

Dr. Mahwish Yousaf

Machine Learning · Federated Learning · Secure Data Analytics

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PROFILE

Postdoctoral researcher specializing in machine learning, federated learning, and secure data analytics. Experience spans independent research design, peer-reviewed publication, and journal reviewing, with a focus on methodological rigour, reproducibility, and novelty assessment. Regularly evaluates machine learning experiments, results, and related literature.

WORK EXPERIENCE

Postdoctoral Research Fellow

Institute of Intelligent Machines, Hefei Institutes of Physical Science, Chinese Academy of Sciences · Hefei, China · 1 August 2024 – 4 May 2026

- **Research focus:** Integrated AI, machine learning, cryptography, and privacy-preserving techniques to enhance data security in blockchain and quantum cryptography, with applications in healthcare and big data.
- **Method development:** Designed computational solutions addressing privacy challenges in healthcare data systems.
- **Mentorship:** Supervised master's and PhD students in research design, experimentation, and academic writing.
- **Scientific contribution:** Led independent research, reviewed manuscripts, presented at conferences, and published in high-impact venues.

Postdoctoral Researcher

University of Science and Technology of China · Hefei, China · 7 August 2021 – 30 June 2024

- Researched nonlinear dimension reduction via Isomap, integrating AI, machine learning, and quantum techniques.
- Developed improved algorithms overcoming Isomap's limitations and applied privacy-preserving cryptography to cloud data security.
- Supervised master's and PhD students in research design, technical training, and academic writing.
- Published in top-tier journals, reviewed manuscripts, and presented at international conferences.
- Awarded Best Paper at the 2023 International Conference on Big Data and Artificial Intelligence.

Lecturer

University of Gujrat, Lahore Campus · Lahore, Pakistan · 5 November 2015 – 29 May 2016

- Delivered undergraduate courses in C/C++, data structures, algorithms, and object-oriented programming for classes of approximately 35 students.
- Designed instructional materials and programming labs, integrating multimedia tools to support learning.
- Maintained attendance and assessment records and provided data-driven feedback to improve student performance.

Lecturer

Government Queen Mary College, Lahore · Lahore, Pakistan · 3 November 2012 – 29 June 2015

- Taught undergraduate computer science courses — C/C++, Java, JavaScript, Visual Basic, data structures, OOP, HTML, database systems, operating systems, and IT — for classes of 20 to over 100 students, achieving an 87% success rate.
- Designed instructional materials and multimedia aids and established a programming lab for hands-on learning.
- Oversaw student induction, placement testing, and academic records.

EDUCATION

Doctor of Engineering, Computer Science and Technology

School of Computer Science and Technology, University of Science and Technology of China · 18 September 2016 – 23 May 2021

Thesis: Research on Nonlinear Isomap Dimension Reduction Method for High-Dimensional Datasets

Master of Philosophy, Information Technology

Department of Information Technology, University of Gujrat, Lahore Campus · 9 October 2014 – 21 September 2016

Bachelor of Science, Computer Science

Department of Computer Science, Government Queen Mary College, Lahore · 19 October 2007 – 9 December 2011

