Year Tutor, and staff–student liaison chair, Namal College (University of Bradford).

PROFESSIONAL SERVICE

- Associate Editor, *IEEE Access* (2020–2023); Editorial Board Member, *Journal of Information and Communication Technology*, University of Sindh.
- Member, National CyberWatch Center Curriculum Standards Panel (NCC-CSP), Cybersecurity Foundation Series.
- Reviewer committee member, 21st IEEE International Conference on Smart Communities (2024) and ITAS 2023, UDST.
- Reviewer: IEEE Transactions on Information Forensics and Security; IEEE Transactions on Dependable and Secure Computing; IEEE Transactions on Intelligent Transportation Systems; IEEE Transactions on Vehicular Technology; IEEE Transactions on Industrial Electronics; IEEE Communications Magazine; IEEE Communications Letters; IEEE Vehicular Technology Magazine; IEEE Intelligent Transportation Systems Magazine; Information Sciences; Information Fusion; Computer Networks; Ad Hoc Networks; Computer Communications; Journal of Network and Computer Applications; Journal of Parallel and Distributed Computing; Telecommunication Systems; Wireless Personal Communications; Journal of Network and Systems Management; IET Information Security; International Journal of Distributed Sensor Networks.

AWARDS, HONORS AND DISTINCTIONS

- Stanford University–Elsevier World's Top 2% Scientists, 2023.
- ERCIM Postdoctoral Fellowship, European Research Consortium for Informatics and Mathematics, 2017.
- Best Paper Publishing Award, *IEEE Communications Magazine*.
- Best Paper Award, UKPEW 27, University of Bradford, UK, 2011; Best Research Presentation Award, PGReS 2015, University of Malaya.
- Best Teaching Award of the Year, Namal College (University of Bradford partnership).
- Bright Spark Scholarship (PhD), University of Malaya; NUST Talent Scholarship (MS); University Gold Medal and Class Merit Scholarship (BS, 2002–2005).

PROFESSIONAL MEMBERSHIPS

- Senior Member, IEEE (No. 96692194); IEEE Communications Society; IEEE Cybersecurity, Cloud Computing, Internet of Things, and Future Networks Communities.
- Professional Member, ACM (No. 9796342); ACM Special Interest Group on Computer Science Education (SIGCSE).
- Member, Consortium for Computing Sciences in Colleges (CCSC).

CERTIFICATIONS AND PROFESSIONAL DEVELOPMENT

- Certified Ethical Hacker (CEH v13), EC-Council, 2025 (Certificate ECC3654918207).
- Harvard Graduate School of Education, Instructional Leadership Certificate (ILC) (2025–2026):
  - "Instructional Coaching Through Change: Supporting Teachers in Action," 2026.
  - "Teachers Mentoring Teachers: Practices for Powerful Professional Communities," 2026.
  - "Articulating the Intangibles of Teaching: Aligning Your Purpose and Practice for Instructional Leadership," 2025.
  - "Welcome to Leading Teacher Teams: Promoting Growth Through Effective Collaboration," 2026.
- Postgraduate Certificate in Higher Education Practice (PGCHEP), University of Bradford, UK, 2009–2010.
- Micro-Teaching Skills Program (University of Sheffield education consultant), February 2010.
- Faculty Development Academy teaching and learning program, COMSATS, January 2012.

TECHNICAL EXPERTISE

Platforms and tools: SDN controllers (Floodlight, OpenDaylight, Ryu); CloudSim; iFogSim; NS-2/NS-3; OMNeT++.

Programming: Python; C/C++; Java/J2EE; MATLAB; .NET; scripting languages.

Methods: Machine, deep, and reinforcement learning; formal modelling, analysis and verification of security protocols; lightweight cryptography and cryptanalysis; security analytics; secure coding; penetration testing.

INTERNATIONAL COLLABORATION

Research, teaching, and funded-project leadership across various countries (United States, Qatar, United Kingdom, Denmark, Sweden, Malaysia, Pakistan) and a remote graduate-research appointment in New Zealand; EU Horizon 2020 consortium partnership; Swedish national innovation programs with ABB, Ericsson, and Volvo; multi-institutional research with Universiti Malaysia Sabah; co-authorship with researchers at the University of Melbourne, King Saud University, and the University of Kentucky.

REFERENCES

- **Professor Rajkumar Buyya**, Redmond Barry Distinguished Professor; Director, Cloud Computing and Distributed Systems (CLOUDS) Laboratory, University of Melbourne, Australia. rbuyya@unimelb.edu.au
- **Professor Muhammad Khurram Khan**, Center of Excellence in Information Assurance, King Saud University, Riyadh, Saudi Arabia.
- **Professor Sherali Zeadally**, University of Kentucky, 320 Little Library Building, Room 314, Lexington, Kentucky 40506. szeadally@uky.edu
- **Professor Muath A. Obaidat**, Computer Science Department, City University of New York, USA. muobaidat@ccny.cuny.edu
- **Dr. Ghufran Ahmed**, Associate Professor, Department of Computer Science, FAST-NUCES, Karachi, Pakistan. ghufran.ahmed@nu.edu.pk
- **Assistant Professor, Dr. Ihsan Ali**, Department of Computer Science, Southeast Missouri State University, One University Plaza, Cape Girardeau, MO 63701. Iali@semo.edu

COMPLETE LIST OF PUBLICATIONS

Journal articles, conference papers, book chapters, and preprints, grouped by year and type; (c) = corresponding author. Cross-verified against the merged Google Scholar and ORCID record (audit of October 2026): duplicate records, preprint versions of published papers, correction notices, indexing artefacts, and unverified items are excluded. Links resolve through the DOI system wherever a DOI exists. Full record: ORCID | Google Scholar.

159 journal articles | **36** conference papers and book chapters | **2** other publications | **5** preprints | 2009–2026

Go to year: 2026 | 2025 | 2024 | 2023 | 2022 | 2021 | 2020 | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2009

2026 | JOURNAL ARTICLES

21 articles

J1 Hafiz Khizer Bin Talib, Yanlong Cao, Muhammad Zaman, Kaiwei Xu, and **Adnan Akhunzada**. "SepViT: A Dual-Path Transformer-Convolution Framework for Apex Frame-Based Microexpression Recognition." *IEEE Transactions on Computational Social Systems* (2026). (c) DOI: 10.1109/TCSS.2026.3653634

J2 Ahmed Elwhishi, Awad A. Younis, and **Adnan Akhunzada**. "Attention-Enhanced Hybrid Architecture for Efficient Intrusion Detection in Industrial IoT." *IEEE Open Journal of the Communications Society* 7 (2026): 1330–1347. DOI: 10.1109/OJCOMS.2026.3661768

J3 Muhammad Nadeem Ghouri, Ghufran Ahmed, Ahmad Sami Al-Shamayleh, Muhammad Maaz, Shahbaz Siddiqui, and **Adnan Akhunzada**. "Next-Gen IoT Security: Deep Learning-Based Detection of RPL Attacks in Mobile Converged Networks." *IEEE Open Journal of the Communications Society* (2026). (c) DOI: 10.1109/OJCOMS.2026.3650763

J4 Tanzila Kehkashan, Maha Abdelhaq, Ahmad Sami Al-Shamayleh, Raja Adil Riaz, Muhammad Abdullah, Abdelmuttlib Ibrahim Abdalla Ahmed, and **Adnan Akhunzada**. "Sustainable and interpretable heart disease prediction: a clinical decision support approach for biomedical healthcare applications." *Scientific Reports* (2026). DOI: 10.1038/s41598-026-37840-0

J5 Saifuddin Sk, Bibek Das, Ahmad Sami Al-Shamayleh, Asfak Ali, Suvojit Acharjee, Sheli Sinha Chaudhuri, and **Adnan Akhunzada**. "SIDC-GAN: Single Image De-Rain Cascade UNet GAN." *IEEE Open Journal of Vehicular Technology* (2026). (c) DOI: 10.1109/OJVT.2026.3669163

J6 Maha Abdelhaq, Ahmad Sami Al-Shamayleh, **Adnan Akhunzada**, Nikola Ivković, and Toobah Hasan. "Scalable and Resilient AI Framework for Malware Detection in Software-Defined Internet of Things." *Computers, Materials & Continua* 87, no. 1 (2026). (c) DOI: 10.32604/cmc.2025.073577

J7 Ghulam Mustafa, Muhammad Saeed Khattak, Ahmad Sami Al-Shamayleh, Muhammad Tanvir Afzal, and **Adnan Akhunzada**. "The HK Index: A Disjointness-Driven Model for Intelligent Ranking of Scientific Impact." *Expert Systems* 43, no. 2 (2026): e70193. (c) DOI: 10.1111/exsy.70193

J8 G. Ahmed, R.A.S. Malick, Ahmad Sami Al-Shamayleh, M.A. Ayub, U. Antuley, T.A. Minai, **Adnan Akhunzada**, et al.. "STELLAR-CB: Synthetic Temporal LSTM for Livestock Activity Recognition Cow Behaviour." *Veterinary Medicine and Science* 12, no. 4 (2026): e70827. (c) DOI: 10.1002/vms3.70827

J9 M.Y. Mhawish, M. Aljamal, A. Alsarhan, B.S. Khassawneh, **Adnan Akhunzada**, et al.. "A Novel Adaptive Generalization-Guided Federated Learning for Multimodal Industrial IoT Intrusion Detection under Statistical Heterogeneity." *IEEE Open Journal of the Computer Society* (2026). (c) DOI: 10.1109/OJCS.2026.3703977

J10 M.H. Ibnath, K.M. Hasib, K. Cengiz, N. Ivković, **Adnan Akhunzada**. "Beyond Polarity in Bengali Texts: Can Multi-Task Modeling Capture Sarcasm Intensity and Classification?" *IEEE Open Journal of the Computer Society* (2026). DOI: 10.1109/OJCS.2026.3697802

J11 S. Mehmood, A. Arooj, Ahmad Sami Al-Shamayleh, S. Batool, I. Ur-Rehman, M.D. Sabir, **Adnan Akhunzada**, et al.. "Tensor Language Model Enables Generative Scheduling for Efficient Tensor Compilation." *Scientific Reports* 16, no. 1 (2026): 15379. (c) DOI: 10.1038/s41598-026-41392-8

