

IRFANA BIBI, PhD

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PROFESSIONAL SUMMARY

Accomplished Academic and Researcher with over 20 years of experience in higher education, institutional leadership, and advanced computing research. I earned my Ph.D. in Computer Science & Technology from the School of Artificial Intelligence, Xidian University, China, under the supervision of Professor Fang Liu. My core research interests span Digital Image Processing, Deep Learning, Graph Theory, Remote Sensing, and Artificial Intelligence, culminating in multiple peer-reviewed publications across high-impact SCI journals and internationally recognized IEEE conferences.

Throughout my career, I have demonstrated strong capabilities in academic administration and instructional design. Notably, I established and headed the BSCS program at NUML Lahore Campus (2021–2023) and previously directed multiple undergraduate computing streams (BSCS, BSSE, and BSIT) at the University of South Asia, Lahore. As an educator, I have delivered extensive core and elective computer science courses to both undergraduate and graduate student bodies, consistently earning excellent student evaluations. I am fully proficient in modern instructional design, online pedagogy, and advanced Learning Management Systems (LMS).

Currently, I bring an international research perspective to my work, serving as a collaborating researcher and the Pakistan Lead / Co-Investigator on a prestigious five-year, 10.25M DKK international project (2025–2030) funded by the DANIDA Fellowship Centre, Denmark. This active role involves high-level cross-border coordination with leading institutional partners across Denmark and Ethiopia to address groundwater sustainability through advanced ecohydrological remote sensing frameworks.

RESEARCH INTERESTS

My research lies at the intersection of **Computer Vision**, **Deep Learning**, and **Digital Image Processing**, with a focus on image segmentation, medical image analysis, object detection, and digital image forensics. Recently, my work has expanded into **Remote Sensing** and **Geospatial AI**, developing trustworthy machine learning models for sustainable agriculture, crop monitoring, and water-resource management. Additionally, I am passionate about building practical, high-impact intelligent systems—including AI-enabled security solutions, assistive technologies for Pakistan Sign Language recognition, and smart fitness applications.

RESEARCH SERVICES

Journal Reviewer	IEEE Transactions on Systems, Man, and Cybernetics: Systems, Science Progress, Frontiers in Education, Multimedia Tools and Applications, Artificial Intelligence Review (<i>UMT-AIR</i>),
Conference Reviewer	6th International Conference on Advancements in Computational Sciences (ICACS'25).

WORK EXPERIENCE

June 2023 – Present	Assistant Professor (TTS) Department of Computer Science, Faculty of Computing & IT (FCIT), University of the Punjab, Lahore
Sep 2021 – June 2023	Assistant Professor / Head of CS Department National University of Modern Languages (NUML), Lahore Campus
Oct 2020 – Sep 2021	Assistant Professor / Acting HoD University of South Asia (USA), Lahore
Feb 2020 – Nov 2020	Assistant Professor (Visiting Faculty) Punjab University (PUCIT - Old Campus), Lahore

Feb 2020 – Aug 2020	Assistant Professor (Visiting Faculty) Bahria University (Lahore Campus), Lahore
Sep 2015 – June 2019	Research Scholar (PhD) School of Artificial Intelligence, Xidian University, China
Aug 2008 – Aug 2014	Lecturer (Computer Science) Hazrat Ayesha Siddiq (HAS) Model Degree & Commerce College, Lahore
Sep 2002 – Apr 2006	Lecturer (Statistics) Garrison Post-graduate College for Women, Lahore

EDUCATION

2015 – 2019	PhD (Computer Science & Technology) Xidian University, China Specialization: Digital Image Processing
2014 – 2015	Chinese Language Study & HSK 3 Certification Xidian University / CSC Program, China Completed 1 year intensive language program and achieved HSK Level 3 proficiency.
2010 – 2012	MS (Total Quality Management) University of the Punjab, Lahore
2002 – 2004	M.Sc. (Computer Science) PUCIT, University of the Punjab, Lahore
1999 – 2001	M.Sc. (Statistics) University of the Punjab, Lahore

RESEARCH FUNDING

2025 – 2030	Competitive International Grant (DANIDA, Denmark) Role: Co-Investigator (Pakistan Lead) Funding Amount: 10.25 Million DKK (30,000 DKK reserved for personal research visits) Project: Enhancing groundwater resource management through remote sensing and ecohydrological nature-based solutions [Project Link] International Consortium Partners: • Denmark: Aarhus University. • Ethiopia: Hawassa University (HU), Addis Ababa University (AAU), and the Ministry of Water and Energy. Key Highlights: Features dedicated funding for two research visits to Denmark (scheduled for 2027 and 2030) and ongoing structural planning for semester-long exchange programs for BS/MS research students to access global laboratory infrastructure.
2024 – 2026	University of the Punjab Internal Research Grant Funding Amount: 0.2 Million PKR Funding provided in support of ongoing baseline artificial intelligence and machine learning research initiatives.

