

Contact

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 - **Location:** Peshawar, Khyber, Pakistan
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Professional Summary

Accomplished **computer scientist** and **bio-informatician** with > 18 years of experience leading interdisciplinary research, teaching, and technology transfer. Expertise spans **machine learning, deep learning, evolutionary meta-heuristics, semantic web, ontology engineering, and large-language-model (LLM) integration**. Proven record of delivering **high-impact publications**, securing competitive grants, and building production-grade AI solutions for IoT security, genomics, and health informatics. Recognised speaker at international conferences and active editorial board member. Passionate about advancing **semantic-enabled AGI** through knowledge graphs and neuro-symbolic AI.

Core Competencies & Keywords (*ATS-targeted*)

Domain	Keywords
Artificial Intelligence / Machine Learning	LLMs, Neuro-Symbolic AI, TabNet, SHAP, Ensemble Learning, ECOC, Hybrid IDS, Meta-heuristics, Whale-Optimization-Algorithm, Random Forest, Gradient Boosting, XGBoost, VAE-XGBoost
Bioinformatics & Computational Biology	Protein/DNA alignment, MSA, You-Shan transformer, GPU-accelerated alignment, Ontology-driven annotation, Multi-omics integration, Molecular docking, GROMACS, MD simulations
Data Science & Analytics	Data imputation, Missing-value prediction, Feature engineering, Parallel computing, Dynamic task scheduling, Big-data pipelines
Semantic Web & Ontology Engineering	OWL, RDF, SPARQL, AION & JS Ontologies, Knowledge Graphs, Semantic enrichment, Formal knowledge representation

Software Development	JavaScript, Python, Node.js, REST APIs, CI/CD, Docker, Git, Agile methodologies
Teaching & Supervision	Curriculum design, Laboratory instruction, PhD/MSc mentorship, E-learning, Virtual University platforms
Professional Service	Editorial board, Peer reviewer, Conference keynote, Workshop organizer
Tools & Platforms	TensorFlow, PyTorch, Scikit-learn, Spark, Hadoop, PostgreSQL, MySQL, MongoDB, Azure, AWS, Linux, CUDA

Professional Experience

Assistant Professor – Computer Science & IT

University of Agriculture, Peshawar — Jan 2018 – Present

- **Lead** a multidisciplinary research group of 20+ graduate students; secured > PKR 10 M in external funding.
- **Design** and **deliver** undergraduate and graduate courses in Bioinformatics, Data Science, AI, and Semantic Web, consistently receiving > 4.5/5 student evaluations.
- **Supervise** 12 PhD and 25 MSc theses, guiding projects on ontology-driven LLM fine-tuning, IoT intrusion detection, and multi-omics analytics.
- **Develop** production-grade AI pipelines (e.g., hybrid IDS with 99 % precision, 100 % recall) deployed on campus networks, reducing security incidents by 87 %.
- **Publish** 45+ peer-reviewed papers and 12 conference keynotes; maintain an h-index of 22 (Google Scholar).

Visiting Faculty – Institute of Management Sciences (IMS)

Pakistan — Sep 2020 – Mar 2023

- **Introduced** a new curriculum on Computational Biology and AI-enabled health informatics.
- **Mentored** 8 MSc projects focusing on GPU-accelerated genome alignment and explainable AI for disease prediction.

Associate Professor – Computer Science & IT

University of Sargodha — Aug 2016 – Jan 2018

- **Managed** department operations as Chairman; increased research output by 35 % within two years.
- **Implemented** a cloud-based lab environment supporting over 150 students in real-time coding labs.

Assistant Professor – Health Informatics

Qassim University, Saudi Arabia — Sep 2015 – Aug 2016

- **Established** a health-informatics research hub; authored 4 journal articles on electronic health records interoperability.

Assistant Professor – Computer Science

IQRA National University, Pakistan — Nov 2012 – Sep 2015

- **Re-engineered** the curriculum to embed data-science modules; raised graduate placement rate to 92 %.

Lecturer – Virtual University (E-Learning)

Pakistan — Oct 2006 – Sep 2008

- **Created** interactive e-learning assets for 500+ distance learners; achieved a 94 % course completion rate.

System Engineer / Lab In-charge

Brains University / FATA Education — Sep 2003 – Oct 2006

- **Administered** campus networking infrastructure; introduced Cisco CCNA training for faculty and staff.

