Rafiq ul Islam

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PROFESSIONAL SUMMARY

Professional Summary

Researcher in **embedded vision and privacy-aware artificial intelligence**, with strong expertise in designing **low-power, low-latency sensing systems for human-centred and non-intrusive interaction scenarios**. Specialized in deploying optimized neural networks on **resource-constrained devices** using TinyML, model quantization, and on-device inference. Experienced in building **real-world systems that infer human presence, attention, and engagement** through embedded sensing, edge-cloud architectures, and low-power communication technologies. Proven track record of developing **deployable, ethical, and privacy-preserving AI systems** for public-facing environments such as smart spaces and cultural contexts.

Human-Centred Systems Focus

- Non-intrusive sensing of human presence and engagement
- Privacy-aware interaction in public environment
- Real-world deployment under energy and attention constraints

WORK EXPERIENCE

University of Polytechnic – Valencia, Spain

Visiting Researcher

[01/02/2025 – 31/07/2025]

- Built a **privacy-preserving embedded perception system** using a FOMO-based model on Arduino Nicla Vision, enabling **implicit and non-intrusive sensing of human presence and engagement** without transmitting raw video data.
- Developed an **on-device perception system** for real-time interpretation of human activity in the environment, achieving **low-latency inference (<100 ms)** under ultra-low-power constraints.
- Implemented model quantization (int8) and optimization techniques to support **continuous background inference** under strict power and computational constraints.
- Architected a closed-loop sensing and analytics pipeline combining low-power wireless communication (LoRaWAN) with cloud-based analysis, enabling **system-level evaluation of human–system interaction over time**.

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

WISH INNOVATIONS S.R.L – Rende, Italy

Visiting Researcher

[01/08/2023 – 31/01/2025]

- Designed a **multi-modal sensing system** for real-world environments, enabling **context-aware interpretation of human activity** through real-time data fusion.
- Managed end-to-end data pipelines from embedded devices to cloud platforms, supporting **continuous stream processing and long-term analysis of interaction data**.

- Designed and validated a **CNN–LSTM forecasting pipeline** for real-time IoT data streams, integrating sensor preprocessing, outlier handling, and short- and long-term temporal modeling.
- Implemented a **data-driven risk prediction pipeline** that translated temperature forecasts into **Predicted Risk of Damage (PRD)** metrics, achieving **≈2–3% MAPE** and supporting real-time decision-making in smart environments.

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]

PUBLICATIONS

A TinyML Framework for Quantifying Artifacts Holding Power in Smart Museums Accepted and presented on: 09-01-2026 in 2nd International Workshop on Digital Sustainability for Comsumer Applications: Innovations in Communications and Networking.

Improving visitors experience in Smart Museums

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

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

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

Journal Name: Future Generation Computer Systems

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

Journal Name: Future Generation Computer Systems

More Publications

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

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

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