J12 A. Polamarasetti, S. Ahmad, M. Zaman, R. Ahmad, A. Hussain, **Adnan Akhunzada**. "Cascaded Cross-Attention Vision Transformers with Wavelet-Based Encodings for DeepFake Detection." *International Journal of Computer Vision* 134, no. 5 (2026): 221. DOI: 10.1007/s11263-026-02806-2

J13 T. Kehkashan, M. Abdullah, Ahmad Sami Al-Shamayleh, N. Ivković, N.A. Ismail, **Adnan Akhunzada**, et al.. "From Benchmarks to Deployment: A Comprehensive Review of Agentic AI Evaluation." *Artificial Intelligence Review* (2026). (c) DOI: 10.1007/s10462-026-11571-0

J14 Z.U. Rehman, J. Zhao, M. Zaman, Q. Yan, A. Li, **Adnan Akhunzada**. "Integrative Deep Diagnostic Architecture: A Convolutional Variational Attention Transformer for Personalized and Multi-Strategy Lung Nodule Detection." *IEEE Access* 14 (2026): 52054–52066. (c) DOI: 10.1109/ACCESS.2026.3679217

J15 M. Rafid, A. Afridi, S. Sualiheen, A. Iqbal, I. Ali, **Adnan Akhunzada**. "6G SDVN: UAV-Assisted VANETs for AI-Enabled Controller Selection and Heterogeneous Multi-Band Connectivity." *IEEE Open Journal of the Communications Society* 7 (2026): 3439–3450. (c) DOI: 10.1109/OJCOMS.2026.3678705

J16 T. Kehkashan, M. Abdelhaq, Ahmad Sami Al-Shamayleh, M. Abdullah, R.A. Riaz, **Adnan Akhunzada**, et al.. "Gastroenterological Disease Detection Using Transformer-Based Medical Imaging for Sustainable Healthcare." *Scientific Reports* (2026). (c) DOI: 10.1038/s41598-026-45222-9

J17 T. Kehkashan, M. Abdelhaq, Ahmad Sami Al-Shamayleh, M. Hamza, M.A. Khan, **Adnan Akhunzada**, et al.. "Sustainable Regional Corn Yield Prediction for the United States Through an Interpretable Machine Learning Approach." *Scientific Reports* (2026). (c) DOI: 10.1038/s41598-026-43213-4

J18 Tanzila Kehkashan, Maha Abdelhaq, Muhammad Abdullah, Sharifah Sakinah Syed Ahmad, Nor Azman Ismail, Nikola Ivković, and **Adnan Akhunzada**. "Adaptive confidence ensemble reranking for reliable knowledge-intensive question answering." *Scientific Reports* 16 (2026): 25351. DOI: 10.1038/s41598-026-54535-8

J19 Mirza Mumtaz Zahoor, Saddam Hussain Khan, Tanja Pavleska, Ibrahim Abdullah Zalah, Hasan J. Alyamani, Julian Hoxha, et al., and **Adnan Akhunzada**. "CE-RS-SBCIT: A novel channel-enhanced hybrid CNN–transformer with residual, spatial, and boundary-aware learning for brain tumor MRI analysis." *Scientific Reports* (2026). DOI: 10.1038/s41598-026-69669-y

J20 Muhammad Zaman, Zia ur Rehman, Saira Moin U. Din, and **Adnan Akhunzada**. "Self-attention-guided EfficientAttentionNet-B0 for robust and automated tuberculosis detection from chest X-ray images." *Array* (2026): 101019. DOI: 10.1016/j.array.2026.101019

J21 Hafiz Khizer Bin Talib, Yanlong Cao, Muhammad Zaman, Sharifah Sakinah Syed Ahmad, Nikola Ivković, Mario Konecki, and **Adnan Akhunzada**. "BroadAttNet: Attention-driven micro-expression recognition." *Computers, Materials & Continua* (2026). DOI: 10.32604/cmc.2026.078779

2026 | CONFERENCE PAPERS AND BOOK CHAPTERS

2 papers

C1 Imran Ashraf, Tanzila Kehkashan, Abdul Rehman, Mueen Uddin, and **Adnan Akhunzada**. "A multi-agent reinforcement learning approach for seamless and safe autonomous vehicle platooning." In *Lecture Notes in Electrical Engineering*. Springer, 2026. DOI: 10.1007/978-981-92-3681-7_2

C2 Muhammad Abdullah, Tanzila Kehkashan, Raja Adil Riaz, Mueen Uddin, and **Adnan Akhunzada**. "Surface crack detection: Advances in automated visual inspection for infrastructure safety." In *Lecture Notes in Electrical Engineering*. Springer, 2026. DOI: 10.1007/978-981-92-3681-7_27

2026 | PREPRINTS

4 preprints

P1 Zia ur Rehman, J. Zhao, Muhammad Zaman, Q. Yan, A. Li, and **Adnan Akhunzada**. "Attention-enhanced deep learning framework for multiclass pulmonary disease diagnosis using chest X-ray imaging." SSRN preprint (2026). DOI: 10.2139/ssrn.5996460

P2 Muhammad Kamran, Mubasher Baig, Nida Anwar, Fahad Ahmad, Mian Muhammad Awais, El-Sayed El-Alfy, et al., including **Adnan Akhunzada**. "Toward real-world sign language recognition: A degradation-aware cross-dataset evaluation protocol for low-resource settings." SSRN preprint (2026). DOI: 10.2139/ssrn.6308399

P3 Muhammad Kamran, Mubasher Baig, and **Adnan Akhunzada**. "When architecture and scaling fail to generalize: A performance degradation aware cross-dataset study of vision models for low-resource sign language recognition." figshare preprint (2026). DOI: 10.6084/m9.figshare.33942442.v1

P4 Mubashra Fayyaz, Rauf Ahmed Shams Malick, and **Adnan Akhunzada**. "Audio-visual-textual fusion for Big Five personality prediction using deep feature extraction and multimodal transformers." Authorea preprint (2026). DOI: 10.22541/au.177012929.90537214/v1

2025 | JOURNAL ARTICLES

26 articles

J22 Jahanzaib Malik, **Adnan Akhunzada**, Ahmad Sami Al-Shamayleh, Sherali Zeadally, Ahmad Almogren. "Hybrid deep learning-based threat intelligence framework for Industrial IoT systems." *Journal of Industrial Information Integration* 45 (2025): 100846. (c) DOI: 10.1016/j.jii.2025.100846

J23 Elizaveta Kuzmina, Shahbaz Pervez, Seyed Ebrahim Hosseini, Muazma Shahbaz, **Adnan Akhunzada**. "Spring Framework Benchmarking Utility for Static Application Security Testing (SAST) Tools." *IEEE Internet of Things Journal* (2025). (c) DOI: 10.1109/JIOT.2025.3598235

J24 Tanzila Kehkashan, Raja Adil Riaz, Ahmad Sami Al-Shamayleh, **Adnan Akhunzada**, Noman Ali, Muhammad Hamza, Faheem Akbar. "AI-generated text detection: A comprehensive review of methods, datasets, and applications." *Computer Science Review* 58 (2025): 100793. (c) DOI: 10.1016/j.cosrev.2025.100793

J25 Muhammad Asghar Khan, Neeraj Kumar, **Adnan Akhunzada**, Insaf Ullah, Gordana. "An Improvised Certificate-Based Proxy Signature using Hyperelliptic Curve Cryptography for Secure UAV Communications." *IEEE Transactions on Intelligent Transportation Systems* 26, no. 4 (2025). DOI: 10.1109/TITS.2024.3524575

J26 Ruhma Sardar, Tayyaba Anees, Erum Mehmood, Wajeeha Khalil, **Adnan Akhunzada**, Fatema Sabeen Shaikh. "Challenges in detecting security threats in WoT: a systematic literature review." *Artificial Intelligence Review*, Springer (2025). DOI: 10.1007/s10462-025-11176-z

J27 Muhammad Khubaib, Tanzila Kehkashan, Maha Abdelhaq, Muhammad Asghar Khan, Muhammad Zaman, Imran Ashraf, Abdul Rehman, **Adnan Akhunzada**. "Data-Efficient Wheat Disease Detection using Shifted Window Transformer: Enhancing Accuracy, Sustainability, and Global Food Security." *IEEE Transactions on Consumer Electronics* (2025). DOI: 10.1109/TCE.2025.3582267

J28 Shakeel Ahmad, Rahiel Ahmad, Ahmad Sami Al-Shamayleh, Divya Nimma, Muhammad Zaman, Nikola Ivković, Korhan Cengiz, **Adnan Akhunzada**, and Ehtisham Haider. "Flight into the future: a holistic review of AI-trends, vision, and challenges in drones technology." *Artificial Intelligence Review*, Springer (2025). DOI: 10.1007/s10462-025-11449-7

J29 Vineet Dhanawat, Varun Shinde, Rachid Alami, **Adnan Akhunzada**, Zaid Bin Faheem, Anjanava Biswas. "Electric vehicles charging station load forecasting integration with renewable energy using novel deep Efficient BiLSTMNet." *IEEE Open Journal of Vehicular Technology* (2025). (c) DOI: 10.1109/OJVT.2025.3608287

J30 Werisha Ibrar, Danish Mahmood, Ahmad Sami Al-Shamayleh, Ghufran Ahmed, Salman Z Alharthi, **Adnan Akhunzada**. "Generative AI: a double-edged sword in the cyber threat landscape." *Artificial Intelligence Review*, Springer (2025). (c) DOI: 10.1007/s10462-025-11285-9

J31 Junaid Akram, Awais Akram, Palash Ingle, Rutvij H Jhaveri, Ali Anaissi, **Adnan Akhunzada**. "Privacy-Preserving Spatial Crowdsourcing Drone Services for Post-Disaster Infrastructure Monitoring: A Conditional Federated Learning Approach." *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* (2025). (c) DOI: 10.1109/JSTARS.2025.3577648

J32 Ghulam Mustafa, Muhammad Saeed Khattak, Muhammad Tanvir Afzal, **Adnan Akhunzada**, Mario Konecki, and Nikola Ivković. "Combining citation and productivity metrics through harmonic mean enhances researcher ranking accuracy." *Scientific Reports* (2025). DOI: 10.1038/s41598-025-30432-4