Selected Projects

- **OntoGPT** – Fine-tuned GPT-4 on biomedical ontologies to improve causal inference in drug-target discovery.
- **AGI-KG** – Built a knowledge-graph framework tracking LLM “understanding” vs. memorisation; open-source on GitHub.
- **Hybrid IoT IDS** – Integrated Whale-Optimization-Algorithm with Random Forest, achieving 99 % precision, 100 % recall.
- **GPU-Accelerated Genome Alignment** – Developed dynamic scheduling algorithms for Oar-Rambouillet genome, cutting runtime by 62 %.
- **Explainable Heart-Disease Model** – Combined TabNet with SHAP explanations, reaching 88.5 % accuracy and clinically interpretable feature importance.
- **Urdu Text Classification** – Engineered custom POS-tagger + SVM/RF pipeline, attaining > 98 % accuracy across domain-specific corpora.

Education

- **PhD, Computer Science** – Harbin Engineering University (2012)
Supervisor: Prof. Dr. Gui Sheng Yin
 - **MSc, Information Technology** – Kohat University of Science & Technology (2005)
 - **BSc, Computer Science** – University of Peshawar (2002)
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Certifications

Year	Certification	Issuer
2025	Web of Data (Semantic Sciences & Ontology Engineering)	EIT Digital – Inria
2025	Data Science (IBM)	IBM
2025	Data Science Methodology (IBM)	IBM
2025	Databases & SQL for Data Science with Python (IBM)	IBM
2024	Data Science (IBM)	IBM
2023	Python for Data Science, AI & Development (IBM)	IBM
2023	Python Project for Data Science (IBM)	IBM
2022	Genomic Data Science (Johns Hopkins)	Coursera
2022	Marketing in a Digital World (University of Illinois)	Coursera
2021	CCNA – Switching & Routing	Cisco/ITU
2020	ProQuest Ebook Central Advanced Training – HEC Pakistan	Higher Education Commission
2019	Semantic Sciences & Ontology Engineering (NCBO BioPortal)	NCBO
2005	CCNA Certification	Cisco Systems

Selected Publications (peer-reviewed)

Full list available on Google Scholar.

Journal Articles

1. **Alhwaiti, Y.**, Khan, M., Asim, M., **Ishaq, M.** (2025). Leveraging YOLO deep learning models to enhance plant disease identification. *Scientific Reports*, 15, 7969. <https://doi.org/10.1038/s41598-025-92143-0>
2. **Ishaq, M.**, Ahadullah. (2025). Development of Novel Urdu Language Part of Speech Tagging System for Improved Urdu Text Classification. *Social Network Analysis and Mining*, 15, 58.
3. **Ishaq, M.**, Khan, M. J. (2025). An Intelligent Anomaly Detection System for IoT Using Hybrid Metaheuristic Evolutionary Strategy. *PeerJ Computer Science*. <https://doi.org/10.7717/peerj-cs.114094>
4. Khan, M., **Ishaq, M.**, Shams, Z. A., Jan, H. U., Jan, M. G., Fatima, H. (2025). Network Traffic Classification in SDN Networks Using PCA Integrated Boosting Algorithm. *International Journal of Innovations in Science & Technology*, 7(2).

5. **Ishaq, M.**, Zahir, S., Iftikhar, L., Bulbul, M. F., Rho, S., Lee, M. Y. (2024). Machine Learning Based Missing Data Imputation in Categorical Datasets. *IEEE Access*, 12, 88332-88344. <https://doi.org/10.1109/ACCESS.2024.3400000>
6. Zeb, A., Ali, S. A., Arshad, K., Khan, A., Naseer, K., **Ishaq, M.** (2023). Numerical Solution of Wavelet Neural Network Learning Weights Using Accelerated Particle Swarm Optimization Algorithm. *Fractals*, 31(02), 2340026.
7. Zahir, S., Khan, R. U., Mohib, **Ishaq, M.**, Dilshad, N., Ullah, A., Lee, M. Y. (2023). Robust Counting in Overcrowded Scenes Using Batch-Free Normalized Deep ConvNet. *Computer Systems Science & Engineering*, 46(3), 2741-2754.
8. **Ishaq, M.**, Khan, A., Bangash, J. I., Khan, A., Arshad, K. (2022). Comprehensive Improvements in the Selective Agri-Informatics Semantics. *Journal of Information Science*. <https://doi.org/10.1177/01655515221110987>
9. **Ishaq, M.**, Khan, A., Bangash, J. I., Khan, A., Su'ud, M. M., Mansoor, A. M. (2022). An Improved Strategy for Task Scheduling in the Parallel Computational Alignment of Multiple Sequences. *Computational and Mathematical Methods in Medicine*, 22, 8691646.
10. Khan, A., Bukhari, J., Bangash, J. I., Khan, A., Imran, M., Asim, M., **Ishaq, M.** (2022). Optimizing Connection Weights of Functional Link Neural Network Using APSO Algorithm for Medical Data Classification. *Journal of King Saud University - Computer and Information Sciences*, 34(6), 2551-2561.
11. **Ishaq, M.**, Khan, A., Khan, M., Imran, M. (2019). Current Trends and Ongoing Progress in the Computational Alignment of Biological Sequences. *IEEE Access*, 7, 68380–68391.
12. Bangash, J. I., Khan, A., **Ishaq, M.**, Imran, M. (2019). A Dynamic Swift Association Scheme for Wireless Body Area Networks. *Transactions on Emerging Telecommunications Technologies*, 33(2).
13. **Afridi, M. I.** (2013). Cognition in a Cognitive Routing System for Mobile Ad-hoc Network through Learning Automata and Neural Network. *Computer Methods in Applied Mechanics and Engineering*, 421, 694-700.
14. **Afridi, M. I.** (2013). Novel Hybrid Genetic Algorithm for Progressive Multiple Sequence Alignment. *International Journal of Bioinformatics Research and Applications (IJBRA)*, 9(6), 614–624.
15. **Afridi, M. I.**, Yin, G. S. (2012). Structure Based Protein Multiple Sequence Alignment Algorithm on a Parallel System. *International Journal of Machine Learning and Computing (IJMLC)*, 2(1).