PUBLICATIONS

Journal Articles	
[Kar+26a]	Shahid Karim et al. “BHSS: Early Prevention for Financial Frauds—A Blockchain Hyperledger for Proposing Cost-Effective Scalability and Security to the Underdeveloped Countries”. In: <i>Human-centric Computing and Information Sciences</i> 16.1 (2026). SCIE — Q2 — HEC: W Category — IF: 3.0, pp. 1–24.
[Chu+24]	Muhammad Saad Chughtai et al. “Deep learning trends and future perspectives of web security and vulnerabilities”. In: <i>Journal of High Speed Networks</i> 30.1 (2024). ESCI — Q4 — HEC: X Category — IF: 1.0, pp. 1–32. DOI: 10.3233/JHS-230001 .

- [Kar+24a] Shahid Karim et al. “MCGAN—a cutting edge approach to real time investigate of multimedia deepfake multi collaboration of deep generative adversarial networks with transfer learning”. In: *Scientific Reports* 14.1 (2024). SCIE — Q1 — HEC: W Category — IF: 3.9, p. 29330. DOI: [10.1038/s41598-024-80842-z](https://doi.org/10.1038/s41598-024-80842-z).
- [Kar+21] Shahid Karim et al. “Auxiliary bounding box regression for object detection in optical remote sensing imagery”. In: *Sensing and Imaging* 22.1 (2021). ESCI — Q3 — HEC: X Category — IF: 2.0, p. 5. DOI: [10.1007/s11220-021-00327-w](https://doi.org/10.1007/s11220-021-00327-w).
- [Kar+20] Shahid Karim et al. “A brief review and challenges of object detection in optical remote sensing imagery”. In: *Multiagent and Grid Systems* 16.3 (2020). ESCI — Q4 — HEC: X Category — IF: 0.4, pp. 227–243. DOI: [10.3233/MGS-200233](https://doi.org/10.3233/MGS-200233).
- [Shi+20] Cheng Shi et al. “Hierarchical Multi-View Semi-Supervised Learning for Very High-Resolution Remote Sensing Image Classification”. In: *Remote Sensing* 12.6 (2020). SCIE — Q1 — HEC: W Category — IF: 4.1, p. 1012. DOI: [10.3390/rs12061012](https://doi.org/10.3390/rs12061012).
- [Zho+19] Taoyun Zhou et al. “Research on high-precision passive localization based on phase difference changing rate”. In: *Concurrency and Computation: Practice and Experience* 31.23 (2019). SCIE — Q3 — HEC: W Category — IF: 1.5, e4492. DOI: [10.1002/cpe.4492](https://doi.org/10.1002/cpe.4492).
- [Far+17] Mian Muhammad Sadiq Fareed et al. “Maximum mean discrepancy regularized sparse reconstruction for robust salient regions detection”. In: *Signal Processing: Image Communication* 54 (2017). SCIE — Q2 — HEC: W Category — IF: 2.7, pp. 66–80. DOI: [10.1016/j.image.2017.02.013](https://doi.org/10.1016/j.image.2017.02.013).

Conference Proceedings

- [Kar+26b] Shahid Karim et al. “Object Detection followed by Scene Classification for Optical Remote Sensing Imagery”. In: *International Conference on Optoelectronics and Information Technology (ICOIT)* (Kunming, China). Presented / In Press (SPIE Proceedings). 2026.
- [Kar+24b] Shahid Karim et al. “Traffic anomaly detection using optimized faster R-CNN”. In: *Proceedings of SPIE 13445, International Conference on Electronics, Electrical and Information (ICEEIE 2024)*. Vol. 13445. 2024, 134451Q. DOI: [10.1117/12.3054173](https://doi.org/10.1117/12.3054173).
- [Li+24] Zeyu Li et al. “Optimized Flame Detection Using a YOLOv5 Neural Network”. In: *2024 International Conference on Computing, Robotics and System Sciences (ICRSS)*. 2024, pp. 253–257. DOI: [10.1109/ICRSS63133.2024.10859123](https://doi.org/10.1109/ICRSS63133.2024.10859123).
- [BK23] Irfana Bibi and Shahid ... Karim. “Automated Door to Prevent COVID-19 using Fuzzy Logic”. In: *2023 International Conference on Electrical, Communication & Computing Engineering (ICECCE)*. 2023, pp. 1–5. DOI: [10.1109/ICECCE57971.2023.10441840](https://doi.org/10.1109/ICECCE57971.2023.10441840).
- [BL18] Irfana Bibi and Fang Liu. “Performance Evaluation Of Local Image Features For Multinational Vehicle License Plate Verification”. In: *2018 IEEE Intelligent Vehicles Symposium (IV)*. 2018, pp. 1649–1654. DOI: [10.1109/IVS.2018.8500534](https://doi.org/10.1109/IVS.2018.8500534).
- [BLF17] Irfana Bibi, Fang Liu, and Mian Muhammad Sadiq Fareed. “Image Segmentation by Hybrid Active Contour Model Using Harmonic Mean”. In: *2017 4th International Conference on Information Science and Control Engineering (ICISCE)*. 2017, pp. 253–257. DOI: [10.1109/ICISCE.2017.61](https://doi.org/10.1109/ICISCE.2017.61).
- [Bib+17] Irfana Bibi et al. “Image segmentation by active contour model using hyperbolic trigonometric formulation”. In: *2017 IEEE International Conference on Signal Processing, Communications and Computing (ICSPCC)*. 2017, pp. 1–5. DOI: [10.1109/ICSPCC.2017.8242604](https://doi.org/10.1109/ICSPCC.2017.8242604).

