

Dr. Numan Shafi

Lecturer in Computer Science
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Research Interests: Cloud Computing, Machine Learning,
Data Science

Professional Experience

- **Lecturer**, Department of Computer Science, Faculty of Computing & Information Technology, University of the Punjab, Lahore *2026–Present*
 - Teaching undergraduate and graduate courses in Computer Science
 - Supervising student research projects
 - Contributing to research and development activities within the department
- **Lecturer**, University of Engineering and Technology (UET), Lahore *2022–2026*
 - Teaching undergraduate and graduate courses in Computer Science
 - Supervising student research projects and thesis
 - Member of departmental curriculum committee
- **Lecturer**, FAST National University, Pakistan *2020–2022*
 - Taught core CS courses including Data Structures and OOP
 - Served as Hostel Warden and Student Advisor
 - Moderator for Spatial Analytics Research Group
- **Visiting Lecturer**, PUCIT, Lahore *2017–2019*
 - Taught Data Structures and Algorithms
 - Developed course materials and lab exercises

Education

- **PhD Computer Science**, PUCIT, Lahore *2020–2025*
 - Thesis: *Cost-effective Dynamic Resource Allocation and Auto-scaling of Microservices*
 - Research Area: Cloud Resource Management and Machine Learning
- **MPhil Computer Science**, PUCIT, Lahore *2017–2019*
CGPA: 3.53/4.00
 - Thesis: *Cleft prediction before birth using deep neural network*
 - Published in Health Informatics Journal
- **BS Software Engineering**, PUCIT, Lahore *2013–2017*
CGPA: 3.58/4.00

- Specialization in Intelligent Systems
- Final Year Project: Machine Learning based Predictive System

Publications

Journal Articles.

- Ali Zia, Renuka Sharma, Abdelwahed Khamis, Usman Ali, Xuesong Li, Muhammad Husnain, **Numan Shafi**, Saeed Anwar, Imran Raza, Muhammad Hasan Jamal, et al. (2026). A review on vision-centric coarse to fine-grained animal action recognition. *Artificial Intelligence Review*, 59(5), 133. (SCI-E, IF: 18.8)
- **Numan Shafi**, Abdullah, M., Iqbal, W., & Bukhari, F. (2025). CEMA: Cost Effective Multi-Layered Autoscaling for Microservice Based Applications. *Journal of Network and Computer Applications*. (SCI-E, IF: 8.0)
- **Numan Shafi**, Abdullah, M., Iqbal, W., & Bukhari, F. (2025). DIMA: Machine learning based dynamic infrastructure management for containerized applications. *Computing*, 107(3), 1-30. (SCI-E, IF: 3.3)
- **Numan Shafi**, Abdullah, M., Iqbal, W., Erradi, A., & Bukhari, F. (2024). Cdascaler: A cost-effective dynamic autoscaling approach for containerized microservices. *Cluster Computing*, 27(4), 5195-5215. (SCI-E, IF: 3.6)
- **Numan Shafi**, Bukhari, F., Iqbal, W., Almustafa, K. M., Asif, M., & Nawaz, Z. (2020). Cleft prediction before birth using deep neural network. *Health Informatics Journal*, 26(4), 2568-2585. (SCI-E, IF: 2.8)
- Umbreen, S., Shehzad, D., **Numan Shafi**, Khan, B., & Habib, U. (2020). An energy-efficient mobility-based cluster head selection for lifetime enhancement of wireless sensor networks. *IEEE Access*, 8, 207779-207793. (SCI-E, IF: 3.4)
- Hamza, A., Shehzad, D., Sarfraz, M. S., Habib, U., & **Numan Shafi** (2021). Novel Secure Hybrid Image Steganography Technique Based on Pattern Matching. *KSII Transactions on Internet and Information Systems (TIIS)*, 15(3), 1051-1077. (ESCI, IF: 1.2)
- Bilal Khan, Danish Shehzad, **Numan Shafi**, Umer Aftab (2022). Analyzing and Enabling the Harmonious Coexistence in Heterogeneous Wireless Communication Systems in Industrial Environment. *Computers, Materials & Continua*. (SCI-E, IF: 1.79)
- Musaddiq, M.H., Sarfraz, M.S., **Numan Shafi**, Maqsood, R., Azam, A., & Ahmad, M. (2022). Predicting the Impact of Academic Key Factors and Spatial Behaviors on Students' Performance. *MDPI Switzerland*. (SCI-E, IF: 2.838)

Conference Papers.

- Haider, T., **Numan Shafi**, & Haq, N. U. I. (2025). AI-Driven Mental Health Chatbot: Empowering Well-Being with Conversational AI and Retrieval-Augmented Generation. In *2025 IEEE Conference on Artificial Intelligence (CAI)*, IEEE, pp. 1596-1602.
- Kamran, M., Waseem, M., **Numan Shafi**, & Zahid, A. (2024). Detection of Caries and Hypodontia using Deep Learning and Explainable AI. In *2024 18th International Conference on Open Source Systems and Technologies (ICOSST)*, IEEE, pp. 1-6.

- Shahzadi, M., Bukhari, F., & **Numan Shafi** (2023). Intelligent Predictive Model for Hepatitis C. In *2023 3rd International Conference on Artificial Intelligence (ICAI)*, IEEE, pp. 7-12.
- Husnain, M., Khalid, A., & **Numan Shafi** (2021). A Novel Preprocessing Technique for Toxic Comment Classification. In *2021 International Conference on Artificial Intelligence (ICAI)*, IEEE, pp. 22-27.
- Asim, Noor., Shehzad, D., Sarfraz, M., Ahmad, & **Numan Shafi**, Husnain, M. (2021). Weed identification using vegetation indices and multispectral UAV imaging. In *42nd Asian Conference on Remote Sensing (ACRS)* (ACRS21_181).

Workshops

- **UAV (Drone) and its Data Processing**, 2020
Delivered hands-on training covering drone operation and data analysis techniques.

Academic Services

- Student Advisor: Guided 50+ students on academic and career matters (2020–2022)
- Hostel Warden at FAST University
- Research Group Moderator: Spatial Analytics Research Group (<https://sar.org.pk/>)

Teaching Portfolio

- Programming Fundamentals (C++)
- Object Oriented Programming (C++/Java)
- Data Structures and Algorithms (C++)
- UAV Applications and Data Processing

Awards & Honors

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| • Principal's List Honor (Top 15% of students) Four times | <i>2014–2017</i> |
| • Merit Scholarship Top 5 in class | <i>2015</i> |
| • .NET Professional Certification Microsoft certified | <i>2016</i> |

References

- **Prof. Dr. Waheed Iqbal**
Professor of Computer Science, PUCIT
<https://www.waheediqbal.info/>
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- **Dr. Muhammad Abdullah**
Assistant Professor, PUCIT
<https://www.abdullah.info/>
muhammad.abdullah@pucit.edu.pk