Hassan Ahmed

Instructor, Department of Computer Science, FAST - NUCES, CFD Campus, Pakistan

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Office # G-19, Department of Computer Science, FAST - NUCES, CFD Campus, Pakistan

EDUCATION

•**Master of Science in Computer Science**   *2022 - 2024*
University of Wah, Wah Cantt, Pakistan   CGPA: 3.46/4.0

- **Thesis:** DeepCAN: A Robust Deep Learning Framework for CAN Intrusion Detection in Autonomous Vehicles
- **Superviser:** Professor Dr. Wazir Zada Khan
- **Coursework:** Advance Image Processing, Advanced Machine Learning, Advanced Network Security, Information Security, Research Methodologies, Advanced Operating Systems

•**Bachelor of Science in Software Engineering**   *2018 - 2022*
COMSATS University Islamabad, Wah Campus, Pakistan   CGPA: 3.01/4.0

- **Thesis:** Lone Ranger - First Person Shooting Game
- **Superviser:** Ms. Mehwish Mukhtar
- **Selected Coursework:** Introduction to Data Science, Data Warehousing and Data Mining, Human-Computer Interaction, Artificial Intelligence, Statistics and Probability Theory, Linear Algebra, Digital Logic Design, Database Systems, Software Quality Engineering, Software Testing, Object Oriented Software Engingeering

EXPERIENCE

•**Instructor**   *Aug 2024 - Present*
Faculty Profile   FAST - National University of Computer and Emerging Sciences, CFD Campus
Responsibilities

- Conducted Labs for undergrad students in the Department of Computer Science
- Courses taught: Programming Fundamentals, Operating Systems, Computer Networks, IT in Business
- Member of departmental course folder review panel and committee for NCEAC

•**Graduate Assistant**   *Nov 2022 - June 2024*
Responsibilities   University of Wah, Wah Cantt

- Conducted Labs for undergrad students at the Department of Computer Science
- Courses: Database Systems, Database Applications, Applications of ICT
- Assisted in Outcome-Based Education (OBE) curriculum development and materials preparation.
- Contributed to departmental administrative tasks and projects

•**Intern**   *July 2022 - Oct 2022*
Learnings   Pakistan Ordnance Factories, Wah Cantt

- Gained experience with database management
- Learned basics of network and its implementation in an organization
- Delivered presentations on ongoing projects, effectively communicating technical concepts

PUBLICATIONS   C=CONFERENCE, J=JOURNAL, S=IN SUBMISSION

[C.1] Hassan Jari, **Hassan Ahmed,** Hareem Kibriya, Wazir Zada Khan, Ali Tahir. **An Ensemble Deep Learning Framework for Autonomous Vehicle Attack Detection**. In *Proceedings of the 2025 International Conference on Emerging Technologies in Electronics, Computing, and Communication (ICETECC)*, Jamshoro, Pakistan, 23–25 April 2025, IEEE, DOI: 10.1109/ICETECC65365.2025.11070228.

CONFERENCES   R=REVIEWER, P=PRESENTER, A=ATTENDEE

[R.1] **International Conference on IT and Industrial Technologies** at FAST-National University of Computer and Emerging Sciences, CFD Campus, Pakistan. Date: 10 - 12 Dec, 2024.

[R.2] **International Conference on Artificial Intelligence and Green Computing** at Campus Mghilla, Beni Mellal, Morocco. Date: 14 - 16 May, 2025.

[P.1] **4th International Conference on Smart Plant Protection** at MNS-University of Agriculture, Multan, Pakistan. Date: 30 - 31 Oct, 2024.

[P.2] **2nd International Conference on Emerging Technologies in Electronics, Computing and Communication (ICETECC 2025)** at Mehran University of Engineering & Technology, Jamshoro, Sindh, Pakistan. Date: 23 - 25 April, 2025.

[A.1] **8th Multi-Disciplinary Student Research International Conference** at University of Wah, Wah Cantt, Pakistan. Date: 06 - 07 Dec, 2023.

Technical Skills

Languages: C++, Python, SQL
Libraries: NumPy, Pandas, Tensorflow, Keras, Scikit-learn, OpenCV, Hugging Face Transformers, LIME, SHAP
ML Techniques: Transfer Learning, Model Fine-tuning, Model Deployment
Databases: Relational Database (MySQL)
Research: LaTeX, Endnote, Edraw Max
Tools: Kaggle, Jupyter Notebook, MS Office, MS Access, MS Visio, CISCO Packet Tracer, Wireshark
Operating Systems: Windows, Linux

Soft Skills

Communication: Effective Verbal and Written Communication, Presentation Skills, Active Listening
Teamwork: Collaboration, Relationship Building, Networking
Problem-Solving: Critical Thinking, Creativity, Adaptability
Leadership: Decision Making, Delegation, Motivation, Team Management
Time Management: Prioritization, Scheduling, Goal Setting, Multitasking

Projects

- **DeepCAN: Intrusion Detection System for Controller Area Network**
Tools, Programming Languages & Libraries: Kaggle, Python, Keras, TensorFlow, Pandas, NumPy, Scikit-learn, Matplotlib
  - Developed DeepCAN, a deep learning-based Intrusion Detection System (IDS) for the Controller Area Network (CAN), to enhance the security of In-Vehicle Networks (IVNs) in Autonomous Vehicles (AVs)
  - Implemented deep learning techniques for intrusion detection, achieving a classification accuracy of 94.52% and outperforming existing methods in terms of accuracy and F1-score.
  - Created an advanced IDS framework that detects and classifies impersonation, fuzzy, and denial-of-service (DoS) attacks, ensuring improved security and reliability for AVs.
  - Applied Explainable Artificial Intelligence (XAI) methods, such as LIME, to analyze detection results and provide interpretability in IDS decision-making.

