Nisar Ahmed, Ph.D.
Research Fellow & IEEE Senior Member
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Profile Summary

Nisar Ahmed is a Marie Skłodowska-Curie (MSCA) Postdoctoral Fellow at the Institute of Biomedicine, University of Turku, contributing to the SYS-LIFE program. His research operates at the intersection of artificial intelligence and precision medicine, with a strong focus on computational histopathology and cardiovascular disease.
His work centers on developing advanced machine learning frameworks, including graph neural networks and multi-scale texture analysis, to quantitatively characterize pathological alterations such as interstitial fibrosis and myolytic changes in atrial fibrillation. By integrating computational pathology with multi-omics and clinical data, he aims to identify novel biomarkers and enable improved risk stratification and disease prognosis.
Dr. Ahmed has a strong track record in designing AI systems inspired by human visual perception, particularly in image quality assessment and biomedical image analysis. His research bridges methodological innovation and clinical translation, with an emphasis on robust, interpretable, and clinically deployable AI solutions for digital pathology.
He is a Senior Member of IEEE and actively contributes to the research community through peer review and editorial activities, supporting the advancement of trustworthy and impactful AI in healthcare.

Research Impact Summary

- **25+** peer-reviewed journal publications in SCI/SCIE indexed journals
- **933+** citations with an H-index of **14** (Google Scholar)
- **160+** verified peer reviews (Web of Science / Publons)

Education

University of Engineering and Technology (UET), Lahore, Pakistan

Ph.D. Computer Engineering, May 2024

- **Dissertation:** Perceptual Image Quality Assessment using Biologically Inspired Machine Learning Methods
- **Key Courses:** Artificial Neural Networks, Knowledge Discovery in Databases, Advanced Information Retrieval Systems, Digital Image Processing

University of Engineering and Technology (UET), Lahore, Pakistan

M.Sc. Computer Engineering, Apr 2015

- **Thesis:** A Robust Compression-Friendly Image Encryption Scheme
- **Key Courses:** Computer Vision, Digital Signal Processing, Advanced Operating Systems

HITEC University Taxila, Pakistan

B.Sc. Electronic Engineering, Sep 2011

Current Employment

- **Position: Senior Researcher**
  - **Start Date:** Mar 2026
  - **Employer:** University of Turku
  - **Place of Work:** Turku, Finland
  - **Job Description:**
  - Conduct interdisciplinary research at the intersection of artificial intelligence and precision medicine, with a focus on computational histopathology for cardiovascular diseases.
  - Develop and apply advanced machine learning models (e.g., graph neural networks, multi-scale feature learning) to quantify tissue-level pathological changes and identify clinically relevant biomarkers.
  - Integrate histopathological, genomic, and clinical data to enable improved disease understanding, risk stratification, and predictive modeling.
  - Collaborate with clinicians and multidisciplinary teams within the SYS-LIFE program to translate AI-driven methodologies into robust and clinically applicable solutions.

Previous Work Experience

- **Position: Assistant Professor**
  - **Start Date:** Sep 2025
  - **Employer:** University of Management and Technology
  - **Place of Work:** Lahore, Pakistan
  - **Job Description:**
  - Delivered undergraduate and postgraduate teaching in Information Security and Data Science, emphasizing both theoretical foundations and applied skills.
  - Supervised and mentored student research and projects in cybersecurity and data science, fostering analytical thinking and practical problem-solving.
  - Contributed to curriculum development, academic research, and departmental initiatives, supporting publication output and overall academic excellence.
- **Position: Section Head — Geo-Satellite Payload Monitoring**
  - **Dates:** Oct 2011 - Oct 2025
  - **Employer:** National Space Agency of Pakistan (SUPARCO)
  - **Place of Work:** Lahore, Pakistan
  - **Job Description:**
    - Led the design and optimization of High Throughput Satellite (HTS) Ka-band networks, enabling scalable nationwide broadband connectivity.
    - Engineered and managed satellite communication systems, including RF link budgets, network architecture, QoS optimization, and secure deployments for enterprise and defense applications.
    - Integrated AI-driven analytics into network operations for anomaly detection, interference mitigation, predictive maintenance, and adaptive resource management, while leading cross-functional R&D initiatives.

