



Accelerating Digital Pathology

Ampere® Cloud Native Processors with Ampere® Optimized AI Frameworks, deliver the best 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 optimized power draw**. ALAFIA leverages Ampere Cloud Native Processors to increase the performance of widely used and highly parallel workloads in healthcare to accelerate digital pathology workflows.

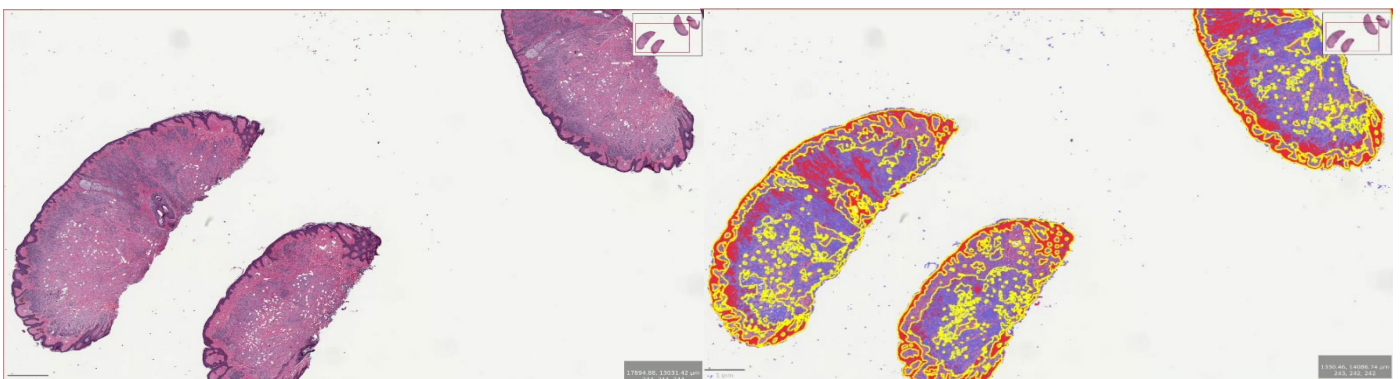
Setup

An optimized and accelerated version of QuPath v0.5.1 running on ALAFIA's AIVAS SuperWorkstation with 128 Cores Ampere® Altra Max CPU. QuPath is an open source application for bioimage analysis. QuPath is often used for digital pathology applications because it offers a powerful set of tools to process whole slide images.

Figure 1 Alafia AIVAS SuperWorkstation with Ampere Altra Max CPU



Figure 2 pre-processed and post-processed whole slide cell sample



Key Benefits Demonstrated

- Provides **ultra-low latency** for real-time cell segmentation, classification and detection applications.
- **Time savings** gained from using accelerated histopathology techniques are critical in swift identification and treatment of illness and disease.
- **High-capacity memory architecture** allows to store and process very large whole slide images with resolutions higher than 100,000 x 100,000 pixels.
- **Over 12 times faster** workflow results
- **Performance can be scaled** depending on the application requirements by allocating the number of CPU cores and memory capacity to meet a desired performance target.
- Ampere Cloud Native Processors deliver **the best price-performance in AI inference** in both cloud and edge deployment scenarios.

Real-time cells detection, classification, segmentation and measurement

This demo performs real time cell detection, segmentation and measurements using state-of-the-art algorithms with an Aperio scanned brightfield whole slide image sample. Processing the whole slide sample is done **real-time** from local NVMe storage. Performance can be scaled depending on the application requirements by allocating the number of CPU cores and memory capacity to meet a desired performance target.

Over 12 times faster workflow. Benchmark Results:

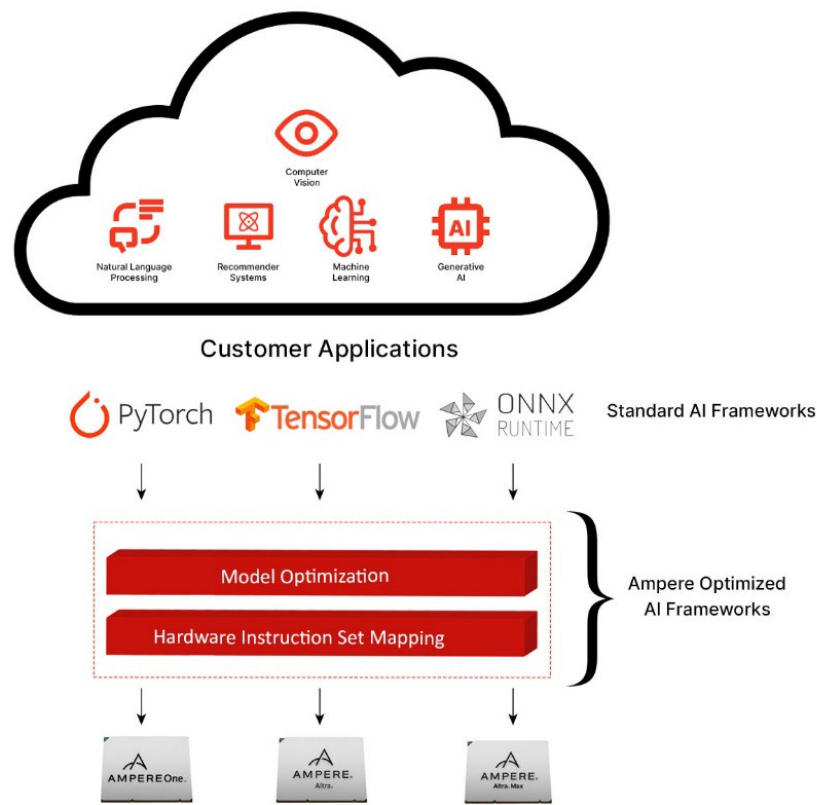
- Pixel Classifier: 4.319 seconds
- Cell Detection: 56.210 seconds
- Cell Classification: 0.160 secs
- Measurement Export: 14.752 secs
- Cell Count Verification: PASSES
- Overall time: 58.458 seconds

Resources

Visit [Ampere AI Solutions web page](#) to learn more about Ampere offerings for AI workloads and to download the free Ampere Optimized AI Frameworks (see diagram below).

For more details on Alafia visit www.alafia.ai.

Figure 3. Integration of Ampere Optimized Frameworks with Ampere Cloud Native Processors



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