J33 Farshad Rahimi Ghashghaei, Nebrase Elmrabit, Ayyaz-Ul-Haq Qureshi, **Adnan Akhunzada**, Mehdi Yousefi. "Advanced Quantum Control With Ensemble Reinforcement Learning: A Case Study on the XY Spin Chain." *IEEE Access* (2025). (c) DOI: 10.1109/ACCESS.2025.3551232

J34 Tanzila Kehkashan, Maha Abdelhaq, Ahmad Sami Al-Shamayleh, Nazish Huda, Imran Ashraf Yaseen, Abdelmuttlib Ibrahim Abdalla Ahmed, and **Adnan Akhunzada**. "Explainable phishing website detection for secure and sustainable cyber infrastructure." *Scientific Reports* (2025). DOI: 10.1038/s41598-025-27984-w

J35 Usman Amjad, Asif Raza, Muhammad Fahad, Doaa Farid, **Adnan Akhunzada**, Muhammad Abubakar, Hira Beenis. "Context aware machine learning techniques for brain tumor classification and detection–A Review." *Heliyon*, Elsevier (2025). DOI: 10.1016/j.heliyon.2025.e41835

J36 Hafiz Khizer bin Talib, Kaiwei Xu, Yanlong Cao, Yuan Ping Xu, Zhijie Xu, Muhammad Zaman, and **Adnan Akhunzada**. "Convolutional Attention Based Mechanism for Facial Microexpression Recognition." *IEEE Access* (2025). DOI: 10.1109/ACCESS.2024.3525151

J37 Rahul Malik, Rachit Garg, Korhan Cengiz, Nikola Ivković, and **Adnan Akhunzada**. "MODAMS: design of a multimodal object-detection based augmentation model for satellite image sets." *Scientific Reports* (2025). DOI: 10.1038/s41598-025-93766-z

J38 Farman Ullah Jan, Rabiah Badar, Ahmad Sami Al-Shamayleh, Akie Uehara, Tomonobu Senjyu, and **Adnan Akhunzada**. "Indirect Adaptive Polynomial Wavelet-Based Neuro-Fuzzy Controller for STATCOM-Equipped Power Systems." *IEEE Open Journal of Power Electronics* (2025). DOI: 10.1109/OJPEL.2025.3628182

J39 Hafiz Khizer bin Talib, Kaiwei Xu, Yanlong Cao, Yuan Ping Xu, Zhijie Xu, Muhammad Zaman, and **Adnan Akhunzada**. "Micro-expression recognition using convolutional variational attention transformer (convat) with multihead attention mechanism." *IEEE Access* (2025). DOI: 10.1109/ACCESS.2025.3530114

J40 Omar Khattab, Mhd Omar Al-Kadri, Sriharsha Av, Saravana Balaji Balasubramanian, Saleem Basha Mohamed Sulaiman, Omar Alani, Raouf Abozariba, Mohamed Ben Farah, **Adnan Akhunzada**. "MSCHF algorithm for minimizing signaling costs and enhancing vertical handover efficiency in wireless communications networks." *PeerJ Computer Science* (2025). DOI: 10.7717/peerj-cs.3283

J41 Farman Ullah Jan, Rabiah Badar, Ahmad Sami Al-Shamayleh, Akie Uehara, Tomonobu Senjyu, and **Adnan Akhunzada**. "Soft Computing based Damping Controllers with Online Parameters Tuning for Stability Enhancement of Power Systems." *IEEE Access* (2025). DOI: 10.1109/ACCESS.2025.3612288

J42 Swati Lipsa, Ranjan Kumar Dash, Korhan Cengiz, Nikola Ivković, **Adnan Akhunzada**. "A 5G network based conceptual framework for real-time malaria parasite detection from thick and thin blood smear slides using modified YOLOv5 model." *Digital Health* 11 (2025): 20552076251321540. DOI: 10.1177/20552076251321540

J43 Misbah Anwer, Ghufran Ahmed, Maha Abdelhaq, Raed Alsaqour, Shahid Hussain, **Adnan Akhunzada**. "Towards Decentralized IoT Security: Optimized Detection of Zero-Day Multi-Class Cyber-Attacks Using Deep Federated Learning." *Computers, Materials & Continua* (2025). (c) DOI: 10.32604/cmc.2025.068673

J44 Anwar Ahmed Khan, Shama Siddiqui, Ahmad Sami Al-Shamayleh, **Adnan Akhunzada**, Indrakshi Dey. "DFROG-MAC: A Dynamic Fragmentation-Based MAC for Prioritised Emergency Data Management in Vehicular Networks." *IET Wireless Sensor Systems* (2025). DOI: 10.1049/wss2.70017

J45 Khubab Ahmed, Huaqing Liu, Li Ke, Ray Tahir Mushtaq, Muhammad Zaman, **Adnan Akhunzada**. "Parameter Estimation of Weibull Distribution Using Constrained Search Space: An Application to Elevator Maintenance." *Machines* (2025). DOI: 10.3390/machines13111022

J46 Asfak Ali, Suvojit Acharjee, Md Manarul Sk, Salman Z Alharthi, Sheli Sinha Chaudhuri, and **Adnan Akhunzada**. "DWSD: Dense Waste Segmentation Dataset." *Data in Brief* (2025): 111340. DOI: 10.1016/j.dib.2025.111340

J47 Asfak Ali, Bibek Das, Ahmad Sami Al-Shamayleh, Sujatro Sarkar, Chinmoyee Ray, Sayoni Mandal, et al., including **Adnan Akhunzada**. "Descriptor: Egocentric action recognition for Bengali sign language detection dataset (Ego-SLD)." *IEEE Data Descriptions* (2025). DOI: 10.1109/IEEEDATA.2025.3563836

2025 | CONFERENCE PAPERS AND BOOK CHAPTERS

12 papers

C3 Anika Kanwal, Siva Chandrasekaran, and **Adnan Akhunzada**. "A hybrid attention-BiGRU model for accurate stock market prediction." In *2025 IEEE 4th International Conference on Computing and Machine Intelligence (ICMI)*. IEEE, 2025. DOI: 10.1109/ICMI65310.2025.11141054

C4 S.A. Hussain, Ghufran Ahmed, Shahbaz Siddiqui, R. Malick, and **Adnan Akhunzada**. "A novel deep learning based melanoma detection technique using skin lesion." In *2025 4th International Conference on Computing and Information Technology (ICCIT)*. IEEE, 2025. DOI: 10.1109/ICCIT63348.2025.10989443

C5 M.A. Khan, Muhammad Zaman, Tanzila Kehkashan, Nikola Ivković, V. Uros, and **Adnan Akhunzada**. "Early detection of diabetic foot ulcers through CoAtNet model: A scalable solution for healthcare integration." In *2025 7th International Congress on Human-Computer Interaction, Optimization and Robotic Applications (ICHORA)*. IEEE, 2025. DOI: 10.1109/ICHORA65333.2025.11017101

C6 Hafiz Khizer Bin Talib, Kaiwei Xu, Yanlong Cao, Muhammad Zaman, M.H. Toqeer, and **Adnan Akhunzada**. "Error-corrected quantum CNN for gender-based micro-expression analysis in affective computing." In *2025 7th International Congress on Human-Computer Interaction, Optimization and Robotic Applications (ICHORA)*. IEEE, 2025. DOI: 10.1109/ICHORA65333.2025.11017004

C7 Muhammad Kamran, Mubasher Baig, Mian Muhammad Awais, El-Sayed M. El-Alfy, and **Adnan Akhunzada**. "PSL-CFRT: A benchmark multi-view dataset for continuous Pakistani sign language fingerspelling recognition and translation." In *2nd International Conference on IT Innovations and Knowledge Discovery (ITIKD)*. IEEE, 2025. DOI: 10.1109/ITIKD63574.2025.11005359

C8 M. Qasim, D. Mehmood, A. Bibi, Ghufran Ahmed, and **Adnan Akhunzada**. "A novel predictive model for integrating pest detection and environmental factors for food security assessment." In *World Sustainability Series*. Springer, 2025. DOI: 10.1007/978-3-032-00098-9_37

C9 Duaa Shoukat, **Adnan Akhunzada**, Muhammad Taimoor Khan, Ahmad Sami Al-Shamayleh, Mueen Uddin, and Hashem Alaidaros. "Bridging innovation and security: Advancing cyber-threat detection in sustainable smart infrastructure." Book chapter, Springer, 2025. DOI: 10.1007/978-981-97-8588-9_11

C10 Usman Khalil, Mueen Uddin, Hashem Alaidaros, and **Adnan Akhunzada**. "NFTs for the unassailable authentication of IoT devices in cyber-physical systems: An implementation study." Book chapter, Springer, 2025. DOI: 10.1007/978-981-97-8588-9_9

C11 Abdul Rehman, Tanzila Kehkashan, Imran Ashraf, Elvis Popović, Nikola Ivković, and **Adnan Akhunzada**. "CADSNet: Cross-aligned dual-stream network for building damage assessment using disaster satellite

imagery." In *2025 International Conference on Computer and Applications (ICCA)*, pp. 1–6. IEEE, 2025. DOI: 10.1109/ICCA66035.2025.11430890

C12 Muhammad Zaman, Zainab Fatima, Muhammad Zubair Aslam, Vedran Uros, Nikola Ivković, and **Adnan Akhunzada**. "Early detection of Parkinson's disease using biomedical voice measurements with random forest classifier." In *2025 International Conference on Computer and Applications (ICCA)*. IEEE, 2025. DOI: 10.1109/ICCA66035.2025.11431068

C13 Muhammad Zaman, Muhammad Danial, Sidra Mumtaz, Nikola Ivković, Vedran Uros, and **Adnan Akhunzada**. "Enhancing hematological diagnostics: A machine learning framework featuring Michael's classifier for beta thalassemia." In *2025 International Conference on Computer and Applications (ICCA)*. IEEE, 2025. DOI: 10.1109/ICCA66035.2025.11430941

C14 Muhammad Abdullah, Tanzila Kehkashan, Faheem Akbar, Roko Milošević, Nikola Ivković, and **Adnan Akhunzada**. "HC-MBNet: A hybrid collaborative multi-branch network for spatiotemporal gastrointestinal disease classification." In *2025 International Conference on Computer and Applications (ICCA)*, pp. 1–6. IEEE, 2025. DOI: 10.1109/ICCA66035.2025.11431042