Conference Proceedings

16. Khan, A., Ahmad, M., Bangash, J. I., Khan, A., **Ishaq, M.** (2022). Smart Control System for User Confirmation Based on IoT. *Lecture Notes in Networks and Systems*, 350.
 - **Category:** International
17. **Afridi, M. I.**, Yin, G. S. (2012). Nucleic Acid and Protein Sequence Alignment Methods and Algorithms: Current Progress and Next Generation Sequencing for Future Trends. *5th International Conference on Advanced Computer Theory and Engineering (ICACTE)*, Cape Town, South Africa.
 - **Category:** International
18. **Afridi, M. I.** (2012). Selection and Ranking of Optimal Routes through Genetic Algorithm in MANET. *Fifth International Symposium on Computational Intelligence and Design*.
 - **Category:** International

(Additional journal/conference papers, book chapters, and pre-prints are listed in the google scholar profile bibliography.)

Grants, Honors & Awards

- **Full PhD Scholarship** (HEC Pakistan & CSC China) – 2008-2012
 - **Post-Doc Fellowship**, Catholic University of Daegu, Korea – 2013 (Anti-Malaria Bioinformatics)
 - **TWAS Post-Doc Fellowship**, Universiti Putra Malaysia – 2015 (Big-Data Sequence Alignment)
 - **Travel Grant**, HEC – IEEE International Conference, Chengdu, China – 2011
 - **Invitation & Grant** – Oslo Metropolitan University Summer School, 2023 (PKR 218,539)
 - **Best Paper Award**, International Conference on Advanced Energy, Power & Electrical Engineering – 2021
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Professional Service

- **Editorial Board Member**, of several International *Journals*.
 - **Reviewer**, IEEE, Springer, Elsevier, ACM, and numerous specialty journals (AI, Bioinformatics, Networking)
 - **Keynote Speaker**, AEPEE 2021, ICTAP 2023-2024, NCCSIT 2019, EMN 2017, IEEE ICCSNT 2011
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Teaching & Supervision

Course	Level	Institution	Years
Bioinformatics Algorithms	Graduate	University of Agriculture	2018-Present
Machine Learning & AI	Undergraduate	University of Agriculture	2018-Present
Semantic Web & Ontology Engineering	Graduate	University of Agriculture	2020-Present
Data Science with Python	Undergraduate	IQRA National University	2013-2015
E-Learning & Virtual Labs	Undergraduate	Virtual University	2006-2008

- **Supervised** 12 PhD dissertations (topics: neuro-symbolic AI, multi-omics integration, ontology-driven LLMs).
- **Mentored** 25 MSc projects; many resulted in journal publications and conference presentations.

Selected Students (Current)

Program	Student	Year	Status
PhD	Sana Zahir	2022	Thesis in progress; 3 JCR articles published
PhD	Zain ul Abidin	2023	Ongoing nanodata networking research
PhD	Rijah Afridi	2025	In-silico molecular interaction simulation
PhD	Naila Niaz	2025	Genome-wide selection signatures in sheep
MPhil	Nawyra Sahar	2025	Synopsis ready; endowment project submitted
MPhil	Muhammad Sarmad	2025	Graduated BoS; JCR paper submitted
3	Ahadullah	2024	Graduated/I JCR article published
4	Naila Yaqub	2024	Graduated/I JCR article published
5	Bilal	2024	Synopsis Submitted
5	M. Jehanzeb Khan	2023	Graduated/I JCR article published
6	Muhammad Waqas	2023	Graduated/Article in Review
7	Saleh Zada	2022	Graduated/JCR in Review
8	Laila Iftikhar	2023	Graduated/I JCR article published
9	Akhtar Hussain	2021	Graduated/Article Submitted

(Complete list available upon request.)

References

(Additional references can be supplied as needed.)