



The Challenges of TinyML Implementation: A Literature Review

By Riya Adlakha and Eltahir Kabbar

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Abstract

This study aims to sensitise and summarise the tiny machine learning (TinyML) implementation literature. TinyML is a subset of machine learning (ML) that focuses on implementing ML models on resource-constrained devices such as microcontrollers, embedded systems, and internet of things (IoT) devices. A systematic literature review is performed on the works published in this field in the last decade. The key focus of this article is to understand the critical challenges faced by this emerging technology. We present five significant challenges of TinyML, namely, limited and dynamic resources, heterogeneity, network management, security and privacy, and model design. This article will be of interest to researchers and practitioners who are interested in the fields of ML, IoT and edge computing.

Keywords: TinyML, edge computing, machine learning, IoT, microcontrollers

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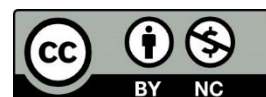
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Unitec, Private Bag 92025

Victoria Street West, Auckland 1010

Aotearoa New Zealand



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