2024 | JOURNAL ARTICLES

12 articles

J48 **Adnan Akhunzada**, Ahmad Sami Al-Shamayleh, Sherali Zeadally, Ahmad Almogren, and Ahmad Adel Abu-Shareha. "Design and performance of an AI-enabled threat intelligence framework for IoT-enabled autonomous vehicles." *Computers and Electrical Engineering* 119 (2024): 109609. (c) DOI: 10.1016/j.compeleceng.2024.109609

J49 Shakeel Ahmad, Muhammad Zaman, Ahmad Sami Al-Shamayleh, Tanzila Kehkashan, Rahiel Ahmad, Muhammad Abdulhamid Safi'I, Ismail Ergen, and **Adnan Akhunzada**. "Across the Spectrum In-Depth Review AI-Based Models for Phishing Detection." *IEEE Open Journal of the Communications Society* (2024). DOI: 10.1109/OJCOMS.2024.3462503

J50 Muhammad Maaz, Ghufran Ahmed, Ahmad Sami Al-Shamayleh, **Adnan Akhunzada**, Shahbaz Siddiqui, and Abdulla Hussein Al-Ghushami. "Empowering IoT Resilience: Hybrid Deep Learning Techniques for Enhanced Security." *IEEE Access* (2024). DOI: 10.1109/ACCESS.2024.3482005

J51 Abdul Qaddos, Muhammad Usman Yaseen, Ahmad Sami Al-Shamayleh, Muhammad Imran, **Adnan Akhunzada**, and Salman Z. Alharthi. "A novel intrusion detection framework for optimizing IoT security." *Scientific Reports* 14, no. 1 (2024): 21789. (c) DOI: 10.1038/s41598-024-72049-z

J52 Daksh Dave, **Adnan Akhunzada**, Nikola Ivković, Sujan Gyawali, Korhan Cengiz. "Diagnostic test accuracy of AI-Assisted mammography for breast imaging: A Narrative Review." *PeerJ Computer Science* (2024). DOI: 10.7717/peerj-cs.2476

J53 Debendra Muduli, Rani Kumari, **Adnan Akhunzada**, Korhan Cengiz, Santosh Kumar Sharma, Rakesh Ranjan Kumar, and Dinesh Kumar Sah. "Retinal imaging-based glaucoma detection using modified pelican optimization based extreme learning machine." *Scientific Reports* 14 (2024): 21789. DOI: 10.1038/s41598-024-79710-7

J54 Natasha Akram, Rabia Irfan, Ahmad Sami Al-Shamayleh, Adila Kousar, Abdul Qaddos, Muhammad Imran, and **Adnan Akhunzada**. "Online Recruitment Fraud (ORF) Detection Using Deep Learning Approaches." *IEEE Access* (2024). (c) DOI: 10.1109/ACCESS.2024.3435670

J55 Ghulam Mustafa, Abid Rauf, Ahmad Sami Al-Shamayleh, Muhammad Tanvir Afzal, Ali Waqas, and **Adnan Akhunzada**. "Defining quantitative rules for identifying influential researchers: Insights from mathematics domain." *Heliyon* 10, no. 9 (2024). (c) DOI: 10.1016/j.heliyon.2024.e30318

J56 Kainat Babar, Muhammad Usman Yaseen, Ahmad Sami Al-Shamayleh, Muhammad Imran, Abdullah Hussein Al-Ghushami, and **Adnan Akhunzada**. "LPN-IDD: A Lightweight Pyramid Network for Image Deraining and Detection." *IEEE Access* (2024). DOI: 10.1109/ACCESS.2024.3371484

J57 Shama Siddiqui, Anwar Ahmed Khan, Farid Nait Abdesselam, Shamsul Arfeen Qasmi, **Adnan Akhunzada**, and Indrakshi Dey. "Towards assessing reliability of next-generation Internet of Things dashboard for anxiety risk classification." *IET Wireless Sensor Systems* (2024). DOI: 10.1049/wss2.12090

J58 Aziz Mehmood Farooqi, Rauf Ahmed Shams Malick, Muhammad Shahzad Shaikh, and **Adnan Akhunzada**. "Multi-IsnadSet MIS for Sahih Muslim Hadith with chain of narrators, based on multiple ISNAD." *Data in Brief* 54 (2024): 110439. (c) DOI: 10.1016/j.dib.2024.110439

J59 Multiple co-authors, including **Adnan Akhunzada**. "Navigating the stock market: The role of state-of-the-art deep learning techniques." *Al-Balqa Journal for Research and Studies* (2024). DOI: 10.35875/vvf5k957

2024 | CONFERENCE PAPERS AND BOOK CHAPTERS

7 papers

C15 Duaa Shoukat, Muhammad Taimoor Khan, Syed Muhammad Sajjad, **Adnan Akhunzada**. "Smart and sustainable threat intelligence." In *Innovation and Technological Advances for Sustainability: Proceedings of ITAS 2023*, Doha, Qatar. CRC Press, 2024. DOI: 10.1201/9781003496724-26

C16 Shayan Ameen, Ghufran Ahmed, Rauf Shams Malik, Shahbaz Siddiqui, Muhammad Kariz Kamal, **Adnan Akhunzada**. "A reliable energy-efficient routing algorithm for WBAN using centrality measure." In *Innovation and Technological Advances for Sustainability: Proceedings of ITAS 2023*, Doha, Qatar. CRC Press, 2024. DOI: 10.1201/9781003496724-30

C17 R. Sultana, Muhammad Zaman, Nikola Ivković, Korhan Cengiz, I. Rafaqat, and **Adnan Akhunzada**. "Efficient detection of knee osteoporosis using the Swin transformer on X-ray images." In *2024 International Conference on Computer and Applications (ICCA)*. IEEE, 2024. DOI: 10.1109/ICCA62237.2024.10928051

C18 Muhammad Zaman, T. Fatima, S. Hameed, S. Haider, **Adnan Akhunzada**, and M. Azeem. "Enhanced pediatric pneumonia diagnosis with chest X-ray using deep attention mechanism." In *2024 IEEE/ACM International Conference on Big Data Computing, Applications and Technologies (BDCAT)*. IEEE, 2024. DOI: 10.1109/BDCAT63179.2024.00026

C19 Imran Ashraf, Tanzila Kehkashan, Muhammad Zaman, **Adnan Akhunzada**, Hafiz Khizer Bin Talib, and Yanlong Cao. "Enhancing micro-expression recognition with Broadbent attention mechanism: A high-performance approach for emotion detection." In *2024 IEEE 21st International Conference on Smart Communities (HONET)*. IEEE, 2024. DOI: 10.1109/HONET63146.2024.10822916

C20 M. Azeem, Muhammad Zaman, **Adnan Akhunzada**, Tanzila Kehkashan, Imran Ashraf, and Abdul Rehman. "Optimizing diabetic foot ulcer detection: Leveraging SSD and YOLO architectures." In *2024 IEEE 21st International Conference on Smart Communities (HONET)*. IEEE, 2024. DOI: 10.1109/HONET63146.2024.10822990

C21 Muhammad Zaman, Tanzila Kehkashan, **Adnan Akhunzada**, Hashem Alaidaros, Mueen Uddin, and M. Azeem. "EQCNN: Enhanced remote sensing imagery classification with circuit-based error-corrected quantum convolutional neural networks." In *2024 25th International Conference on Digital Image Computing: Techniques and Applications (DICTA)*. IEEE, 2024. DOI: 10.1109/DICTA63115.2024.00109

2023 | JOURNAL ARTICLES

19 articles

J60 **Adnan Akhunzada**, Sherali Zeadally, and Saif ul Islam. "Toward performance and energy-efficient edge-of-things." *IEEE IT Professional* 25, no. 1 (2023): 17–23. (c) DOI: 10.1109/MITP.2022.3230837

J61 Gul Nawaz, Muhammad Junaid, **Adnan Akhunzada**, Abdullah Gani, Shamyla Nawazish, Asim Yaqub, Adeel Ahmed, and Huma Ajab. "Detecting and Mitigating DDOS Attacks in SDNs Using Deep Neural Network." *Computers, Materials & Continua* 77, no. 2 (2023). (c) DOI: 10.32604/cmc.2023.026952

J62 Bilal Ahmed, Li Wang, Ahmad Sami Al-Shamayleh, Muhammad Tanvir Afzal, Ghulam Mustafa, Wagdi Alrawagfeh, and **Adnan Akhunzada**. "Machine learning approach for effective ranking of researcher assessment parameters." *IEEE Access* 11 (2023): 133294–133312. DOI: 10.1109/ACCESS.2023.3336950

J63 Javed Iqbal, Haris Jibran, Ahmad Sami Al-Shamayleh, Fakhar Abbas, **Adnan Akhunzada**, Salman Z. Alharthi, and Abdullah Gani. "Comparative study of SPI success factors in global and in-house environment for large-scale software companies." *PeerJ Computer Science* 9 (2023): e1656. (c) DOI: 10.7717/peerj-cs.1656

J64 Zulfiqar Ali, Asif Muhammad, Ahmad Sami Al-Shamayleh, Kashif Naseer Qureshi, Wagdi Alrawagfeh, and **Adnan Akhunzada**. "Enhancing performance of movie recommendations using LSTM with meta path analysis." *IEEE Access* 11 (2023): 119017–119032. DOI: 10.1109/ACCESS.2023.3327271

J65 Bilal Ahmed, Li Wang, Ghulam Mustafa, Muhammad Tanvir Afzal, and **Adnan Akhunzada**. "Evaluating the effectiveness of author-count based metrics in measuring scientific contributions." *IEEE Access* 11 (2023): 101710–101726. (c) DOI: 10.1109/ACCESS.2023.3309416

J66 Kamran Saeed, Uzair Iqbal Janjua, Salman Z. Alharthi, Tahir Mustafa Madni, and **Adnan Akhunzada**. "An empirical study to investigate the impact of factors influencing knowledge sharing in virtual teams." *IEEE Access* 11 (2023): 92715–92734. (c) DOI: 10.1109/ACCESS.2023.3309009

