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Abstract Dummy Page.

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Part I:
Introduction

Scania systems are made of a diverse multitude of Electronic Control Units (ECUs) with varying features and constraints, with newer hardware with richer capabilities set to join down the pipeline. Repurposing some of the older hardware and utilising the incoming powerful hardware for machine learning (ML) applications provide an exciting frontier.

1. Background

Tiny Machine Learning (Tiny ML) is a field of study in embedded systems and machine learning that is growing at a fast pace and has a lot of relevance to this project.

1.1 Scania Embedded Systems

Nature of the Distributed Network

1.1.1 Target Hardware
Raspberry Pi Zero

The Constraints on the Environment

1.2 Anomally Detection

Explain the problem and introduce some terminology which will appear again in the next chapter ...

Why perform training and inference on ECUs?
State the Motivation

1.3 Implementations using General Frameworks

Training and inference of (small) neural networks in embedded systems can be considerably improved compared to general purpose neural networks frameworks

2. Theory

This section will elaborate and build upon all the theoretical foundations required to implement most of the methods presented in this report.

2.1 Pruning

2.2 Quantisation

Part II:
Implementation

Give an outline of the general approach to writing the NN

3. Design
Software Architecture

3.1 Embedded Operating System

Replace with the name of the chosen OS

3.1.1 Neural Network Support

Leveraging hardware support from OS to the application

3.2 Tiny Neural Network

Part III:
Analysis

Outline the results of the implementation

4. Results

The performance of the Neural Network

4.1 Accuracy and Compute Times

4.2 Comparing Neural Network Optmisations

5. Discussion

Which optimisation approaches gave the most in improvement?

6. Conclusion and Future Work

References

[1] Patrik W. Daly Helmut Kopka. *A Guide to LaTeX 2ε*. Addison-Wesley Professional, 4th edition, 2003.