



# Object Detection with YOLOv8 — Running Machine Learning on Oracle Ampere A1 VMs

Oracle Ampere A1 , powered by Ampere® Altra CPU and high performance Ampere® AI inference engine, delivers best-in-class AI inference performance on standard frameworks, including PyTorch, TensorFlow, and ONNX-RT.

## Ampere Altra Powered ML Inference on OCI

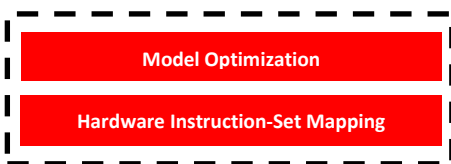
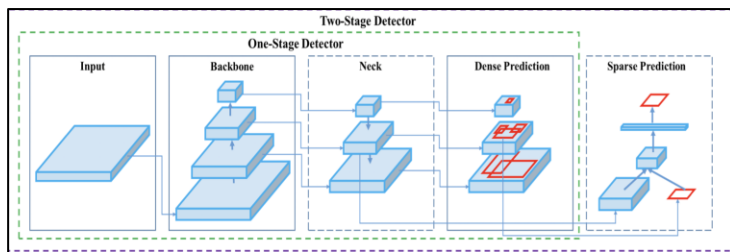
Ampere® Altra family of **Cloud-Native Processors** satisfies the performance requirements of widely used machine learning (ML) workloads while **providing the best price-performance**. This demo consists of multiple streams of video sources detecting still and moving objects such as pedestrians, laptop, chair, cup, and so on, 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 CPU-only 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.



ORACLE  
Cloud Infrastructure

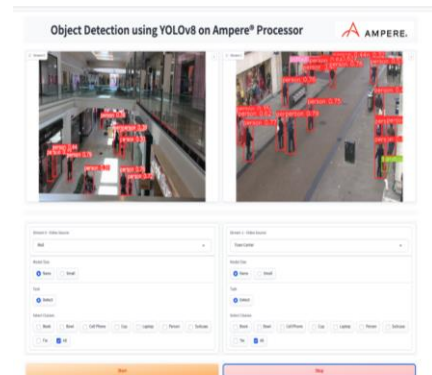


Figure 1: YOLOv8 Demo Runs on Oracle Ampere A1 with Ampere Altra

## 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 on Oracle Ampere A1 at real-time **performance level**. The performance can be scaled depending on application requirements by allocating the number of vCPUs to meet the desired price-performance target.

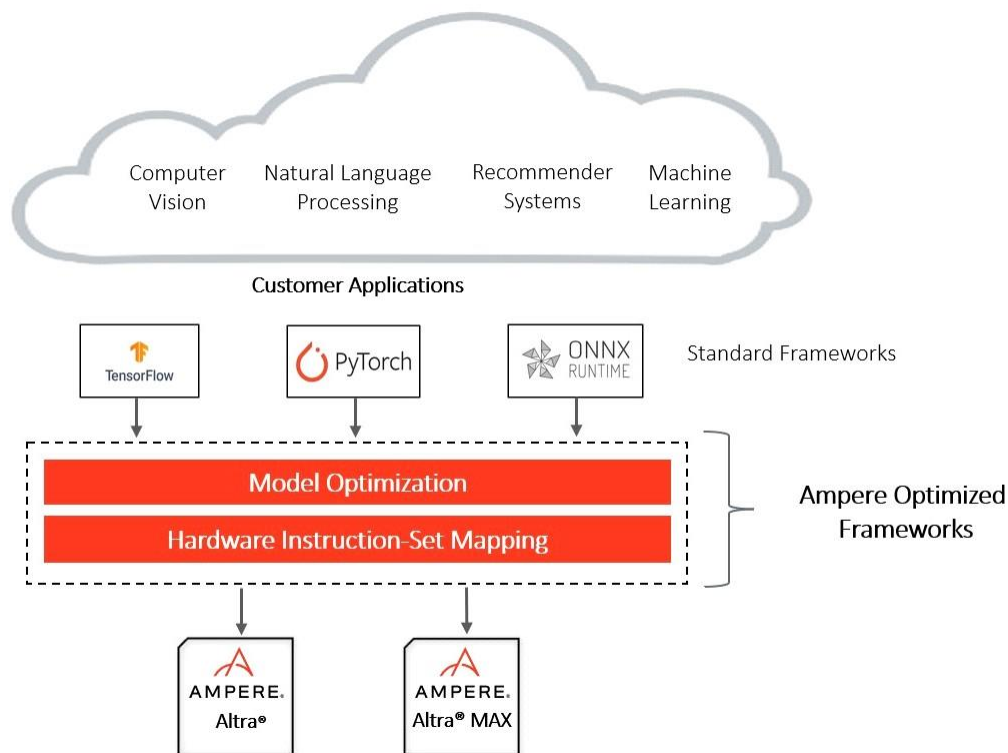
The same workload also runs on x86 for comparison purposes. We demonstrate that the **Ampere Altra family of cloud-native processors consistently outperforms x86 platforms**.

## 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 Altra Cloud Native Processors**



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