- **AgriGuard**
Tools, Programming Languages & Libraries: Kaggle, Python, NumPy, Pandas, TensorFlow, Scikit-learn, Matplotlib, OpenCV, Seaborn
  - Developed a pest image classification system for agricultural pest detection, enabling early pest identification and intervention to prevent crop losses.
  - Implemented Deep CNN for pest classification, achieving an accuracy of 90.00%, thus improving detection efficiency and reducing the need for chemical pesticides.
  - Created a deep learning-based classification pipeline with data augmentation and transfer learning, ensuring improved model generalization across diverse pest images.
  - Applied confusion matrix and classification reports to analyze model performance, identifying precision, recall, and F1-score for different pest categories to optimize the classification process.

- **Breast Cancer Prediction using Machine Learning**
Tools, Programming Languages & Libraries: Python, Pandas, NumPy, Seaborn, Matplotlib, Scikit-Learn
  - Developed a breast cancer prediction model using ML algorithms and achieved an accuracy of approximately 94.00 to 98.00%.
  - Implemented data preprocessing and feature selection techniques to process thousands of patient records for improved model performance.
  - Created correlation heatmaps and distribution plots to analyze key diagnostic features to enhance interpretability for clinicians.
  - Applied a classification pipeline for easy integration with hospital decision-support systems, aiding in early detection of breast cancer.

Courses and Trainings

- **Problem-Based Learning in OBE** *2024*
  FAST - National University of Computer and Emerging Sciences, CFD Campus
- **Two-Day Teacher Training Workshop** *2024*
  FAST - National University of Computer and Emerging Sciences, CFD Campus
- **Machine Learning, AI & Data Science** *2024*
  Governemnt of Punjab, Pakistan
- **Introduction to Generative AI** *2024*
  Google Cloud
- **Introduction to Cybersecurity** *2022*
  CISCO Networking Academy
- **Virtual Assistant** *2022*
  DigiSkills.pk
- **Search Engine Optimization** *2022*
  DigiSkills.pk
- **Data Analytics and Business Intelligence** *2022*
  DigiSkills.pk
- **E-Commerce Management** *2022*
  DigiSkills.pk

Volunteering & Extracurricular Activities

—**Blood Donation Volunteer** *Sep 2019 - June 2022*
Activities Comsats University Islamabad, Wah Campus
  * Organized and managed multiple blood donation camps in collaboration with the Pakistan Red Crescent Society
  * Successfully motivated the students to take part, which led to the collection of more than 100 pints of blood per camp
  * Provided support and assistance to donors throughout the donation process, ensuring a positive experience for all participants

—**Media Head** *Oct 2023 - May 2024*
Activities Computing Society, UW
  * Served as the Media Head, leading the documentation and coverage of various events and activities
  * Managed a team of photographers and ensured comprehensive coverage of all events, including but not limited to academic seminars, cultural festivals, and community service initiatives
  * Played a key role in promoting the visibility and positive image of the institution through compelling visual storytelling

—**Photographer** *Oct 2022 - May 2024*
Activities Media & Mass Society, UW
  * Ensured comprehensive coverage of all events, including but not limited to academic seminars, cultural festivals, and community service initiatives

Awards & Achievements

—**Outstanding Contribution Award from PM of Pakistan** All Pakistan Minorities Heritage Photo Contest *18th April, 2023*
—**02 times Winner of Naat Competition** Inter-University Competition by Literary Society, UW *Oct 22 - May 24*
—**Winner of Naat Competition** National competition arranged by YPDC, UOC. *31st March, 2023*
—**Second Position in Naat Competition** National competition arranged by Pakistan National Arts Council. *25th Oct, 2023*
—**03 times Winner of Naat Competition** Inter-University Competition at CUI, Wah Campus *Sep 18 - Dec 19*
—**02 times Winner of Kalam e Iqbal Competition** Inter-University Competition at CUI, Wah Campus *Sep 18 - Dec 19*
—**Winner of Naat Competition** National competition arranged by FGEI (C/G) *28th Oct, 2013*
—**Winner of Milli Naghma Competition** National competition arranged by FGEI (C/G) *11 Nov, 2013*

Hobbies & Leisure Activities

Photography: Passionate about visual storytelling through photography. My genres include landscape, street, and portrait photography. View my work at: snappy_786

Traveling & Adventure: Enjoy exploring new places and cultures, meeting new people from diverse backgrounds, and learning from their traditions and ways of life. These experiences enhance my creativity and communication skills.

Singing: Award-winning performer in national and inter-university Naat, National Song, and Kalam-e-Iqbal competitions.