CURRICULUM VITAE
Muhammad Waqas Arshad

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Academic Qualification

Ph.D. in Computer Science and Engineering   **2022–2025**

University of Bologna, Italy
- Focus Areas: Quantum Computing, Deep Learning, Machine Learning, Artificial Intelligence, Time Series Analysis, Computer Vision, Quantum Annealing, Optimization, Automotive Suspension Design, 2D/3D Mathematical and Design Modeling, Multi-Objective Optimization.
- Ph.D. Thesis (Submitted and Approved) (Expected defense on 25 March, 2026): *Geometric | Kinematic Modeling | Double Wishbone Suspension | Optimization | Quantum Computing | AI*

Quantum Information Science and Engineering High School Program   **2025 (4 days)**

Brookhaven National Laboratory; U.S. Department of Energy Office of Science; Virginia Tech; Codesign Center for Quantum Advantage (C2QA)
- Quantum Information Science (QIS) and Engineering

Advanced End-to-End Quantum Computing Technical (ADEQUATE)   **2023 (1 week)**

EIT Deep Tech Talent (European Union); Czech Technical University in Prague (CTU); University of Latvia (LU); QWorld
- Quantum algorithms and computational techniques

Summer School on Quantum Information   **2023 (1 week)**

Jülich Forschungszentrum; Supercomputing Center; JUNIQ (Quantum User Facility), Germany
- Summer School on Quantum Information Processing (Research Scholar)

Summer School on Artificial Intelligence   **2023 (1 week)**

University of Ljubljana, Slovenia
- European Summer School on AI (ESSAI) and 20th Advanced Course on AI (3rd TAILOR Summer School)

M.S. in Artificial Intelligence (Scholarship)   **2019–2022**

Air University, Islamabad, Pakistan
- Areas: Deep Learning, Machine Learning, Artificial Intelligence, Time Series Analysis, Computer Vision
- Dissertation: *Sales Prediction of Cardiac Products by Ensemble of Time Series, Deep Learning and Data-Driven Approaches*

B.S. in Computer Science (Scholarship)   **2015–2019**

PMAS Arid Agriculture University (UIIT), Rawalpindi, Pakistan
- Topics: Oracle Database, Web Development, Software Engineering, C++, CCNA, System Administration, Data Structures

- Dissertation: *Super Smart Glasses (replica of Google Glasses with extra features)*

A+ Fiber Optic System   2017

Punjab Technical Education Commission, Lahore
- Fiber optic systems, fiber connections, antennas

F.Sc. (Pre-Engineering), HSSC   2012–2014

Fazaia Inter College Chaklala (Rawalpindi) — Federal Council
- Physics, Mathematics, Chemistry, English

Matric (Computer Science), SSC   (Federal Council)

Fazaia Inter College Chaklala (Rawalpindi)
- Computer Science, Mathematics, English

Experience

IBM Qiskit Advocate   Present
Advancement of quantum computing and growing the Qiskit ecosystem in collaboration with IBM.

Visiting Research Scholar, Purdue University, Fort Wayne, IN, USA   Present
Specialization in Quantum Computing, AI, and Machine Learning with applications in time series analysis, computer vision, and automotive suspension; integration of 2D/3D design modeling for research and industry innovation.

PhD Research Scholar, Ferrari S.p.A., Maranello, Italy   Present
PhD collaboration between the University of Bologna and Ferrari focused on quantum computing research and optimization problems defined by Ferrari; ongoing research contributions and industrial engagement.

Head of IT, Warehouse & Research Department, Norwich Pharmaceuticals, Islamabad, Pakistan   2018–2023
- IT infrastructure management, software/hardware oversight, employee technical support, and data security.
- Warehouse operations: receiving, inventory management, and order fulfillment.
- Administration: record keeping, office logistics, budgeting.
- Import department: compliance, documentation, and coordination of import processes.
- Research coordination: collaboration with scientists; support for drug discovery and product development.

Head of Store Department & IT Consultant, PROMED International, Islamabad, Pakistan   2019–2023
- Oversaw warehouse activities and decision support for financial forecasting and profit/loss analysis.
- Managed requests for importing stents and balloons.
- Developed software and web applications for data analysis and management.