PEER-REVIEWED PUBLICATIONS

Journal articles

1. Yihang Lu, **Mahwish Yousaf**, Xianwei Meng, and Enhong Chen. "MNT-TNN: Spatiotemporal Traffic Data Imputation via Compact Multimode Nonlinear Transform-Based Tensor Nuclear Norm." *Transportation Research Part C: Emerging Technologies*, 29 September 2025. doi.org/10.1016/j.trc.2025.105348
Corresponding author and supervisor; the work formed part of a PhD student's project.
2. **Mahwish Yousaf**, Muhammad Saadat Shakoor Khan, and Shamsheer Ullah. "An Extended-Isomap for High-Dimensional Data Accuracy and Efficiency: A Comprehensive Survey." *Multimedia Tools and Applications*, Springer, 14 August 2024. doi.org/10.1007/s11042-024-19917-y
3. Tanzeel U. Rehman, **Mahwish Yousaf**, and Li Jing. "A*-FastIsomap: An Improved Performance of Classical Isomap Based on A* Search Algorithm." *Neural Processing Letters*, Springer, 27 June 2022. doi.org/10.1007/s11063-022-10941-3
Corresponding author and supervisor; the work formed part of a master's student's thesis.
4. Shamsheer Ullah, Muhammad Tanveer Hussain, and **Mahwish Yousaf**. "QuSigS: A Quantum Signcryption Scheme to Recover Key Escrow Problem and Key Revocation Problem in Cloud Computing." *Multimedia Tools and Applications*, Springer, 13 August 2022. doi.org/10.1007/s11042-022-13502-x
5. Shamsheer Ullah, Zheng Jiangbin, Nizam Ud Din, Muhammad Tanveer Hussain, Farhan Ullah, and **Mahwish Yousaf**. "Elliptic Curve Cryptography: Applications, Challenges, Recent Advances, and Future Trends: A Comprehensive Survey." *Computer Science Review*, Elsevier, 18 December 2022. doi.org/10.1016/j.cosrev.2022.100530
6. **Mahwish Yousaf**, M. Saadat Khan, Tanzeel U. Rehman, Shamsheer Ullah, and Li Jing. "NRIC: A Noise Removal Approach for Nonlinear Isomap Method." *Neural Processing Letters*, Springer, 8 March 2021. doi.org/10.1007/s11063-021-10472-3
7. **Mahwish Yousaf**, Tanzeel U. Rehman, Dongliang Liao, Najia Alhusaini, and Li Jing. "FastIsomapVis: A Novel Approach for Nonlinear Manifold Learning." *IEEE Access*, vol. 8, pp. 199470–199481, 2020. doi.org/10.1109/ACCESS.2020.3017954
8. **Mahwish Yousaf**, Tanzeel U. Rehman, and Li Jing. "An Extended Isomap Approach for Nonlinear Dimension Reduction." *SN Computer Science*, Springer, 9 May 2020. doi.org/10.1007/s42979-020-00179-y

Conference papers

9. **Mahwish Yousaf**, Muhammad Saadat Shakoor Khan, Shamsheer Ullah, Shou Wang, and Li Jing. "NR-Isomap: An Incremental Approach with Gaussian Process Kernels for Denoising." 2023 IEEE 6th International Conference on Big Data and Artificial Intelligence (BDAI), 7 July 2023. doi.org/10.1109/BDAI59165.2023.10256697

MANUSCRIPTS UNDER REVIEW

Listed with their status as recorded in the source CV. These are not published works.

1. **Mahwish Yousaf**, Muhammad Saadat Shakoor, and Xianwei Meng. "Quantum Machine Learning for Big Data Security: An Experimental Study of Privacy and Threat Detection." *Quantum Machine Intelligence* — major revision, under review (21 April 2026).
2. **Mahwish Yousaf**, Muhammad Saadat Shakoor, Xianwei Meng, and Li Jing. "Quantum Machine Learning for Big Data Security and Privacy: Taxonomy, Challenges, and Future Trends." *ACM Computing Surveys* — under review (25 August 2025).
3. **Mahwish Yousaf**, Muhammad Saadat Shakoor, and Li Jing. "A Quantum Machine Learning Framework for Cyberattack Detection and Privacy-Aware Analytics in Big Data Environments." *Quantum Machine Intelligence* — under review (30 April 2026).

HONOURS AND AWARDS

Best Paper Award — 2023 IEEE 6th International Conference on Big Data and Artificial Intelligence (BDAI), 7 July 2023, for "NR-Isomap: An Incremental Approach with Gaussian Process Kernels for Denoising."

Gold Medal, MS Information Technology — University of Gujrat, Lahore Campus, Department of Information Technology, 10 February 2017.

CSC Scholarship for doctoral study — Chinese Government Scholarship Council, 31 August 2016, held at the University of Science and Technology of China, School of Computer Science and Technology.

Federal Government Scholarship for master's study — Ministry of Federal Education and Professional Training, Government of Pakistan, 31 August 2014.

REFEREES

References are available on request. Referee contact details are withheld from this public version.