Rafiq ul Islam

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PROFESSIONAL SUMMARY

Professional Summary

PhD Researcher in Efficient Embedded Vision & Privacy-Aware AI, specializing in deploying low-latency, energy-efficient neural networks on microcontrollers for real-time human behavior analysis. Expert in **model optimization (TinyML, int8 quantization), sensor integration, and edge AI pipelines** designed to protect user anonymity. Proven track record of building deployable perception systems for smart environments. Seeking an MSCA Postdoctoral Fellowship to advance research in **event-based vision and efficient human movement perception** at IMT Atlantique.

Research Themes & Technical Alignment

- **Low-Power, Low-Latency Perception:** Optimizing TinyML models (int8 quantization) for real-time, on-device visual inference under strict energy and latency constraints.
- **Privacy-Preserving Sensing:** Designing vision systems that protect user anonymity through on-device processing and privacy-aware architectures (e.g., FOMO models).
- **Human-Centered Embedded AI:** Developing adaptive systems for human behavior analysis in real-world settings, bridging efficient perception with ethical interaction.

WORK EXPERIENCE

University of Polytechnic – Valencia, Spain

Visiting Researcher

[01/02/2025 – 31/07/2025]

- Built a **privacy-preserving visual perception system** using a FOMO model on Arduino Nicla Vision, enabling **anonymous human presence and engagement tracking** without transmitting raw video, directly relevant to event camera-based anonymized sensing.
- Developed an **on-device visual perception system** for real-time scene understanding, achieving low-latency inference (<100ms) under ultra-low-power constraints.
- Implemented **model quantization (int8)** and optimization techniques to achieve robust performance under severe power/computational constraints—skills directly applicable to efficient robotic control.
- Architected a **closed-loop data pipeline** integrating low-power wireless communication (LoRaWAN) with cloud analytics (InfluxDB), mirroring perception-action cycles in autonomous systems.

GithubLink: https://github.com/rafibit/artifacts-holding-power

University of Calabria and WISH INNOVATIONS S.R.L – Rende, Italy

PhD Researcher

[01/08/2023 – 29/01/2026]

- Designed a **multi-modal sensor network** for environmental perception, implementing **real-time data fusion and adaptive control loops** applicable to event-based sensor integration.
- Managed end-to-end data lifecycle from edge devices to cloud platforms (The Things Network), ensuring reliable, real-time communication in dynamic environments.
- Applied **privacy-preserving design principles** to embedded AI, aligning with human-centered and safe robotic systems.

Daanish Schools, Govt. of Punjab – Faisalabad, Pakistan

Computer Science Teacher

[30/12/2020 – 31/10/2022]

University of Agriculture – Faisalabad, Pakistan

Visiting Lecturer

[01/10/2019 – 30/04/2020]

Punjab Education Department – Faisalabad

Senior Elementary School Teacher

[31/07/2016 – 31/08/2017]

EDUCATION AND TRAINING

PhD-Information and Communication Technology

University of Calabria [01/11/2022 – 29/01/2026]

City: Rende | **Country:** Italy

MS Computer Science

Beijing Institute of Technology [05/09/2017 – 20/06/2019]

City: Beijing | **Country:** China

Bachelor of Computer Science

University of Engineering and Technology [11/12/2011 – 30/08/2015]

City: Lahore | **Country:** Pakistan

SKILLS

Programming

Python / MicroPython / C++ / OpenMV scripting / Flux Query Language / Embedded Linux

Technical Expertise

Linux (Terminal Commands, Bash/Shell) / Docker Environment / Mqtt Protocol / Influxdata(InfluxDB, Telegraf, Grafana) / Cloud Server Management / The Things Network and Chirpstack

Embedded Vision & AI

TinyML / Model Quantization / Edge Impulse / Computer Vision (FOMO) / Real Time Inference / On Device Learning

Low Power Syatems and Sensing

Microcontroller Programming (Arduino)) / Time Series Analysis / LoRaWAN / Sensor Fusion

LANGUAGE SKILLS

Mother tongue(s): Urdu

Other language(s):

English

LISTENING C1 **READING** C1 **WRITING** C1

SPOKEN PRODUCTION C1 **SPOKEN INTERACTION** C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PUBLICATIONS

General-Purpose Sensing for Smart Environments: The Smart Museum Use Case

Journal Name: 21st International Conference on Distributed Computing in Smart Systems and the Internet of Things

Improving visitors experience in Smart Museums

Journal Name: 1st IEEE Latin American Conference on Internet of Things

Leading Smart Environments towards the Future Internet through Name Data Networking: A survey

Journal Name: Future Generation Computer Systems

Healthiness and Safety of Smart Environments through Edge Intelligence and Internet of Things Technologies

Journal Name: Future Generation Computer Systems

More Publications

Link: https://scholar.google.com/citations?view_op=list_works&hl=en&user=qTUg8-oAAAAJ

HONOURS AND AWARDS

[27/12/2018] Beijing Institute of Technology, China
STUDENT DISTINGUISHED AWARD

[27/12/2018] Beijing Institute of Technology, China
BEST VOLUNTEER AWARD

PROFESSIONAL DEVELOPMENT

[26/03/2025 – 28/03/2025]
Summer School: IoT for eco friendly Tourism

Participant

[27/06/2024 – 27/06/2024]
Workshop IEEE@UNICAL

Attendee

[25/09/2023 – 27/09/2023]
The International Conference on Embedded wireless systems and Networks

Participant