Head of the General Secretariat, Internet Society Blockchain Special Interest Group
2018–Present
- Worked on SOPs and laws regarding ethical use of blockchain technology.
- Responsible for administrative activities.

Communications Manager, Space of Peace Organization, Turkey   2019–2020
Registration: 27-020-028

- Data collection of funding organizations in Pakistan and coordination meetings for charitable donations.

Ethical Hacking Instructor, PMAS Arid Agriculture University (UIIT), Pakistan   2019
- Topics: penetration testing, website/Android security, role of ethical hackers in society.

Software Developer (Internship), National Highway Authority HQ, Islamabad, Pakistan
2018–2019
- Developed database management applications for tracking projects (e.g., road construction).
- Worked on vehicle recognition/detection for toll booth systems.

Software Developer (Internship), Fauji Foundation, Rawalpindi, Pakistan 07/2018–09/2018
- Database system upgrades; payroll management system support.
- Learned data analytics tools and big data management practices.

Computer Teacher, Nishat Degree College, Islamabad, Pakistan   2015–2017
- Taught computer languages and laboratory/practical modules from basic to advanced levels.
- Received appreciation as best computer teacher.

Publications

- Arshad, M. W., Lodi, S., & Liu, D. Q. (2025).Design and Multi-Objective Kinematic Optimization of 3D Double Wishbone Suspensions Using an Ensemble Optimization.*Applied Research*, Wiley.
- Arshad, M. W., Lodi, S., & Liu, D. Q. (2025). A Reinforcement Learning Approach for the Kinematic Optimization of Double-Wishbone Suspension Geometry. *Proceedings of the 32th International Conference on Systems Engineering (ICSEng)*, Warsaw, Poland, Springer (Accepted and Presented).
- Arshad, M. W., Lodi, S., & Liu, D. Q. (2025). Double Wishbone Suspension: A Computational Framework for Parametric 3D Kinematic Modeling and Simulation Using Mathematica. *Technologies*, 13(8), 332.
- Arshad, M. W., Lodi, S., & Liu, D. Q. (2025). An Advanced Hybrid Optimization Algorithm for Vehicle Suspension Design Using a QUBO-SQP Framework. *Mathematics*, 13, 3843.
- Arshad, M. W., & Lodi, S. (2025). Quantum computing in the automotive industry: survey, challenges, and perspectives. *The Journal of Supercomputing*, 81(10), 1–45.
- Arshad, M. W., Lodi, S., & Liu, D. Q. (2025). Multi-Objective Optimization of Independent Automotive Suspension by AI and Quantum Approaches: A Systematic Review. *Machines*, 13(3).
- Arshad, M. W., Lodi, S., & Liu, D. Q. (2025). A Hybrid Quantum-Classical Approach Using D-Wave and SLSQP for Double Wishbone Suspension System Optimization. In *2025 IEEE Conference on Artificial Intelligence (CAI)* (pp. 16–19). IEEE.
- Arshad, M. W., & Lodi, S. (2024). Optimization of Double Wishbone Suspension: Evaluating the Performance of Classes of Algorithms. In *International Conference on Applied Mathematics & Computer Science (ICAMCS)* (pp. 156–161). IEEE Computer Society.
- Decoodt, P., Arshad, M. W., Morissens, M., & Liu, D. Q. (2025). Quantum Machine Learning for Classification of Left Ventricular Ejection Fraction Phenotypes from Echocardiograms. In *IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI)*.
- Akhtar, S., Hanif, M., Saraoglu, H. M., Lal, S., & Arshad, M. W. (2025). YOLOv11-SAMNet: A Hybrid Detection and Segmentation Framework for Urine Sediment Analysis. In *International Conference on Computational Science and Its Applications* (pp. 241–251). Springer.
- Akhtar, S., Hanif, M., Arshad, M. W., & Farooq, F. (2025). Cutting-Edge Malware Detection in Healthcare: Leveraging Cascaded-AlexNet Model. In *International Conference on Computational Science and Its Applications* (pp. 89–100). Springer.
- AlShuaibi, A., Arshad, M. W., & Maayah, M. (2025). A hybrid genetic algorithm and hidden markov model-based hashing technique for robust data security. *Journal of Cyber Security and Risk Auditing*, 2025(3), 42–56.

