# Rafiq ul Islam

**Email address:** rafiqul.islam@dimes.unical.it

**Website:** https://rafibit.github.io/pp2

**Home:** 87036 Rende (Italy)

## 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 **real-world cyber-physical and edge environments**, including public-facing and resource-constrained settings.

### 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** Conference: Consumer Communications & Networking Conference (CCNC)

**Improving visitors experience in Smart Museums** Conference: 1st IEEE Latin American Conference on Internet of Things.

**General-Purpose Sensing for Smart Environments: The Smart Museum Use Case** Conference: 21st International Conference on Distributed Computing in Smart Systems and the Internet of Things

**Journal Name**:

**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 Named 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 Systems and Sensing

Micro Controller Prograamming (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

## 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