J67 Hassaan Malik, Tayyaba Anees, Ahmad Sami Al-Shamayleh, Salman Z. Alharthi, Wajeeha Khalil, and **Adnan Akhunzada**. "Deep Learning-Based Classification of Chest Diseases Using X-rays, CT Scans, and Cough Sound Images." *Diagnostics* 13, no. 17 (2023): 2772. (c) DOI: 10.3390/diagnostics13172772

J68 Ghulam Mustafa, Abid Rauf, Ahmad Sami Al-Shamayleh, Bilal Ahmed, Wagdi Alrawagfeh, Muhammad Tanvir Afzal, and **Adnan Akhunzada**. "Exploring the significance of publication-age-based parameters for evaluating researcher impact." *IEEE Access* (2023). DOI: 10.1109/ACCESS.2023.3304013

J69 Imran Javed, Uzair Iqbal Janjua, Tahir Mustafa Madni, and **Adnan Akhunzada**. "The impact of mitigation strategies for socio-cultural distance issues in GSD: An empirical study." *IEEE Access* (2023). (c) DOI: 10.1109/ACCESS.2023.3300836

J70 Daksh Dave, Aditya Sharma, Adeel Ahmed, **Adnan Akhunzada**, and Rashid Amin. "SAppKG: Mobile App Recommendation Using Knowledge Graph and Side Information-A Secure Framework." *IEEE Access* (2023). (c) DOI: 10.1109/ACCESS.2023.3296466

J71 Ghulam Mustafa, Abid Rauf, Ahmad Sami Al-Shamayleh, Muhammad Sulaiman, Wagdi Alrawagfeh, Muhammad Tanvir Afzal, and **Adnan Akhunzada**. "Optimizing document classification: Unleashing the power of genetic algorithms." *IEEE Access* (2023). (c) DOI: 10.1109/ACCESS.2023.3292248

J72 Ghulam Mustafa, Abid Rauf, Bilal Ahmed, Muhammad Tanvir Afzal, **Adnan Akhunzada**, and Salman Z. Alharthi. "Comprehensive evaluation of publication and citation metrics for quantifying scholarly influence." *IEEE Access* (2023). (c) DOI: 10.1109/ACCESS.2023.3290917

J73 Erum Mehmood, Tayyaba Anees, Ahmad Sami Al-Shamayleh, Abdullah Hussein Al-Ghushami, Wajeeha Khalil, and **Adnan Akhunzada**. "DHSDJArch: An Efficient Design of Distributed Heterogeneous Stream-Disk Join Architecture." *IEEE Access* 11 (2023): 63565–63578. (c) DOI: 10.1109/ACCESS.2023.3288284

J74 Khalid Saeed, Wajeeha Khalil, Ahmad Sami Al-Shamayleh, Sheeraz Ahmed, **Adnan Akhunzada**, Salman Z. Alharthi, and Abdullah Gani. "A comprehensive analysis of security-based schemes in underwater wireless sensor networks." *Sustainability* 15, no. 9 (2023): 7198. (c) DOI: 10.3390/su15097198

J75 Shehzad Haider, Wajeeha Khalil, Ahmad Sami Al-Shamayleh, **Adnan Akhunzada**, and Abdullah Gani. "Risk Factors and Practices for the Development of Open Source Software From Developers' Perspective." *IEEE Access* 11 (2023): 63333–63350. (c) DOI: 10.1109/ACCESS.2023.3267048

J76 Tayyaba Anees, Qaiser Habib, Ahmad Sami Al-Shamayleh, Wajeeha Khalil, Muath A. Obaidat, and **Adnan Akhunzada**. "The integration of WoT and edge computing: Issues and challenges." *Sustainability* 15, no. 7 (2023): 5983. (c) DOI: 10.3390/su15075983

J77 Khalid Saeed, Wajeeha Khalil, Ahmad Sami Al-Shamayleh, Iftikhar Ahmad, **Adnan Akhunzada**, Salman Z. Alharthi, and Abdullah Gani. "Analyzing the impact of active attack on the performance of the AMCTD protocol in underwater wireless sensor networks." *Sensors* 23, no. 6 (2023): 3044. (c) DOI: 10.3390/s23063044

J78 Zulfiqar Ali, Kashif Naseer Qureshi, Ahmad Sami Al-Shamayleh, **Adnan Akhunzada**, Aadil Raza, and Muhammad Fasih Uddin Butt. "Delay optimization in LoRaWAN by employing adaptive scheduling algorithm with unsupervised learning." *IEEE Access* 11 (2023): 2545–2556. (c) DOI: 10.1109/ACCESS.2023.3234188

2023 | CONFERENCE PAPERS AND BOOK CHAPTERS

1 paper

C22 Anika Kanwal, Siva Chandrasekaran, and **Adnan Akhunzada**. "Stock Price Prediction using CuDNNLSTM and multiple CNN layers." In *2023 IEEE International Conference on Artificial Intelligence, Blockchain, and Internet of Things (AIBThings)*, pp. 1–5. IEEE, 2023. DOI: 10.1109/AIBThings58340.2023.10291016

2023 | PREPRINTS

1 preprint

P5 D. Dave, G. Sawhney, **Adnan Akhunzada**, A. Ahmed, Ahmad Sami Al-Shamayleh, E.S. Flores, et al. "Revolutionizing diabetic retinopathy diagnosis in third world countries: The transformative potential of smartphone-based AI." TechRxiv preprint (2023). DOI: 10.36227/techrxiv.24601953.v1

2022 | JOURNAL ARTICLES

19 articles

J79 Iram Bibi, **Adnan Akhunzada**, and Neeraj Kumar. "Deep AI-powered cyber threat analysis in IIoT." *IEEE Internet of Things Journal* 10, no. 9 (2022): 7749–7760. (c) DOI: 10.1109/JIOT.2022.3229722

J80 Muhammad Taimoor Khan, **Adnan Akhunzada**, and Sherali Zeadally. "Proactive defense for fog-to-things critical infrastructure." *IEEE Communications Magazine* 60, no. 12 (2022): 44–49. (c) DOI: 10.1109/MCOM.005.2100992

J81 Shamim Younas, Faisal Rehman, Tahir Maqsood, Saad Mustafa, **Adnan Akhunzada**, and Abdullah Gani. "Collaborative detection of black hole and gray hole attacks for secure data communication in VANETs." *Applied Sciences* 12, no. 23 (2022): 12448. (c) DOI: 10.3390/app122312448

J82 Aftab Hussain, Muhammad Usman Yaseen, Muhammad Imran, Muhammad Waqar, **Adnan Akhunzada**, Mohammad Al-Ja'afreh, and Abdulmotaleb El Saddik. "An attention-based ResNet architecture for acute hemorrhage detection and classification: Toward a health 4.0 digital twin study." *IEEE Access* 10 (2022): 126712–126727. DOI: 10.1109/ACCESS.2022.3225671

J83 Asad Hussain, Sheraz Alam, Sajjad A. Ghauri, Mubashir Ali, Husnain Raza Sherazi, **Adnan Akhunzada**, Iram Bibi, and Abdullah Gani. "Automatic modulation recognition based on the optimized linear combination of higher-order cumulants." *Sensors* 22, no. 19 (2022): 7488. DOI: 10.3390/s22197488

J84 Noorulain Ashraf, Danish Mahmood, Muath A. Obaidat, Ghufran Ahmed, and **Adnan Akhunzada**. "Criminal Behavior Identification Using Social Media Forensics." *Electronics* 11, no. 19 (2022): 3162. (c) DOI: 10.3390/electronics11193162

J85 Ch Anwar Ul Hassan, Jawaid Iqbal, Muhammad Sufyan Khan, Saddam Hussain, **Adnan Akhunzada**, Mudabbir Ali, Abdullah Gani, Mueen Uddin, and Syed Sajid Ullah. "Design and Implementation of Real-Time Kitchen Monitoring and Automation System Based on Internet of Things." *Energies* 15, no. 18 (2022): 6778. DOI: 10.3390/en15186778

J86 Noureen Fatima, Rashid Jahangir, Ghulam Mujtaba, **Adnan Akhunzada**, Zahid Hussain Shaikh, and Faiza Qureshi. "Multi-Modality and Feature Fusion-Based COVID-19 Detection Through Long Short-Term Memory." *Computers, Materials & Continua* 72, no. 3 (2022). DOI: 10.32604/cmc.2022.023830

J87 Noureen Fatima, Ghulam Mujtaba, **Adnan Akhunzada**, Khurshed Ali, Zahid Hussain Shaikh, Baby Rabia, and Javed Ahmed Shahani. "Prediction of Pakistani Honey Authenticity Through Machine Learning." *IEEE Access* 10 (2022): 87508–87521. (c) DOI: 10.1109/ACCESS.2022.3199021

J88 Muhammad Zeeshan, Muhammad Umar Farooq, Kashif Shahzad, and **Adnan Akhunzada**. "5G/SDR-Assisted Cognitive Communication in UAV Swarms: Architecture and Applications." *IEEE IT Professional* 24, no. 3 (2022): 28–34. DOI: 10.1109/MITP.2022.3161318

J89 Javed Iqbal, Rodina B. Ahmad, Muzafar Khan, Mohd Hairul Nizam, and **Adnan Akhunzada**. "Model to cope with requirements engineering issues for software development outsourcing." *IEEE Access* 10 (2022): 63199–63229. (c) DOI: 10.1109/ACCESS.2022.3182393

J90 Ikram Ul Haq, Tamim Ahmed Khan, **Adnan Akhunzada**, and Xuan Liu. "MalDroid: Secure DL-enabled intelligent malware detection framework." *IET Communications* 16, no. 10 (2022): 1160–1171. (c) DOI: 10.1049/cmu2.12265

J91 Kainat Malik, Faisal Rehman, Tahir Maqsood, Saad Mustafa, Osman Khalid, and **Adnan Akhunzada**. "Lightweight internet of things botnet detection using one-class classification." *Sensors* 22, no. 10 (2022): 3646. (c) DOI: 10.3390/s22103646

J92 Muhammad Imran, Bin Yao, Waqas Ali, **Adnan Akhunzada**, Muhammad Kashif Azhar, Muhammad Junaid, and Uzair Iqbal. "Research perspectives and challenges of blockchain for data-intensive and resource-constrained devices." *IEEE Access* 10 (2022): 38104–38122. (c) DOI: 10.1109/ACCESS.2022.3162096

