



Object Detection with YOLOv8

Ampere® Cloud Native Processors with Ampere® Optimized AI Frameworks, deliver best GPU-Free AI inference performance for applications developed in PyTorch, TensorFlow, and ONNX-RT.

Ampere Altra Powered ML Inference

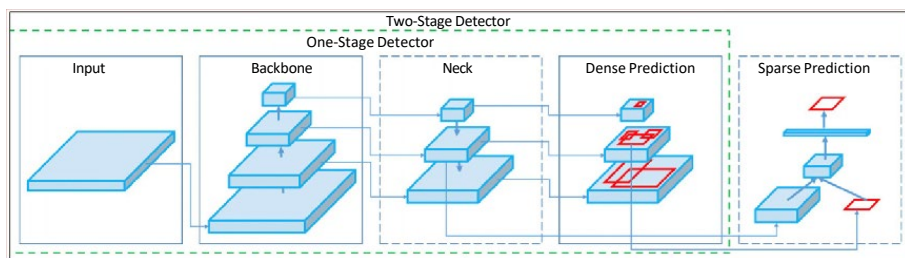
Ampere **Cloud Native Processors** satisfy the performance requirements of widely used machine learning (ML) workloads while **providing the best price-performance and optimizing power draw**. This demo consists of multiple streams of video sources detecting still and moving objects using the popular YOLOv8 model.

Setup

Deployment of the open-source computer vision object detection AI model YOLOv8 with **Ampere® Optimized PyTorch** running on Ampere Altra Max. The chosen model, YOLOv8, is a widely used algorithm for computer vision applications where both throughput and latency are critical. Implementation and performance details for the YOLOv8 model developed and released by Ultralytics can be found [here](#).

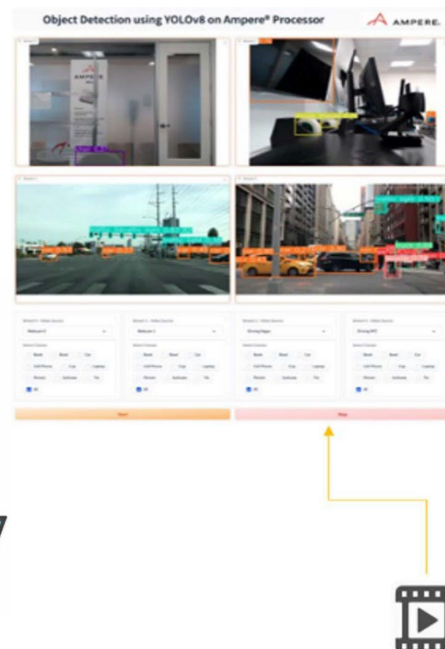
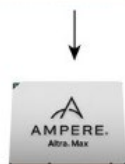
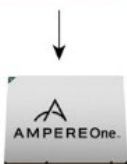
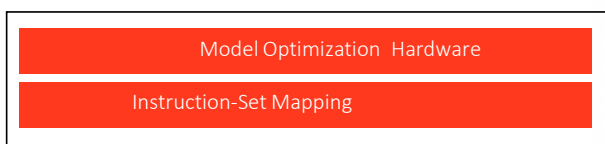
Key Benefits Demonstrated

- Meets or exceeds the necessary **low latency** requirements for real-time ML object detection applications.
- Delivers the best **price-performance** in GPU-Free AI inference in both cloud and edge deployment scenarios.
- The YOLOv8 model can be downloaded from Ampere® AI Model Library (AML) and used as is without any modifications.
- Ampere Altra processor can **easily be scaled** and **dynamically provisioned** based on the performance requirements of the user's application such as target frame rate, number of video channels, etc.



