

# Halar Haleem



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## OBJECTIVES

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- ✍ To strive for academic excellence and impart quality education with emphasis on Electronic Engineering, computer science and domain specific Artificial Intelligence.
- ✍ To cultivate the ability to effectively implement and optimize solutions for challenges in Electronic Engineering, and Artificial Intelligence, equipping individuals with practical skills and problem-solving techniques applicable to their future professional endeavors.

## ACADEMIC QUALIFICATION

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| 2023 | <b>University of Genova, Italy.</b><br>Doctor of Philosophy (PhD) in Science and Technology For Electronic and Telecommunication Engineering (STIET) with major in deep learning and computer vision |
| 2015 | <b>Mehran University of Engineering &amp; Technology, Jamshoro, Pakistan</b><br>Masters of Electronic Engineering (M.E) in Electronic Systems Engineering (3.83 CGPA)                                |
| 2011 | <b>Mehran University of Engineering &amp; Technology, Jamshoro, Pakistan</b><br>Bachelors of Electronic Engineering (B.E) in Electronic Engineering ( <b>86.13%</b> Cumulative)                      |

## PROFESSIONAL EXPERIENCE

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- ✍ Working as Post-doctoral Research Fellow at DSP Lab, DITEN Department, University of Genoa, Italy from February 2023 to cont.:
- ✍ Worked part time as a Data Science & AI Engineer at AiGot SRL, Italy, from April 2025 to May 2025.
- ✍ Worked as Assistant Professor (Electronic Engineering) at Mehran UET SZAB Campus, Khairpur Mir's from September 2017 to October 2019.
- ✍ Worked as Lecturer (Electronic Engineering) at Mehran UET SZAB Campus, Khairpur Mir's from January 2016 to September 2017.
- ✍ Worked as Assistant Manager at Maritime Technologies Complex, Karachi from September 2012 to January 2016.
- ✍ Worked as a Lab Engineer (Electronic Engineering) at Hamdard Institute of Information & Technology, Hamdard University Karachi from January 2012 to September 2012.

## MANAGEMENT EXPERIENCE

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- ✍ Worked as Focal person of the Department of Electronic Engineering Mehran UET SZAB Campus, Khairpur Mir's from 2017 to 2019.
- ✍ Student branch chapter advisor of the IEEE Robotics & Automation society in 2019.

## RESEARCH INTERESTS

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- ✍ **Research field:** Computer vision, Deep Learning, Machine Learning & Embedded Systems.
- ✍ **Research domains:** Context awareness and scene understanding, surveillance and monitoring scenarios, remote sensing, e-Health systems and wearable technologies, human activity recognition, and others.
- ✍ **AI & computer vision:** Visual objects detection, single/ multi-object tracking, segmentation approaches, Generative models (GANs, diffusion models), transformer architectures, lightweight AI for edge computing, and others.
- ✍ **Embedded Systems:** Real-time AI processing, and AI-powered IoT applications.

## PUBLICATIONS

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### Journal(s):