J93 Rizwan Aslam Butt, **Adnan Akhunzada**, Muhammad Faheem, and Basit Raza. "Enhanced energy savings with adaptive watchful sleep mode for next generation passive optical network." *Energies* 15, no. 5 (2022): 1639. (c) DOI: 10.3390/en15051639

J94 Hamnah Anwar, Saif Ur Rehman Khan, Javed Iqbal, and **Adnan Akhunzada**. "A tacit-knowledge-based requirements elicitation model supporting COVID-19 Context." *IEEE Access* 10 (2022): 24481–24508. (c) DOI: 10.1109/ACCESS.2022.3153678

J95 Abdul Qayum, Saif Ur Rehman Khan, and **Adnan Akhunzada**. "FineCodeAnalyzer: Multi-perspective source code analysis support for software developer through fine-granular level interactive code visualization." *IEEE Access* 10 (2022): 20496–20513. (c) DOI: 10.1109/ACCESS.2022.3151395

J96 Muhammad Arslan Tariq, Muhammad Umar Farooq, Muhammad Zeeshan, Ali Hassan, and **Adnan Akhunzada**. "FIPAM: Fuzzy inference based placement and migration approach for NFV-based IoTs." *IEEE Transactions on Network and Service Management* 19, no. 4 (2022): 4298–4309. DOI: 10.1109/TNSM.2022.3145658

J97 Amna Javed Tiwana, Muhammad Zeeshan, Tabinda Ashraf, Muhammad Umar Farooq, Kashif Shahzad, and **Adnan Akhunzada**. "Dynamic link adaptation for filterband multicarrier in networks with diverse service quality and throughput requirements." *Telecommunication Systems* 79, no. 1 (2022): 109–122. (c) DOI: 10.1007/s11235-021-00845-3

2022 | CONFERENCE PAPERS AND BOOK CHAPTERS

2 papers

C23 Syed Nawaz Ali Shah, Ghufran Ahmed, **Adnan Akhunzada**, and Engr Shahbaz Siddiqui. "A Novel Deep Learning-based Approach to encounter cyber threats in IIoT." In *2022 Mohammad Ali Jinnah University International Conference on Computing (MAJICC)*, pp. 1–7. IEEE, 2022. (c) DOI: 10.1109/MAJICC56935.2022.9994173

C24 Misbah Anwer, Ghufran Ahmed, **Adnan Akhunzada**, Shahid Hussain, and Mubashir Khan. "Comparative analysis of soft computing approaches of zero-day-attack detection." In *2022 International Conference on Emerging Trends in Smart Technologies (ICETST)*, pp. 1–5. IEEE, 2022. DOI: 10.1109/ICETST55735.2022.9922937

2021 | JOURNAL ARTICLES

15 articles

J98 **Adnan Akhunzada**, Sherali Zeadally, and Saif Ul Islam. "Power and performance efficient SDN-enabled fog architecture." *IEEE IT Professional* 23, no. 6 (2021): 24–30. (c) DOI: 10.1109/MITP.2021.3085840

J99 Ghufran Ahmed, Rauf Ahmed Shams Malick, **Adnan Akhunzada**, Sumaiyah Zahid, Muhammad Rabeet Sagri, and Abdullah Gani. "An approach towards IoT-based predictive service for early detection of diseases in poultry chickens." *Sustainability* 13, no. 23 (2021): 13396. (c) DOI: 10.3390/su132313396

J100 Zeeshan Hussain, **Adnan Akhunzada**, Javed Iqbal, Iram Bibi, and Abdullah Gani. "Secure IIoT-enabled industry 4.0." *Sustainability* 13, no. 22 (2021): 12384. (c) DOI: 10.3390/su132212384

J101 Izaz Ahmad Khan, Syed Adeel Ali Shah, **Adnan Akhunzada**, Abdullah Gani, and Joel JPC Rodrigues. "TARS: A Novel Mechanism for Truly Autonomous Resource Selection in LTE-V2V Mode 4." *Sensors* 21, no. 22 (2021): 7431. (c) DOI: 10.3390/s21227431

J102 Tayyaba Ilyas, Danish Mahmood, Ghufran Ahmed, and **Adnan Akhunzada**. "Symptom analysis using fuzzy logic for detection and monitoring of covid-19 patients." *Energies* 14, no. 21 (2021): 7023. DOI: 10.3390/en14217023

J103 Azra Shamim, Awais Ali Khan, Muhammad Ahsan Qureshi, Hamaad Rafique, and **Adnan Akhunzada**. "Ride or not to ride: does the customer deviate toward ridesharing?" *International Journal of Environmental Research and Public Health* 18, no. 19 (2021): 10352. (c) DOI: 10.3390/ijerph181910352

J104 Ghazala Rasheed, Muzafar Khan, Noman Malik, and **Adnan Akhunzada**. "Measuring learnability through virtual reality laboratory application: a user study." *Sustainability* 13, no. 19 (2021): 10812. (c) DOI: 10.3390/su131910812

J105 Tanveer Khan, Antonis Michalas, and **Adnan Akhunzada**. "Fake news outbreak 2021: Can we stop the viral spread?" *Journal of Network and Computer Applications* 190 (2021): 103112. (c) DOI: 10.1016/j.jnca.2021.103112

J106 Iram Bibi, **Adnan Akhunzada**, Jahanzaib Malik, Muhammad Khurram Khan, and Muhammad Dawood. "Secure distributed mobile volunteer computing with android." *ACM Transactions on Internet Technology (TOIT)* 22, no. 1 (2021): 1–21. (c) DOI: 10.1145/3428151

J107 Muhammad Javed Ramzan, Saif Ur Rehman Khan, Tamim Ahmed Khan, **Adnan Akhunzada**, and Chan Naseeb. "A Conceptual Model to Support the Transmuters in Acquiring the Desired Knowledge of a Data Scientist." *IEEE Access* 9 (2021): 115335–115347. (c) DOI: 10.1109/ACCESS.2021.3105038

J108 Basharat Mahmood, Naveed Ahmad, Majid Iqbal Khan, and **Adnan Akhunzada**. "Dynamic priority real-time scheduling on power asymmetric multicore processors." *Symmetry* 13, no. 8 (2021): 1488. (c) DOI: 10.3390/sym13081488

J109 Farwah Aizaz, Saif Ur Rehman Khan, Junaid Ali Khan, and **Adnan Akhunzada**. "An empirical investigation of factors causing scope creep in agile global software development context: a conceptual model for project managers." *IEEE Access* 9 (2021): 109166–109195. (c) DOI: 10.1109/ACCESS.2021.3100779

J110 Ikram Ul Haq, Tamim Ahmed Khan, and **Adnan Akhunzada**. "A dynamic robust DL-based model for android malware detection." *IEEE Access* 9 (2021): 74510–74521. (c) DOI: 10.1109/ACCESS.2021.3079370

J111 Soneila Khan and **Adnan Akhunzada**. "A hybrid DL-driven intelligent SDN-enabled malware detection framework for Internet of Medical Things (IoMT)." *Computer Communications* 170 (2021): 209–216. (c) DOI: 10.1016/j.comcom.2021.01.013

J112 Rukaiya, Muhammad Umar Farooq, Shoab A. Khan, Farhan Hussain, and **Adnan Akhunzada**. "CFFD-MAC: A hybrid MAC for collision free full-duplex communication in wireless ad-hoc networks." *IEEE Access* 9 (2021): 35584–35598. (c) DOI: 10.1109/ACCESS.2021.3061943

2021 | CONFERENCE PAPERS AND BOOK CHAPTERS

1 paper

C25 Misbah Anwer, Ghufran Ahmed, **Adnan Akhunzada**, and Shahbaz Siddiqui. "Intrusion detection using deep learning." In *2021 International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME)*, pp. 1–6. IEEE, 2021. DOI: 10.1109/ICECCME52200.2021.9590852

2020 | JOURNAL ARTICLES

10 articles

J113 **Adnan Akhunzada**, Saif ul Islam, and Sherali Zeadally. "Securing cyberspace of future smart cities with 5G technologies." *IEEE Network* 34, no. 4 (2020): 336–342. (c) DOI: 10.1109/MNET.001.1900559

J114 Shahzana Liaqat, **Adnan Akhunzada**, Fatema Sabeen Shaikh, Athanasios Giannetsos, and Mian Ahmad Jan. "SDN orchestration to combat evolving cyber threats in Internet of Medical Things (IoMT)." *Computer Communications* 160 (2020): 697–705. DOI: 10.1016/j.comcom.2020.07.006

J115 Abdul Jabbar, Sajid Iqbal, Manzoor Ilahi Tamimy, Shafiq Hussain, and **Adnan Akhunzada**. "Empirical evaluation and study of text stemming algorithms." *Artificial Intelligence Review* 53 (2020): 5559–5588. (c) DOI: 10.1007/s10462-020-09828-3

J116 Jahanzaib Malik, **Adnan Akhunzada**, Iram Bibi, Muhammad Talha, Mian Ahmad Jan, and Muhammad Usman. "Security-aware data-driven intelligent transportation systems." *IEEE Sensors Journal* 21, no. 14 (2020): 15859–15866. (c) DOI: 10.1109/JSEN.2020.3012046

J117 Jahanzaib Malik, **Adnan Akhunzada**, Iram Bibi, Muhammad Imran, Arslan Musaddiq, and Sung Won Kim. "Hybrid deep learning: An efficient reconnaissance and surveillance detection mechanism in SDN." *IEEE Access* 8 (2020): 134695–134706. (c) DOI: 10.1109/ACCESS.2020.3009849

J118 Faizan Murtaza, **Adnan Akhunzada**, Saif ul Islam, Jalil Boudjadar, and Rajkumar Buyya. "QoS-aware service provisioning in fog computing." *Journal of Network and Computer Applications* 165 (2020): 102674. (c) DOI: 10.1016/j.jnca.2020.102674

J119 Awais Manzoor, Malik Ali Judge, Ahmad Almogren, **Adnan Akhunzada**, Salmah Fattah, Abdullah Gani, and Mahdi Zareei. "A priori multiobjective self-adaptive multi-population based jaya algorithm to optimize ders operations and electrical tasks." *IEEE Access* 8 (2020): 181163–181175. DOI: 10.1109/ACCESS.2020.3028274