PyTorch

Ampere Optimized AI Frameworks



Real-time Object Detection and Classification

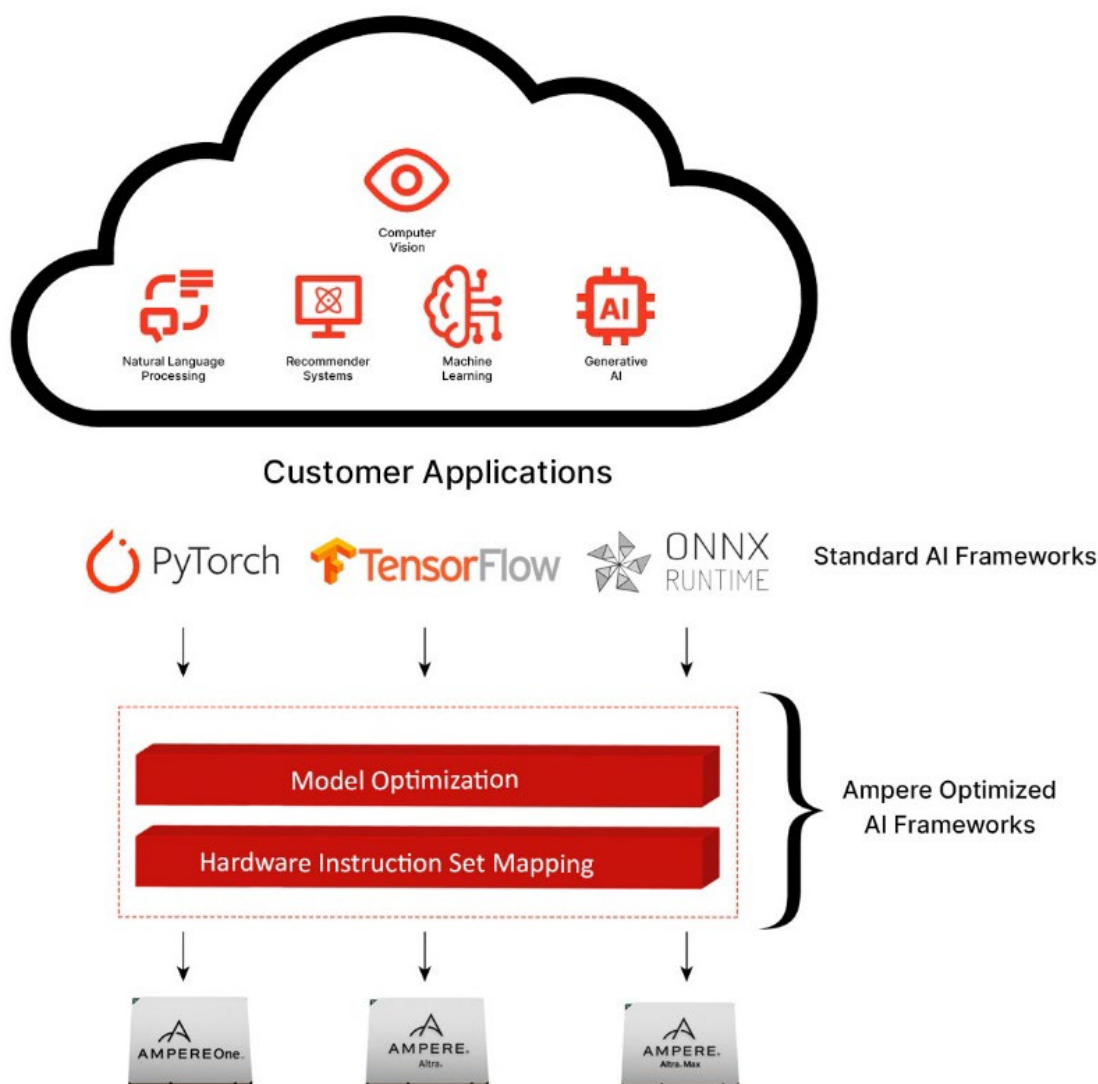
This demo performs object detection and classification with a pre-trained YOLOv8 model. It processes images and videos from an incoming real-time video streaming from video files. It runs at real-time **performance level**. The performance can be scaled depending on application requirements by allocating the number of CPU cores to meet the desired price-performance target.

Resources

The YOLOv8 model can be accessed from the [Ampere AI Model Library](#). The docker image of Ampere Optimized PyTorch is available in the downloads section of [Ampere AI Solutions web page](#). Other Ampere® Optimized Frameworks can also be accessed from the same location.

Ampere Optimized TensorFlow, PyTorch, ONNX-RT can also be downloaded and installed free of charge on any edge workstation or server through [Ampere AI Solutions web page](#).

Figure 2. Integration of Ampere Optimized Frameworks with Ampere Cloud Native Processors



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