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

Low-power floating-point accelerators
Literature gap in embedded systems for TinyML applications