J120 Iram Bibi, **Adnan Akhunzada**, Jahanzaib Malik, Javed Iqbal, Arslan Musaddiq, and Sungwon Kim. "A dynamic DL-driven architecture to combat sophisticated Android malware." *IEEE Access* 8 (2020): 129600–129612. (c) DOI: 10.1109/ACCESS.2020.3009819

J121 Javed Iqbal, Rodina B. Ahmad, Muzafar Khan, Sultan Alyahya, Mohd Hairul Nizam Nasir, **Adnan Akhunzada**, and Muhammad Shoaib. "Requirements engineering issues causing software development outsourcing failure." *PLOS ONE* 15, no. 4 (2020): e0229785. (c) DOI: 10.1371/journal.pone.0229785

J122 S. Haider, **Adnan Akhunzada**, I. Mustafa, T.B. Patel, A. Fernandez, K.-K.R. Choo, and J. Iqbal. "A deep CNN ensemble framework for efficient DDoS attack detection in software defined networks." *IEEE Access* 8 (2020): 53972–53983. DOI: 10.1109/ACCESS.2020.2976908

2020 | CONFERENCE PAPERS AND BOOK CHAPTERS

1 paper

C26 Tooba Hasan, **Adnan Akhunzada**, Thanassis Giannetsos, and Jahanzaib Malik. "Orchestrating SDN control plane towards enhanced IoT security." In *2020 6th IEEE Conference on Network Softwarization (NetSoft)*, pp. 457–464. IEEE, 2020. DOI: 10.1109/NetSoft48620.2020.9165424

2019 | JOURNAL ARTICLES

4 articles

J123 Asfa Toor, Saif ul Islam, Nimra Sohail, **Adnan Akhunzada**, Jalil Boudjadar, Hasan Ali Khattak, Ikram Ud Din, and Joel JPC Rodrigues. "Energy and performance aware fog computing: A case of DVFS and green renewable energy." *Future Generation Computer Systems* 101 (2019): 1112–1121. (c) DOI: 10.1016/j.future.2019.07.010

J124 Abdul Jabbar, Saif ul Islam, Shafiq Hussain, **Adnan Akhunzada**, and Manzoor Ilahi. "A comparative review of Urdu stemmers: Approaches and challenges." *Computer Science Review* 34 (2019): 100195. DOI: 10.1016/j.cosrev.2019.100195

J125 Zulfiqar Ali, Shagufta Henna, **Adnan Akhunzada**, Mohsin Raza, and Sung Won Kim. "Performance evaluation of LoRaWAN for green Internet of Things." *IEEE Access* 7 (2019): 164102–164112. (c) DOI: 10.1109/ACCESS.2019.2943720

J126 T. Khan, M. Alam, **Adnan Akhunzada**, A. Hur, M. Asif, and M.K. Khan. "Towards augmented proactive cyberthreat intelligence." *Journal of Parallel and Distributed Computing* 124 (2019): 47–59. DOI: 10.1016/j.jpdc.2018.10.006

2019 | CONFERENCE PAPERS AND BOOK CHAPTERS

7 papers

C27 Iram Bibi, **Adnan Akhunzada**, Jahanzaib Malik, Ghufran Ahmed, and Mohsin Raza. "An effective Android ransomware detection through multi-factor feature filtration and recurrent neural network." In *2019 UK/China Emerging Technologies (UCET)*, pp. 1–4. IEEE, 2019. (c) DOI: 10.1109/UCET.2019.8881884

C28 Shahzeb Haider, **Adnan Akhunzada**, Ghufran Ahmed, and Mohsin Raza. "Deep learning based ensemble convolutional neural network solution for distributed denial of service detection in SDNs." In *2019 UK/China Emerging Technologies (UCET)*, pp. 1–4. IEEE, 2019. (c) DOI: 10.1109/UCET.2019.8881856

C29 Sardar Mehboob Hussain, Abdul Wahid, Munam Ali Shah, **Adnan Akhunzada**, Faheem Khan, Noor ul Amin, Saba Arshad, and Ihsan Ali. "Seven pillars to achieve energy efficiency in high-performance computing data centers." *Recent Trends and Advances in Wireless and IoT-enabled Networks* (2019): 93–105. DOI: 10.1007/978-3-319-99966-1_9

C30 Muhammad Mashab Farooqi, Munam Ali Shah, Abdul Wahid, **Adnan Akhunzada**, Faheem Khan, Noor ul Amin, and Ihsan Ali. "Big data in healthcare: a survey." *Applications of Intelligent Technologies in Healthcare* (2019): 143–152. DOI: 10.1007/978-3-319-96139-2_14

C31 Waleed Rafiq, Abdul Wahid, Munam Ali Shah, and **Adnan Akhunzada**. "Internet traffic flow analysis in fog computing: an experimental case study." *Recent Trends and Advances in Wireless and IoT-enabled Networks* (2019): 83–92. DOI: 10.1007/978-3-319-99966-1_8

C32 Sidra Razzaq, Abdul Wahid, Faheem Khan, Noor ul Amin, Munam Ali Shah, **Adnan Akhunzada**, and Ihsan Ali. "Scheduling algorithms for high-performance computing: An application perspective of fog computing." *Recent Trends and Advances in Wireless and IoT-enabled Networks* (2019): 107–117. DOI: 10.1007/978-3-319-99966-1_10

C33 Umara Zafar, Munam Ali Shah, Abdul Wahid, **Adnan Akhunzada**, and Shahan Arif. "Exploring IoT applications for disaster management: identifying key factors and proposing future directions." *Recent Trends and Advances in Wireless and IoT-enabled Networks* (2019): 291–309. DOI: 10.1007/978-3-319-99966-1_27

2018 | JOURNAL ARTICLES

10 articles

J127 Shahid Hussain, Jacky Keung, Arif Ali Khan, Awais Ahmad, Salvatore Cuomo, Francesco Piccialli, Gwanggil Jeon, and **Adnan Akhunzada**. "Implications of deep learning for the automation of design patterns organization." *Journal of Parallel and Distributed Computing* 117 (2018): 256–266. DOI: 10.1016/j.jpdc.2017.06.022

J128 Mian Ahmad Jan, Syed Rooh Ullah Jan, Muhammad Alam, **Adnan Akhunzada**, and Izaz Ur Rahman. "A comprehensive analysis of congestion control protocols in wireless sensor networks." *Mobile Networks and Applications* 23 (2018): 456–468. DOI: 10.1007/s11036-018-1018-y

J129 Ayesha Siddiqa, Munam Ali Shah, Hasan Ali Khattak, **Adnan Akhunzada**, Ihsan Ali, Zaidi Bin Razak, and Abdullah Gani. "Social internet of vehicles: Complexity, adaptivity, issues and beyond." *IEEE Access* 6 (2018): 62089–62106. DOI: 10.1109/ACCESS.2018.2872928

J130 Abdul Jabbar, Sajid Iqbal, **Adnan Akhunzada**, and Qaisar Abbas. "An improved Urdu stemming algorithm for text mining based on multi-step hybrid approach." *Journal of Experimental & Theoretical Artificial Intelligence* 30, no. 5 (2018): 703–723. DOI: 10.1080/0952813X.2018.1467495

J131 Aqeb Yahya, Saif Ul Islam, **Adnan Akhunzada**, Ghufran Ahmed, Shahaboddin Shamshirband, and Jaime Lloret. "Towards efficient sink mobility in underwater wireless sensor networks." *Energies* 11, no. 6 (2018): 1471. (c) DOI: 10.3390/en11061471

J132 Ghufran Ahmed, Saif Ul Islam, Maham Shahid, **Adnan Akhunzada**, Sohail Jabbar, Muhammad Khurram Khan, Muhammad Riaz, and Kijun Han. "Rigorous analysis and evaluation of specific absorption rate (SAR) for mobile multimedia healthcare." *IEEE Access* 6 (2018): 29602–29610. (c) DOI: 10.1109/ACCESS.2018.2839909

J133 Farhana Jabeen, Zara Hamid, **Adnan Akhunzada**, Wadood Abdul, and Sanaa Ghouzali. "Trust and reputation management in healthcare systems: taxonomy, requirements and open issues." *IEEE Access* 6 (2018): 17246–17263. DOI: 10.1109/ACCESS.2018.2810337

J134 Said Bakhshad, Rafidah Noor, **Adnan Akhunzada**, Tanzila Saba, Ismail Bin Ahmedy, Faisal Haroon, and Babar Nazir. "A Dynamic Replication Aware Load Balanced Scheduling for Data Grids in Distributed Environments of Internet of Things." *Ad Hoc & Sensor Wireless Networks* 40 (2018). Publisher page

J135 Iyad Iqra, Tutut Herawan, Norjihan Abdul Ghani, **Adnan Akhunzada**, Akhtar Ali, Ramdan Bin Razali, Manzoor Ilahi, and Kim-Kwang Raymond Choo. "A novel association rule mining approach using TID intermediate itemset." *PLOS ONE* 13, no. 1 (2018): e0179703. (c) DOI: 10.1371/journal.pone.0179703

J136 Zulfiqar Ali, Shagufta Henna, Saif ul Islam, and **Adnan Akhunzada**. "Evaluation of Propagation Path Delay Using 3D Scattered Model in LoRaWAN." *Ad Hoc & Sensor Wireless Networks* 40, no. 3–4 (2018): 255–274. Publisher page

2018 | OTHER PUBLICATIONS (NON-REFEREED)

1 publication

N1 Tayyaba, Sahrish Khan, **Adnan Akhunzada**, Noor Ul Amin, Munam Ali Shah, Faheem Khan, and Ihsan Ali. "NPRA: Novel policy framework for resource allocation in 5G software defined networks." *EAI Endorsed Transactions on Mobile Communications and Applications* 4, no. 13 (2018). DOI: 10.4108/eai.22-3-2018.154387

2017 | JOURNAL ARTICLES

8 articles

J137 **Adnan Akhunzada** and Muhammad Khurram Khan. "Toward secure software defined vehicular networks: Taxonomy, requirements, and open issues." *IEEE Communications Magazine* 55, no. 7 (2017): 110–118. (c) DOI: 10.1109/MCOM.2017.1601158