- ✍ **Halar Haleem**, Igor Bisio, Chiara Garibotto, Fabio Lavagetto, Andrea Sciarrone, Nafeeul Walee, Atef Mohamed, Lei Chen, and Yiming Ji, "Towards Intelligent Traffic Monitoring System Exploiting GANs-based Models For Real-Time UAV Data" Accepted for publication in the *IEEE JSAC* (2025).
- ✍ Sohail Ahmed, **Halar Haleem**, Bertrand Schneider, and Georgi V. Georgiev. "Capturing activities and interactions in makerspaces using monocular computer vision". *IEEE Transactions on Learning Technologies* (2025).
- ✍ Muhammad Usman Khalid, Muizz Ahmed Sethi, Nirmal Kumar Ravikumar, **Halar Haleem**, Alessandro Seitone, Mattia Frascio, Perla Maiolino, And Matteo Zoppi. "A Camera-Embedded Self-Adaptable Finger with Multi-Modal Sensing Capabilities for Robotic Manipulation" *IEEE Access* (2025).
- ✍ Igor Bisio, Caterina Fallani, Chiara Garibotto, **Halar Haleem**, Fabio Lavagetto, Mehrnaz Hamedani, Angelo Schenone, Andrea Sciarrone, and Matteo Zerbino, "AI-Enabled Internet of Medical Things: Architectural framework and Case Studies" *IEEE Internet of Things Magazine (IoTM)* (2025).
- ✍ Sheida Nozari, **Halar Haleem**, Igor Bisio, Chiara Garibotto, Fabio Lavagetto, and Andrea Sciarrone. "CrowdWatch: Privacy-Preserving Monitoring Leveraging Wi-Fi Multiple Access Information." *IEEE Internet of Things Journal* (2025).
- ✍ Bisio Igor, **Halar Haleem**, Chiara Garibotto, Fabio Lavagetto, and Andrea Sciarrone. "RF/WiFi-based UAV Surveillance Systems: A Systematic Literature Review." *Elsevier Internet of Things Journal* (2024).
- ✍ Memon, Kanwal, Roomia Memon, Zafar Hussain Ibupoto, Ghufraan Ahmed Memon, **Halar Haleem**, Ayaz Ali Memon, Anjum Qureshi, Javed H. Niazi, Ahmed Nadeem, and Sabry M. Attia. "AuAgCu trimetallic nanoparticles-based alloy: an advanced electrocatalyst for hydrogen evolution reaction in alkaline media." *RSC advances* 14, no. 37 (2024): 27132-27140.
- ✍ Bisio Igor, **Halar Haleem**, Chiara Garibotto, Fabio Lavagetto, and Andrea Sciarrone. "Vehicular/Non-Vehicular Multi-Class Multi-Object Tracking in Drone-based Aerial Scenes." *IEEE Transactions on Vehicular Technology* (2023).
- ✍ Bisio Igor, Chiara Garibotto, **Halar Haleem**, Fabio Lavagetto, and Andrea Sciarrone. "A Systematic Review of Drone Based Road Traffic Monitoring System". *IEEE Access* (2022).
- ✍ Bisio Igor, Chiara Garibotto, **Halar Haleem**, Fabio Lavagetto, and Andrea Sciarrone. "Traffic Analysis through Deep Learning-based Image Segmentation from UAV streaming". *IEEE Internet of Things Journal* (2022).
- ✍ Bisio Igor, **Halar Haleem**, Chiara Garibotto, Fabio Lavagetto, and Andrea Sciarrone. "Performance Evaluation and Analysis of Drone-based Vehicle Detection Techniques From Deep Learning Perspective." *IEEE Internet of Things Journal* (2021).
- ✍ Bisio Igor, Chiara Garibotto, **Halar Haleem**, Fabio Lavagetto, and Andrea Sciarrone. "On the localization of wireless targets: A drone surveillance perspective." *IEEE Network* 35, no. 5 (2021).
- ✍ Karim, Sarang, **Halar Haleem Memon**, Shahzeb Ansari, Kashif Hussain, and Bhawani Shankar Chowdhry. "Optimization of power plant for telecom sector based on embedded system." *Mehran University Research Journal of Engineering & Technology* 38, no. 1 (2019): 209-220.
- ✍ Bushra, S., **H. H. Memon**, A. Nighat, and B. S. Chowdhry. "Design of Robust & Predictive Controller for Altitude Stabilization and Trajectory Tracking of a Quad-Copter." *International Journal of Engineering & Technology* 7, no. 4.38 (2018).
- ✍ Touqeer, J. A., **H. H. Memon**, S. A. Soomro, and N. A. Tunio. "Economic and environmental analysis of converting grid supplied HPS lights to solar PV powered LEDs in street lighting at Khairpur Mirs' Pakistan." *Indian J. Sci. Technol.* 9, no. 47 (2016): 1-6.

### Conference(s):

- ✍ **Halar Haleem**, Muhammad Shahid, Bisio Igor, Chiara Garibotto, Fabio Lavagetto, Sheida Nozari, Andrea Sciarrone, Mehrnaz Hamedani, Angelo Schenone, "Replacing Force Plates with IMU-based Smart Glasses for Balance Assessment" *IEEE HEALTHCOM* (2024).
- ✍ **Halar Haleem**, Bisio Igor, Chiara Garibotto, Fabio Lavagetto, and Andrea Sciarrone. "Model-Independent Approach For Long-Tail Object Detection In Aerial Imagery." *IEEE Annual Congress on Artificial Intelligence of Things, IEEE AIoT*, (2024).
- ✍ Bisio Igor, **Halar Haleem**, Chiara Garibotto, Fabio Lavagetto, and Andrea Sciarrone. "Innovative Flying Strategy based on Drone Energy Profile: an Application for Traffic Monitoring." *IEEE GLOBECOM* (2022).

- ✍ Bisio Igor, **Halar Haleem**, Chiara Garibotto, Fabio Lavagetto, and Andrea Sciarrone. "Accuracy-Versus-Energy Evaluation In Drone-Based Video Processing For Object Detection." *IEEE GLOBECOM* (2022).
- ✍ G. Chen et al., "VisDrone-MOT2021: The Vision Meets Drone Multiple Object Tracking Challenge Results," 2021 IEEE/CVF International Conference on Computer Vision Workshops (ICCVW), 2021, pp. 2839-2846, doi: 10.1109/ICCVW54120.2021.00318.
- ✍ **Memon, H. H.**, and M. M. Alam. "Reliability, maintainability, availability and failure rate analysis of IGBT triggering system designed for marine environment." In *2016 13th International Bhurban Conference on Applied Sciences and Technology (IBCAST)*, pp. 295-299. IEEE, 2016.
- ✍ **Memon, H. H.**, B. S. Chowdhry, and M. Aamir. "Optimal power dispatch using model predictive control for energy deficit countries." In *2016 13th International Bhurban Conference on Applied Sciences and Technology (IBCAST)*, pp. 245-250. IEEE, 2016.