- Ali, A., AlShuaibi, A., & Arshad, M. W. (2025). An Integrated Federated Learning Framework with Optimization for Industrial IoT Intrusion Detection. *SHIFRA*, 110–117.
- Hendrastuty, N., Ar'nars, M. G., Putra, T. A., & Arshad, M. W. (2024). Decision Support System in Teacher Pedagogy Assessment Using MAIRCA with Geometric Mean Weighting. In *ICIMCIS 2024* (pp. 265–270). IEEE.
- Shetty, N., Kumar, P. P., Nuvvula, R. S., Thalari, S. K., Arshad, M. W., Alubady, R., & Khan, B. (2024). AI-driven energy forecasting for EV charging stations powered by solar and wind energy. In *icSmartGrid 2024* (pp. 336–339). IEEE.
- Arshad, M. W. (2024). Combination of Multi-Attributive Ideal-Real Comparative Analysis and Rank Order Centroid in Supplier Performance Evaluation. *KLIK*, 4(4), 2330–2341.
- Arshad, M. W., Setiawansyah, S., & Sintaro, S. (2024). Comparative Analysis of MOORA and GRA with PIPRECIA Weighting in Selection of Warehouse Heads. *BEES*, 4(3), 112–122.
- Arshad, M. W. (2024). Entropy and Additive Ratio Assessment Methods in Determining the Best Warehouse Location. *Bulletin of Computer Science Research*, 4(4), 318–326.
- Bhardwaj, I., Biswas, T. R., Arshad, M. W., Upadhyay, A., & More, A. B. (2024). MIS-Function in Automotive Sales Promotion Planning Using ML. *Library Progress International*, 44(3), 3164–3170.
- Hadad, S. H., Subhan, S., Setiawansyah, S., Arshad, M. W., Yudhistira, A., & Rahmanto, Y. (2024). Combination of LOPCOW and MAIRCA in determining best production employees. *Jurnal Teknik Informatika (Jutif)*, 5(3), 843–853.
- Putra, A. D., Arshad, M. W., Setiawansyah, S., & Sintaro, S. (2024). Decision Support System for Best Honorary Teacher Performance Assessment using LOPCOW and MARCOS. *JoSYC*, 5(3), 578–590.
- Muda, I., Almahairah, M. S., Jaiswal, R., Kanike, U. K., Arshad, M. W., & Bhattacharya, S. (2023). Role of AI in Decision Making and its socio-psycho impact. *Journal for ReAttach Therapy and Developmental Diversities*, 6(5s), 517–523.
- Arshad, M. W., Murtza, I., & Arshad, M. A. (2023). Applications of Quantum Computing in Health Sector. *JDSIS*, 1(1), 19–24.
- Arshad, M. W. (2023). Detection of Human Gender from Eyes Images Using DNN Approach. *Jurnal Teknoinfo*, 17(2), 336–340.
- Arshad, M. W. (2023). Prediction and Diagnosis of Breast Cancer using ML and Ensemble Classifiers. *Central Asian Journal of Mathematical Theory and Computer Sciences*, 4(1), 49–56.
- Phatak, S. S., Patil, H. S., Arshad, M. W., et al. (2022). Advanced Face Detection using ML and AI-based Algorithm. In *IC3I 2022* (pp. 1111–1116). IEEE.
- Arshad, M. W., & Tahir, S. F. (2022). Sales Prediction of Cardiac Products by Time Series and Deep Learning. *International Journal of Innovations in Science & Technology*, 4(5), 1–11.
- Dubey, A., Mujoo, S., Hannan, S. A., Satpathy, G., Arshad, M. W., & Manikandan, E. Cancer prediction using RNA sequencing and deep learning.
- Hannan, S. A., Hivre, M., Lata, M., Krishna, B. H., Sathyasiva, S., & Arshad, M. W. (2022). Brain damage detection using ML approach. *International Journal of Health Sciences*, Special (7), 4910–4924.