THESIS SUPERVISED

Graduate Research Supervision (M.Phil.)

2026 – To Date **Thesis Title:** Self-Supervised Learning in Crop Mapping Under Domain Shift.
In Progress

Student: Khizra Naseem

2026 – To Date In Progress	Thesis Title: 3D Gaussian Splatting-Based Real-Time Scene Reconstruction. Student: Rubaisha Khan
2026 – To Date In Progress	Thesis Title: A Low-Cost, Edge-Native Digital Twin Architecture for Open-Field Small-holder Crop Monitoring. Student: Fizza Nasir
2026 – To Date In Progress	Thesis Title: An Explainable Federated Learning Framework for Intrusion Detection in Industrial IoT Networks. Student: Fatima Shabbir
2025 – 2026 Completed	Thesis Title: A Two-Stage Hybrid Framework for Joint Low-Light Image Enhancement and Compression. Student: Neha Saeed
2025 – 2026 Completed	Thesis Title: A Knowledge Distillation Framework for Edge-Deployable Multi-Class Image Forgery Detection and Localization. Student: Hiba Amin
2025 – 2026 Completed	Thesis Title: An Explainable Gated Cross-Attention-Based Hybrid Framework for Tomato Leaf Disease Classification. Student: Muhammad Haweras Noor

Undergraduate Supervision (FYPs)

2026 – 2027 In Progress	Project Title: SignBase PSL: Breaking the Communication Barrier at Bank Counter. Group Ref: FYP-26-BCS-OC-1 (4 Students)
2026 – 2027 In Progress	Project Title: Foasis: A multi-tenant final year project collaboration system for academic institutions. Group Ref: FYP-26-BCS-OC-2 (3 Students)
2026 – 2027 In Progress	Project Title: FitCoach AI: AI-Based Real-Time Fitness Trainer. Group Ref: FYP-26-BCS-OC-3 (3 Students)
2026 – 2027 In Progress	Project Title: Nexus: A Security Framework for AI Agentic Systems. Group Ref: FYP-26-BCS-OC-4 (3 Students)
2025 – 2026 Completed	Project Title: SizeWise: AI-Based Foot Measurement and Virtual Try-On System for Online Stores. Group Ref: FYP-25-BCS-OC-6 (4 Students)
2025 – 2026 Completed	Project Title: BizBot: AI-Powered Business Process Automation. Group Ref: FYP-25-BCS-OC-4 (4 Students)
2025 – 2026 Completed	Project Title: AgriBot: A Web Application for Plant Disease Detection Using Leaf Images. Group Ref: FYP-25-BCS-OC-3 (4 Students)
2024 – 2025 Completed	Project Title: Android Application for Pothole and Crack Detection of Roads. Group Ref: FYDP-OC-24-CS-12 (4 Students)
2024 – 2025 Completed	Project Title: Remote Admin. Group Ref: BITF20-18 (3 Students)
2023 – 2024 Completed	Project Title: EDUSCULPT (Learning Management System). Group Ref: BCSF20-10 (4 Students)

2023 – 2024
Completed

Project Title: MERN Audio Conversation Platform.

Group Ref: BCSF20-11 (5 Students)

HONORS, AWARDS & PROFESSIONAL RECOGNITIONS

2026	Session Chair Track: “Computer Vision, Pattern Recognition, and AI” — 7 th <i>International Conference on Advancements in Computational Sciences</i> (ICACS’26), Faculty of Information Technology (FIT), University of Lahore, Pakistan.
2025	Session Chair <i>International Research Conference Xplore 2025 – Chapter 6</i> , Lahore Business School (LBS), University of Lahore, Pakistan.
2024	Session Chair <i>International Research Conference Xplore 2024 – Chapter 5</i> , Lahore Business School (LBS), University of Lahore, Pakistan.
Sep 2015 – June 2019	International PhD Scholarship Awarded by the Chinese Scholarship Council (CSC), China, for doctoral studies at Xidian University.
Sep 2014 – Aug 2015	Chinese Language Scholarship Awarded by the Chinese Scholarship Council (CSC), China, for intensive language and cultural immersion.

