

# Expansion of IoT and TinyML: Requirements, Accelerators, and Challenges

Internet-of-Things (IoT) in Smart Cities and Industry 4.0

Neural network accelerators

## Aspects for long-term sustainability:

**Energy and resource efficiency**

**Quality preservation**

**Application versatility**

**Platform compatibility**

**On-device training**

## Current state-of-the-art methods:

### **Extreme quantization**

Fails to adequately meet fundamental aspects, particularly in **complex problems** and **mission-critical applications**.

### **Fixed precision**

Fails to adequately adapt to the ongoing technological shift towards **on-device training**.