Awards and Honors

- **Marie Skłodowska-Curie Postdoctoral Fellowship (MSCA)** – Awarded under the SYS-LIFE Program at the University of Turku for research in AI-driven precision medicine and computational pathology (2025).
- **Service Excellence Award** – Recognized by Member (Space Electronics), SUPARCO, for outstanding leadership as Section Head of the Payload Monitoring team (2021).
- **Indigenous Ph.D. Fellowship** – Granted by the Higher Education Commission (HEC), Pakistan, to support doctoral studies in recognition of academic merit (2016).

Professional Memberships & Academic Service

Leadership and Management

- **Technical Program Committee (TPC) Member** – VirtualStain: Special Session at the International Conference on Technologies for Smart eHealth (ICTS4eHealth), Portugal (2026)
- **Section Head** – Geo-Satellite Payload Monitoring, SUPARCO, Pakistan (2021–2024)
- **Member** – Steering Committee, Office of Research Innovation and Commercialization (ORIC), Baba Guru Nanak University (2024–2029)
- **Member** – Board of Studies, Department of Computer Science & IT, Baba Guru Nanak University (2024–2027)
- **Member** – Industrial Advisory Board, Department of Computer Science, UET Lahore (2022–2026)

- **Served as a session chair and invited/guest speaker** at multiple international events, including BioCity Symposium 2026, ICETI 2025, ICCI 2025, C-CODE 2025, GSTMS-25, and ICAST 2024.
- **Acting as invited Peer Reviewer** for high-impact journals, including Pattern Recognition, Neural Networks, Expert Systems with Applications, Computer Vision and Image Understanding, Multimedia Tools and Applications, and Engineering Applications of Artificial Intelligence.

Journal Articles

1. G. Saleem, **N. Ahmed**, et al., *A Layered Security Framework Against Prompt Injection in RAG-Based Chatbots*, **ICCK Transactions on Information Security and Cryptography**, **2**(3), 192–215, (2026).
2. **N. Ahmed**, et al., *Attention-Based Ensemble Learning for Crop Classification Using Landsat 8–9 Fusion*, **Earth Systems and Environment**, **10**, 6577–6598, (2026).
3. **N. Ahmed**, et al., *Perceptual Quality Assessment of Digital Images in the Absence of Reference Information*, **International Journal of Innovations in Science & Technology**, **8**(5), 2047–2066, (2026).
4. **N. Ahmed**, et al., *A Resource-Efficient Machine Learning Pipeline for DDoS Attack Detection: A Comparative Study on CIC-IDS2018 and CIC-DDoS2019*, **ICCK Transactions on Information Security and Cryptography**, **2**(1), 55–69, (2026).
5. M. A. Aslam, H. Khalid, **N. Ahmed**, *A Multi-Scale Spatial Attention-Based Zero-Shot Learning Framework for Low-Light Image Enhancement*, **Scientific Reports**, **16**, 976, (2026).
6. M. A. Aslam, A. Naveed, **N. Ahmed**, et al., *Hybrid Attention Network for Accurate Breast Tumor Segmentation in Ultrasound Images*, **Scientific Reports**, **15**, 39633, (2025).
7. A. Abba, **N. Ahmed**, et al., **Experimental evaluation of various chaos-based image encryption schemes**, **Journal of Computing Theories and Applications 3**(1), 91-103, (2025).
8. Y. Xu, M. A. Aslam, W. J., **N. Ahmed**, et al., *Improving Arabic Multi-Label Emotion Classification Using Stacked Embeddings and Hybrid Loss Function*, **IEEE Access**, **13**, 188939–188954, (2025).
9. M. A. Aslam, X. Wei, H. Khalid, **N. Ahmed**, et al., *QualityNet: A Multi-Stream Fusion Framework with Spatial and Channel Attention for Blind Image Quality Assessment*, **Scientific Reports**, **14**, 26039, (2024).
10. M. A. Aslam, X. Wei, **N. Ahmed**, et al., *TQP: An Efficient Video Quality Assessment Framework for Adaptive Bitrate Video Streaming*, **IEEE Access**, **12**, 88264–88278, (2024).

