

2023 Deep Learning Hardware Accelerator Design Contest

Midterm Evaluation Report: Evaluation Criteria

Issued: February 20 (Monday), 2023

1. Overview

This document summarizes the criteria for the midterm evaluation. Since the competition is designed for an educational goal, we have considered all aspects, including algorithms, coding, experimental results, and presentation.

2. Evaluation criteria

1.1. Software (25p)

- Check how to a team understands a deep learning model's inference and prepare the data for hardware implementation.
- Mean Average Precision (mAP(%)): Evaluate the accuracy of the quantized model and activation quantization.
- Generate input data (e.g., input image and filters) and the output data (e.g., feature maps for Layers 1-3) for hardware verification.

1.2. Hardware Design (50p)

- Design DSP/MAC, buffers, and a controller (e.g., FSM) for multi-layer operations
- Implement normalization (e.g., scaling/descaling, adding a bias), activation, quantization, and max-pooling.
- Verify the outputs of RTL simulation for three CONV layers.

1.3. Presentation (25p)

- Explain the results.
- Explain your quantization method, dataflow, implementation ideas, and algorithms.
- Distribute tasks among members, and make a plan