Manuscripts Under Review

- A Surrogate Assisted Multi Objective Optimization Framework for the Kinematic Design of 3D Double Wishbone Suspension. (Submitted; Under review at *SN Computer Science*, Springer)
- A Hybrid Variational Quantum-Classical Framework for Multi-Objective Design Optimization of DWS Kinematics. (Submitted; Under review at *JESTECH*, Elsevier)
- HPC-Driven Hybrid Optimization of QUBO-Formulated Suspension Geometry: A Benchmark of Classical, Parallel, and Novel Metaheuristic Solvers. (Submitted; Under review at *Journal of Automation and Intelligence*, Elsevier)

Technical Program Committees and Reviewing

- Technical Committee Member, 2025 IEEE 38th International System-on-Chip Conference (SOCC)
- Technical Committee Member, icSoftComp2024 (Sixth International Conference on Soft Computing and its Engineering Applications), Springer
- Reviewer, *International Journal of Mining Science and Technology* (Q1)
- Reviewer, *IET Quantum Communication* (Q1)
- Reviewer, *Neural Computing and Applications* (Q1)
- Reviewer, *International Journal of Intelligent Information Systems*
- Reviewer, *Asian Journal of Education and Social Studies*
- Reviewer, *Journal of Data Science and Intelligent Systems (JDSIS)*
- Reviewer, IEEE Conference: ICECT 2024
- Reviewer, IEEE Conference: ICCIT

Achievements / Courses (Selected and Complete List)

- QNickel, QBronze Workshop on Quantum Computing & Programming (QWorld; CTE Cagliari DLAB; CRS4)
- 5-Day GenAI Course (Google & Kaggle), 2024–2025
- ICSI Certified Network Security Specialist
- Google Certified IT Support Specialist
- Certified IBM AI Engineering
- Nutanix Hybrid Cloud Scholarship Winner
- Autopsy Basics and Practice (8 hours)
- Communication During Emory University's Global Emergency
- COVID-19 Contact Tracing (Johns Hopkins University)
- Google Cloud Platform Fundamentals for AWS Professionals
- Machine Learning for Business (Google Cloud)
- Mathematical Skills in Data Science (Duke University)
- Successful Career Development (University System of Georgia)
- Klipfolio Certified Expert
- Microsoft Advertising Certified Professional
- SEMrush Social Media Toolkit Certified Exam
- Computer Vision (University at Buffalo)
- Artificial Intelligence (Accenture UK)
- Computer Programming for All (University of Leeds)
- Code Yourself! Introduction to Programming (University of Edinburgh)
- Oracle Database Developer Certificate (Oracle)
- Learn to Code for the Web (University of Leeds)
- Advanced Google Analytics (Google)
- Microsoft Word Specialist
- CCNA (Cisco Network Academy)
- Microsoft Virtual Academy Exam 70-532 (Microsoft Azure Development)
- SQL Online Certificate (Stanford University)
- Computer Science 101 Certificate (Stanford University)
- Oxford Home Study College: Hotel Management Course
- MS Excel 2013 Performing Calculations (Skillsoft)
- 6 Months Fiber Optic Technology (PSDF)
- Training on Development Governance Issues (NCRD)
- Human Capital Strategy (University of Philanthropy)
- Big Data Technology (AWS)
- Blockchain Course (HEC & PMAS Arid University)
- KarafarinShow Entrepreneur Show 2018: Certificate of Appreciation

- Rawalpindi Rising Star Award
- PAK-USA Embassy Cultural Exchange Program Event Certificate
- Awarded as Global Peace Ambassador (2019–2022)

Social Media

- LinkedIn: muhammad-waqas-arshad-5359b4139
- Google Scholar: Profile
- ORCID: 0000-0003-3262-5833

Memberships

- ACM
- IEEE
- ASTM
- IEEE Big Data Community
- National Youth Association (Ambassador)
- United Nations Volunteers
- IEEE International Blockchain Community
- Blockchain Entrepreneurial Lounge
- World Smile Archive (Ambassador)
- American Physical Society
- High Scope America
- Internet Society
- CIVICUS (Individual Associate Member)
- Internet Organization (South-Asia)
- Selected as Global Peace Ambassador

Languages

- English (Fully Professional)
- Italian (Beginner)
- Urdu (Expert)

References

Prof. Stefano Lodi
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Prof. David Q. Liu
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Prof. Syed Fahad Tahir
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