### **Book Chapter(s):**

- ✍ Bisio Igor, Chiara Garibotto, and Fabio **Halar Haleem**. "Drone surveillance system—RF/WiFi-based drone detection, localization, and tracking: a survey." *Aviation Cybersecurity: Foundations, Principles, and Applications* (2021): 49.

### **SKILLS**

**Technical:** *Programming languages & tools* (Python, MATLAB/Simulink, NI MultiSim, Proteus, PLC, Assembly);  
*Machine Learning, Deep Learning, and computer vision libraries and tools* (TensorFlow, Keras, PyTorch, OpenCV, Scikit-Learn, Git, & others);  
*Development Environments* (Spyder IDE, Pycharm, Visual studio, Jupyter Notebook);  
*AI Agents & Workflow Tools:* Celery, AI agents, Git, Docker, MongoDB Compass.  
*Edge computing & Embedded platforms* (NVIDIA Jetson, Raspberry Pi, Arduino, Dockers)

- ✍ **Computer:** Windows OS, Linux, MS Office, LibreOffice, LaTeX, Overleaf.

- ✍ **Languages:** Sindhi (Mother tongue), Urdu, English, Italian (Basic level).

### **HONORS & RESEARCH FUNDING**

- ✍ Winner of Italian Government Scholarship for the PhD program.
- ✍ Winner of research funding for the MSCA COFUND post-doctoral fellowship program.

### **RESEARCH COLLABORATIONS**

- ✍ Department of Information Technology, Georgia Southern University, USA. → Academic
- ✍ Centre of Ubiquitous Computing (UBICOMP), University of Oulu, Finland. → Academic
- ✍ Department of Computer Science, Kuwait University, Kuwait. → Academic
- ✍ Ericsson (Genova, Italy) collaborated in the European 5G SMARTG project. → Industrial

### **COURSES, SCHOOLS & CONFERENCES**

- ✍ **Schools:**
  - ✓ “PhD School on eHealth” by IEEE Communication Society, (2023 and 2024).
  - ✓ “Autonomous and Intelligent Unmanned Vehicles” IEEE Sensors Council Summer School (2020).
  - ✓ “Deep Learning: a hands-on introduction” DIBRIS Department, University of Genova, Italy, (2020).
- ✍ **Courses:**
  - ✓ “Deep Learning and Computer Vision” by University of Thessaloniki, Greece, (2022).
  - ✓ “Fundamentals of TinyML”, at edX (2021).
  - ✓ “Machine Learning”, Coursera (2021).
  - ✓ “Introduction to Machine Learning”, Coursera (2020).
- ✍ **Conferences:**
  - ✓ IEEE Annual Congress on Artificial Intelligence of Things, Melbourne, Australia, (2024).
  - ✓ IEEE HEALTHCOM, Nara, Japan, (2024).
  - ✓ IEEE Global Communications Conference, Rio de Janeiro, Brazil, (2022).
  - ✓ IEEE HEALTHCOM, Genova, Italy, (2022).
  - ✓ IEEE IBCAST, IEEE, Islamabad, Pakistan, (2016).
  - ✓ IEEE 31<sup>st</sup> Multitopic International Symposium, Karachi, Pakistan, (2016).

## OTHER INFORMATION

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- ✍ Have taken IELTS test in July 2019 scoring 6.0 band.
- ✍ Journals Reviewer: IEEE Transactions on Vehicular Technology, IEEE Internet of Things Journal, IEEE Access, Sukkur IBA Journal of Emerging Technologies)
- ✍ Conferences Reviewer: IEEE International Conference on Communications (ICC), IEEE International Conference on E-health Networking, Application & Services, The International Telecommunications Conference (HEALTHCOM), International Telecommunications Conference (ITC-Egypt)

## REFERENCES

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1. Prof. Fabio Lavagetto (Relation-: PhD Supervisor)  
DITEN – University of Genova, Italy. Tel: 010-3532208, Email: [Fabio.lavagetto@unige.it](mailto:Fabio.lavagetto@unige.it)
2. Prof. Igor Bisio (Relation-: PhD Supervisor)  
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3. Prof. (Assistant) Kashif Hussain, (Relation-: Manager and colleague)  
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