11. M. A. Aslam, X. Wei, **N. Ahmed**, et al., *VRL-IQA: Visual Representation Learning for Image Quality Assessment*, **IEEE Access**, **12**, 2458–2473, (2024).
12. M. Adnan, M. Ali, **N. Ahmed**, *A Color Image Encryption Scheme Based on Singular Values and Chaos*, **CMES – Computer Modeling in Engineering & Sciences**, **137**(1), (2023).
13. **N. Ahmed**, et al., *Deep Ensembling for Perceptual Image Quality Assessment*, **Soft Computing**, **26**(16), 7601–7622, (2022).
14. **N. Ahmed**, et al., *Development of Crop Yield Estimation Model using Soil and Environmental Parameters*, **Journal of Agricultural Research**, **59**(3):295-303, (2021).
15. **N. Ahmed**, et al., *Efficient JPEG Encoding Using Bernoulli Shift Map for Secure Communication*, **Wireless Personal Communications**, **125**(4), 3405–3424, (2022).
16. **N. Ahmed**, et al., *Image Quality Assessment for Foliar Disease Identification (AgroPath)*, **Journal of Agricultural Research**, **59**(2):177-186, (2021).
17. **N. Ahmed**, et al., *BIQ2021: A Large-Scale Blind Image Quality Assessment Database*, **Journal of Electronic Imaging**, **31**(5), (2022).
18. **N. Ahmed**, et al., *Leaf Image-Based Plant Disease Identification Using Color and Texture Features*, **Wireless Personal Communications**, **121**(2), 1139–1168, (2021).
19. H. Khalid, M. Ali, **N. Ahmed**, *Gaussian Process-Based Feature-Enriched Blind Image Quality Assessment*, **Journal of Visual Communication and Image Representation**, **77**, (2021).
20. **N. Ahmed**, et al., *PIQI: Perceptual Image Quality Index Based on Ensemble of Gaussian Process Regression*, **Multimedia Tools and Applications**, (2021).
21. **N. Ahmed**, et al., *Perceptual Quality Assessment of Digital Images Using Deep Features*, **Computing and Informatics**, **39**(3), (2020).
22. G. Saleem, M. Akhtar, **N. Ahmed**, et al., *Automated Analysis of Visual Leaf Shape Features for Plant Classification*, **Computers and Electronics in Agriculture**, **157**, 270–280, (2019).
23. G. Saleem, **N. Ahmed**, et al., *Design and Analysis of a Robust Compression Friendly Image Encryption Scheme*, **International Journal of Energy, Information and Communications**, **8**(2), 1–18, (2017).
24. **N. Ahmed**, et al., *A Benchmark for Performance Evaluation and Security Assessment of Image Encryption Schemes*, **International Journal of Computer Network and Information Security**, **8**(12), 18-29, (2016).
25. **N. Ahmed**, et al., *A Novel Image Encryption Scheme Based on Orthogonal Vectors*, **The Nucleus**, **52**(2), 71-78, (2015).

Book Chapters

1. **N. Ahmed**, et al., *Fundamentals of Deep Learning and Transfer Learning for IoT Security*, In: **Edge Intelligence**, Syngress, 17–55, (2026).
2. **N. Ahmed**, et al., *Image Quality Assessment Using a Combination of Handcrafted and Deep Features*, In: **Intelligent Technologies and Applications (INTAP 2019)**, Springer, (2019).
3. S. Maqbool, **N. Ahmed**, et al., *Simultaneous Encryption and Compression of Digital Images Based on Secure-JPEG Encoding*, In: **Pattern Recognition (MCPR 2016)**, Springer, LNCS **9703**, 145–154, (2016).

Conference

1. **N. Ahmed**, *Specific Emitter Identification in IoT Environment Using Artificial Intelligence*, In: **Proceedings of Emerging Scientist 2024**, Faisalabad, Pakistan, 16–17 Feb, (2024).
2. **N. Ahmed**, *Quality of Experience (QoE) Assessment for HTTP-Based Video Streaming*, In: **International Conference on Space (ICS 2022): Role of Space Technology in Socio-Economic Development**, Islamabad, Pakistan, 28–30 Mar, (2022).
3. **N. Ahmed**, et al., *Ensembling Convolutional Neural Networks for Perceptual Image Quality Assessment*, In: **13th International Conference on Mathematics, Actuarial, Computer Science & Statistics (MACS13)**, Karachi, Pakistan, 14–15 Dec, (2019).
4. S. Nawaz, A. Calefati, **N. Ahmed**, *Hand Written Characters Recognition via Deep Metric Learning*, In: **13th IAPR International Workshop on Document Analysis Systems (DAS 2018)**, Vienna, Austria, 417–422, 24–27 Apr, (2018).
5. G. Saleem, F. Azam, U. Younus, **N. Ahmed**, et al., *Quality Assurance of Web Services: A Systematic Literature Review*, In: **2nd IEEE International Conference on Computer and Communications (ICCC 2016)**, Chengdu, China, 14–17 Oct, (2016).