POSITIONS OF RESPONSIBILITY

Administrative Services

Jun 2026 – To Date	Final Year Design Project (FYDP) Coordinator Department of Computer Science, University of the Punjab, Lahore.
Jun 2025 – To Date	Program Team Member Quality Enhancement Cell (QEC), Department of Computer Science, University of the Punjab, Lahore.
May 2025 – To Date	Member Student Achievement Recognition Committee (SARC), FCIT, University of the Punjab, Lahore.
Jan 2025 – To Date	Secretary Discipline Council (DC), Department of Computer Science, University of the Punjab, Lahore.
Jul – Aug, 2026	Secretary Interview Committee for Admission in Graduate Programs (F26), Department of Computer Science, University of the Punjab, Lahore.
Jul – Aug, 2025	Secretary Interview Committee for Admission in Graduate Programs (F25), Department of Computer Science, University of the Punjab, Lahore.
May 16–18, 2025	Committee Secretary & Member National Programming Competition (PUCon’25), FCIT. <i>Roles: Served as Secretary for the Sub-Committee on Reel & Photography Competition, and Member of the Sub-Committee on UI/UX Design.</i>
Mar 2024 – Jan 2025	Member Financial Support Committee (FSC), Department of Computer Science, University of the Punjab, Lahore.
Aug – Sep, 2024	Secretary Interview Committee for Admission in Graduate Programs (F24), Department of Computer Science, University of the Punjab, Lahore.
Feb 16–18, 2024	Organizing Committee Member National Programming Competition (PUCon’24), Faculty of Computing & IT (FCIT), University of the Punjab, Lahore.

Advisory Services

Jan 2026 – To Date	Student Counsellor BSCSF24 (SS) (OC) — Department of Computer Science, Faculty of Computing & IT (FCIT), University of the Punjab, Lahore.
Aug 2023 – Jan 2025	Member Departmental Doctoral Programme Committee (DDPC), Department of Computer Science, University of the Punjab, Lahore.

PROFESSIONAL MEMBERSHIPS & DEVELOPMENT

Mar 2026 – To Date	Professional Member, IEEE Institute of Electrical and Electronics Engineers (IEEE). <i>Active Society Memberships:</i> • IEEE Geoscience and Remote Sensing Society (GRSS) • IEEE Computational Intelligence Society (CIS) • IEEE Robotics and Automation Society (RAS) • IEEE Women in Engineering (WIE)
2023 – 2025	Higher Education & Institutional Development • New Faculty Orientation (2025): Professional Development Program, HRDC, University of the Punjab, Lahore. • Generative AI in Higher Education (2024): Punjab Higher Education Commission (PHEC), Pakistan. • Curriculum Orientation (2023): Revised Computing Curricula Workshop, National Computing Education Accreditation Council (NCEAC), Pakistan.
2025	Research Methodology Certification Series Extensive professional researcher track completed at the <i>Center for Learning & Teaching (CLT), Forman Christian College (A Registered University), Pakistan:</i> • Grants and Grant-Proposal Writing • Academic Publishing for High Impact Outcomes • Building and Executing an Active Research Framework • Quantitative Empirical Methods Using SPSS
2017 – 2024	Advanced Data Science & Artificial Intelligence Training • Deep Learning Frameworks (2024): Deep Learning with Keras — <i>IBM (via Coursera)</i>. • Statistical Machine Learning (2024): Introduction to Machine Learning — <i>Duke University (via Coursera)</i>. • Enterprise Big Data Frameworks (2020): Introduction to Big Data — <i>University of California (via Coursera)</i>. • Cloud Architectures (2020): Big Data & Cloud Computing Workshop — <i>IEEE Lahore Section</i>. • Ocean Analytics Frameworks (2018): Training Program on Machine Learning for Ocean Acoustics and Climate Data Analysis — <i>DRDO-NPOL, Kochi, India</i>. • AI Foundations (2017): Training of Artificial Intelligence & Big Data — <i>Xi'an Jiaotong University, China & IKCEST</i>.

TECHNICAL & LANGUAGE SKILLS

Programming & Frameworks:	Python, PyTorch, Keras, C, C++, JAVA, SQL, MATLAB.
Language Skills:	English (<i>Professional</i>), Urdu (<i>Native</i>), Chinese / Mandarin (<i>HSK Level 3 Certified</i>).

REFERENCES

References will be provided on request.