

Proposal: A Comparison of Optimization Methods for YOLO Running on Jetson Nano

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1 Project Summary

YOLO is a highly capable image detection and classification model. It has been shown to perform well on various open datasets including coco128, CFAR10, CFAR100, and ImageNet. An edge device running YOLO could assist in various tasks such as human detection in home security cameras, quality assurance in manufacturing, and obstacle identification in autonomous systems. We propose to compare compression methods described in [1] to assess the performance of YOLOv8 on the Jetson Nano platform. We will write the harness in such a way as to enable easy assessment of deployment to other platforms as well.

2 ML ALgorithm

We will use YOLOv8.

3 Target Platform

Jetson Nano

4 Optimization Approach

We will train the model using a desktop workstation with a GPU. The trained model will be variously compressed using methods from [1] then evaluated when running on the target platform.

5 Metrics

We will use the coco metrics of mean average precision (mAP) in both @0.5 and @0.95 variants as evaluation metrics.

6 Dataset

We will use CFAR100 as the train and test set.

References

- [1] M. JANI, J. FAYYAD, Y. AL-YOUNES, AND H. NAJJARAN, *Model compression methods for yolov5: A review*, 2023.