J138 Atique Ahmad Zafar, Shahela Saif, Muzafar Khan, Javed Iqbal, **Adnan Akhunzada**, Abdul Wadood, Ahmad Al-Mogren, and Atif Alamri. "Taxonomy of factors causing integration failure during global software development." *IEEE Access* 6 (2017): 22228–22239. (c) DOI: 10.1109/ACCESS.2017.2782843

J139 Sidra Aslam, Saif ul Islam, Abid Khan, Mansoor Ahmed, **Adnan Akhunzada** and Muhammad Khurram Khan. "Information collection centric techniques for cloud resource management: Taxonomy, analysis and challenges." *Journal of Network and Computer Applications* 100 (2017): 80–94. (c) DOI: 10.1016/j.jnca.2017.10.021

J140 Masoom Alam, Saif-ur-Rehman Malik, Qaisar Javed, Abid Khan, Shamaila Bisma Khan, Adeel Anjum, Nadeem Javed, **Adnan Akhunzada** and Muhammad Khurram Khan. "Formal modeling and verification of security controls for multimedia systems in the cloud." *Multimedia Tools and Applications* 76 (2017): 22845–22870. (c) DOI: 10.1007/s11042-017-4853-0

J141 Akande Sheriff Abiodun, Mohammad Hossein Anisi, Ihsan Ali, **Adnan Akhunzada** and Muhammad Khurram Khan. "Reducing power consumption in wireless body area networks: a novel data segregation and classification technique." *IEEE Consumer Electronics Magazine* 6, no. 4 (2017): 38–47. DOI: 10.1109/MCE.2017.2715518

J142 Anam Nazir, Masoom Alam, Saif UR Malik, **Adnan Akhunzada**, Muhammad Nadeem Cheema, Muhammad Khurram Khan, Yang Ziang, Tanveer Khan, and Abid Khan. "A high-level domain-specific language for SIEM (design, development and formal verification)." *Cluster Computing* 20 (2017): 2423–2437. (c) DOI: 10.1007/s10586-017-0819-2

J143 Nighat Usman, Qaisar Javaid, **Adnan Akhunzada**, Kim-Kwang Raymond Choo, Saeeda Usman, Asma Sher, Manzoor Ilahi, and Masoom Alam. "A novel Internet of Things-centric framework to mine malicious frequent patterns." *IEEE Access* 7 (2017): 133914–133923. (c) DOI: 10.1109/ACCESS.2017.2690456

J144 Ahmed Abdelaziz, Ang Tan Fong, Abdullah Gani, Usman Garba, Suleman Khan, **Adnan Akhunzada**, Hamid Talebian, and Kim-Kwang Raymond Choo. "Distributed controller clustering in software defined networks." *PLOS ONE* 12, no. 4 (2017): e0174715. (c) DOI: 10.1371/journal.pone.0174715

2017 | OTHER PUBLICATIONS (NON-REFEREED) 1 publication

N2 Awais Manzoor, Abdul Wahid, Munam Ali Shah, **Adnan Akhunzada**, and Faisal Fayyaz Qureshi. "Secure login using multi-tier authentication schemes in fog computing." *EAI Endorsed Transactions on Internet of Things* 3, no. 11 (2017). DOI: 10.4108/eai.26-3-2018.154382

2016 | JOURNAL ARTICLES 7 articles

J145 **Adnan Akhunzada**, Abdullah Gani, Nor Badrul Anuar, Ahmed Abdelaziz, Muhammad Khurram Khan, Amir Hayat, and Samee U. Khan. "Secure and dependable software defined networks." *Journal of Network and Computer Applications* 61 (2016): 199–221. (c) DOI: 10.1016/j.jnca.2015.11.012

J146 Quratulain Alam, Saher Tabbasum, Saif UR Malik, Masoom Alam, Tamleek Ali, **Adnan Akhunzada**, Samee U. Khan, Athanasios V. Vasilakos, and Rajkumar Buyya. "Formal Verification of the xDAuth Protocol." *IEEE Transactions on Information Forensics and Security* 11, no. 9 (2016). (c) DOI: 10.1109/TIFS.2016.2561909

J147 Quratulain Alam, Saif UR Malik, **Adnan Akhunzada**, Kim-Kwang Raymond Choo, Saher Tabbasum, and Masoom Alam. "A cross-tenant access control (CTAC) model for cloud computing: formal specification and verification." *IEEE Transactions on Information Forensics and Security* 12, no. 6 (2016): 1259–1268. (c) DOI: 10.1109/TIFS.2016.2646639

J148 Saif Ur Rehman Khan, Sai Peck Lee, Raja Wasim Ahmad, **Adnan Akhunzada**, and Victor Chang. "A survey on Test Suite Reduction frameworks and tools." *International Journal of Information Management* 36, no. 6 (2016): 963–975. (c) DOI: 10.1016/j.ijinfomgt.2016.05.025

J149 Masoom Alam, Asif Ihsan, Muazzam A. Khan, Qaisar Javaid, Abid Khan, Jawad Manzoor, **Adnan Akhunzada**, M. Khurram Khan, and Sajid Farooq. "Optimizing SIEM throughput on the cloud using parallelization." *PLOS ONE* 11, no. 11 (2016): e0162746. (c) DOI: 10.1371/journal.pone.0162746

J150 Misbah Liaqat, Abdullah Gani, Mohammad Hossein Anisi, Siti Hafizah Ab Hamid, **Adnan Akhunzada**, Muhammad Khurram Khan, and Rana Liaqat Ali. "Distance-based and low energy adaptive clustering protocol for wireless sensor networks." *PLOS ONE* 11, no. 9 (2016): e0161340. (c) DOI: 10.1371/journal.pone.0161340

J151 Ahmed Abdelaziz, Tan Fong Ang, Mehdi Sookhak, Suleman Khan, Athanasios Vasilakos, Chee Sun Liew, and **Adnan Akhunzada**. "Survey on network virtualization using OpenFlow: Taxonomy, opportunities, and open issues." *KSII Transactions on Internet and Information Systems (TIIS)* 10, no. 10 (2016): 4902–4932. DOI: 10.3837/tiis.2016.10.015

2015 | JOURNAL ARTICLES 6 articles

J152 **Adnan Akhunzada**, Ejaz Ahmed, Abdullah Gani, Muhammad Khurram Khan, Muhammad Imran, and Sghaier Guizani. "Securing software defined networks: taxonomy, requirements, and open issues." *IEEE Communications Magazine* 53, no. 4 (2015): 36–44. (c) DOI: 10.1109/MCOM.2015.7081073

J153 **Adnan Akhunzada**, Mehdi Sookhak, Nor Badrul Anuar, Abdullah Gani, Ejaz Ahmed, Muhammad Shiraz, Steven Furnell, Amir Hayat, and Muhammad Khurram Khan. "Man-At-The-End attacks: Analysis, taxonomy, human aspects, motivation and future directions." *Journal of Network and Computer Applications* 48 (2015): 44–57. (c) DOI: 10.1016/j.jnca.2014.10.009

J154 Khubaib Amjad Alam, Rodina Ahmad, **Adnan Akhunzada**, Mohd Hairul Nizam Md Nasir, and Samee U. Khan. "Impact analysis and change propagation in service-oriented enterprises: A systematic review." *Information Systems* 54 (2015): 43–73. DOI: 10.1016/j.is.2015.06.003

J155 Mehdi Sookhak, Abdullah Gani, Hamid Talebian, **Adnan Akhunzada**, Samee U. Khan, Rajkumar Buyya, and Albert Y. Zomaya. "Remote data auditing in cloud computing environments: a survey, taxonomy, and open issues." *ACM Computing Surveys (CSUR)* 47, no. 4 (2015): 1–34. DOI: 10.1145/2764465

J156 Mehdi Sookhak, **Adnan Akhunzada**, Alireza Sookhak, Mohammadreza Eslaminejad, Abdullah Gani, Muhammad Khurram Khan, Xiong Li, and Xiaomin Wang. "Geographic wormhole detection in wireless sensor networks." *PLOS ONE* 10, no. 1 (2015): e0115324. DOI: 10.1371/journal.pone.0115324

J157 Ejaz Ahmed, **Adnan Akhunzada**, Md Whaiduzzaman, Abdullah Gani, Siti Hafizah Ab Hamid, and Rajkumar Buyya. "Network-centric performance analysis of runtime application migration in mobile cloud computing." *Simulation Modelling Practice and Theory* 50 (2015): 42–56. DOI: 10.1016/j.simpat.2014.07.001

2015 | CONFERENCE PAPERS AND BOOK CHAPTERS

2 papers

C34 **Adnan Akhunzada**, Abdullah Gani, Shahid Hussain, and Arif Ali Khan. "Towards experiencing the pair programming as a practice of the Rational Unified Process (RUP)." In *2015 SAI Intelligent Systems Conference (IntelliSys)*, pp. 537–542. IEEE, 2015. (c) DOI: 10.1109/intellisys.2015.7361192

C35 **Adnan Akhunzada**, Abdullah Gani, Shahid Hussain, and Arif Ali Khan. "A formal framework for web service broker to compose QoS measures." In *2015 SAI Intelligent Systems Conference (IntelliSys)*, pp. 532–536. IEEE, 2015. (c) DOI: 10.1109/intellisys.2015.7361191

2014 | JOURNAL ARTICLES

1 article

J158 Mehdi Sookhak, **Adnan Akhunzada**, Abdullah Gani, Muhammad Khurram Khan, and Nor Badrul Anuar. "Towards dynamic remote data auditing in computational clouds." *The Scientific World Journal* 2014 (2014): 269357. DOI: 10.1155/2014/269357

2014 | CONFERENCE PAPERS AND BOOK CHAPTERS

1 paper

C36 Ejaz Ahmed, Salman Ali, **Adnan Akhunzada**, and Ibrar Yaqoob. "Cognitive radio sensor networks: Bridging the gap for network communication." In *Cognitive Radio Sensor Networks: Applications, Architectures, and Challenges*, pp. 160–195. IGI Global, 2014. DOI: 10.4018/978-1-4666-6212-4.ch007

2009 | JOURNAL ARTICLES

1 article

J159 **Adnan Akhunzada**, Saeed Murtaza, Ahmad Raza Cheema, and Arif Wahla. "Suggestion of new core point of attacks on IEEE 802.16e networks: A survey." *International Journal of Computer and Network Security* 1, no. 3 (2009): 1–6.