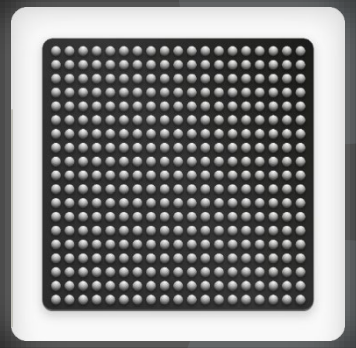
HAILO

Hailo AI Software Suite

Version 2024-07



July 2024

Hailo AI Software Suite July 2024 Release

2024-04	AI Software Suite Version 2024-07		2024-10
3.27	→ Hailo Dataflow Compiler	version **3.28**	3.29
4.17	→ HailoRT	version **4.18**	4.19
2.11	→ Model Zoo	version **2.12**	2.13
3.28	→ TAPPAS	version **3.29**	3.30

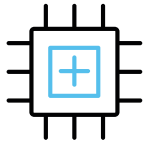
docker

Software features legend: Release Preview

Hailo AI Software Suite Version 2024-07

Ease of Use

- Added support for bounding box only Yolov8 post-processing

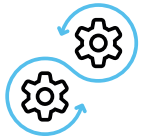


New Capabilities

- Hailo-10H support across the AI Software Suite
- Introducing new graphical tools: Dataflow Compiler Studio and HailoRT Profiler

Enhanced Performance

- FPS improvement for some models such as the Yolov5m benchmark
- PyHailoRT Async API support



Infrastructure & Frameworks

- PyHailoRT Python 3.11 support

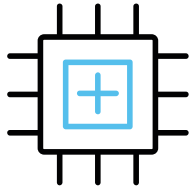
Pre-Trained Models

- Yolo v10 support
- New Transformer models

Application Examples

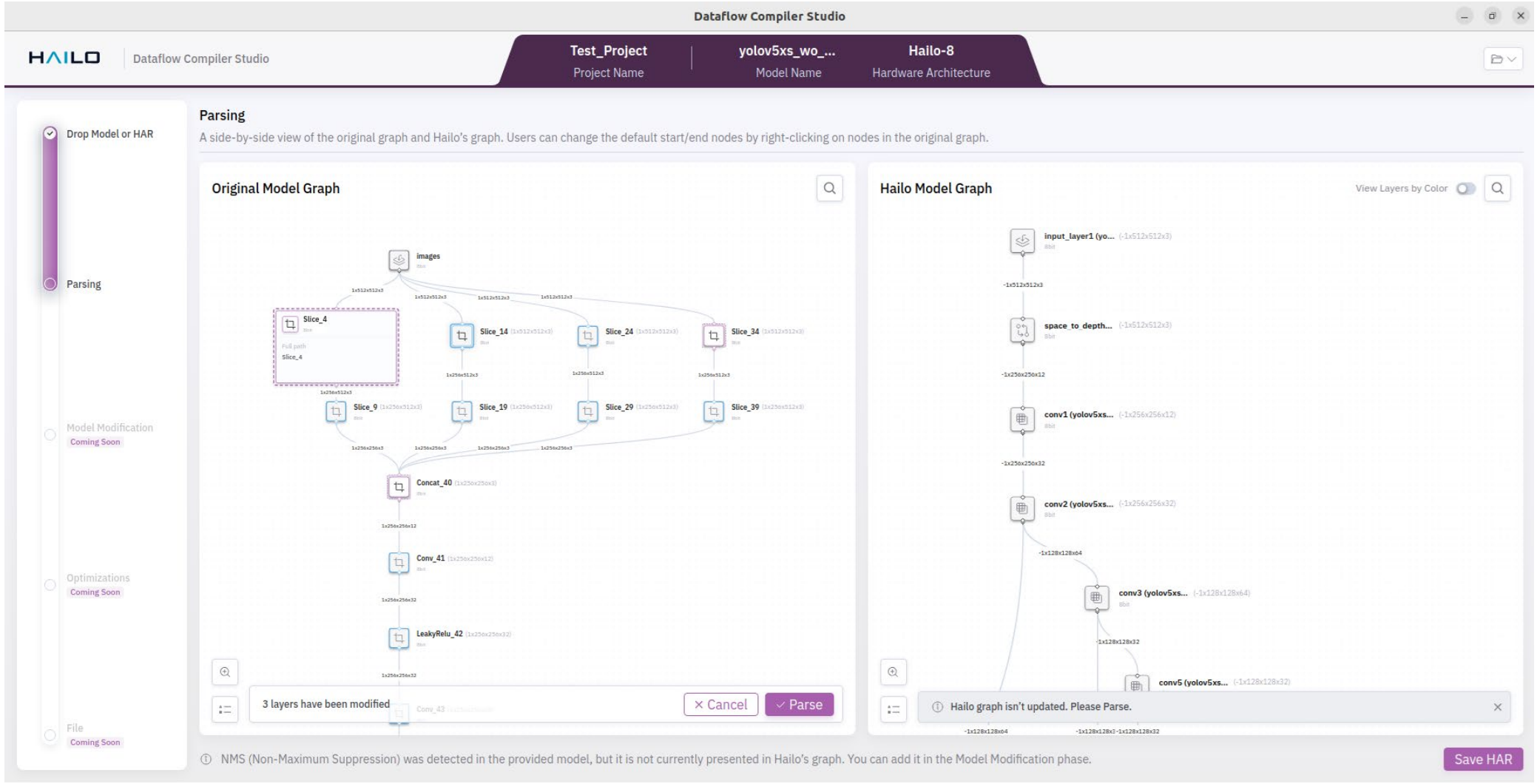
- New Hailo-15 detection & face landmarks example app

New Capabilities

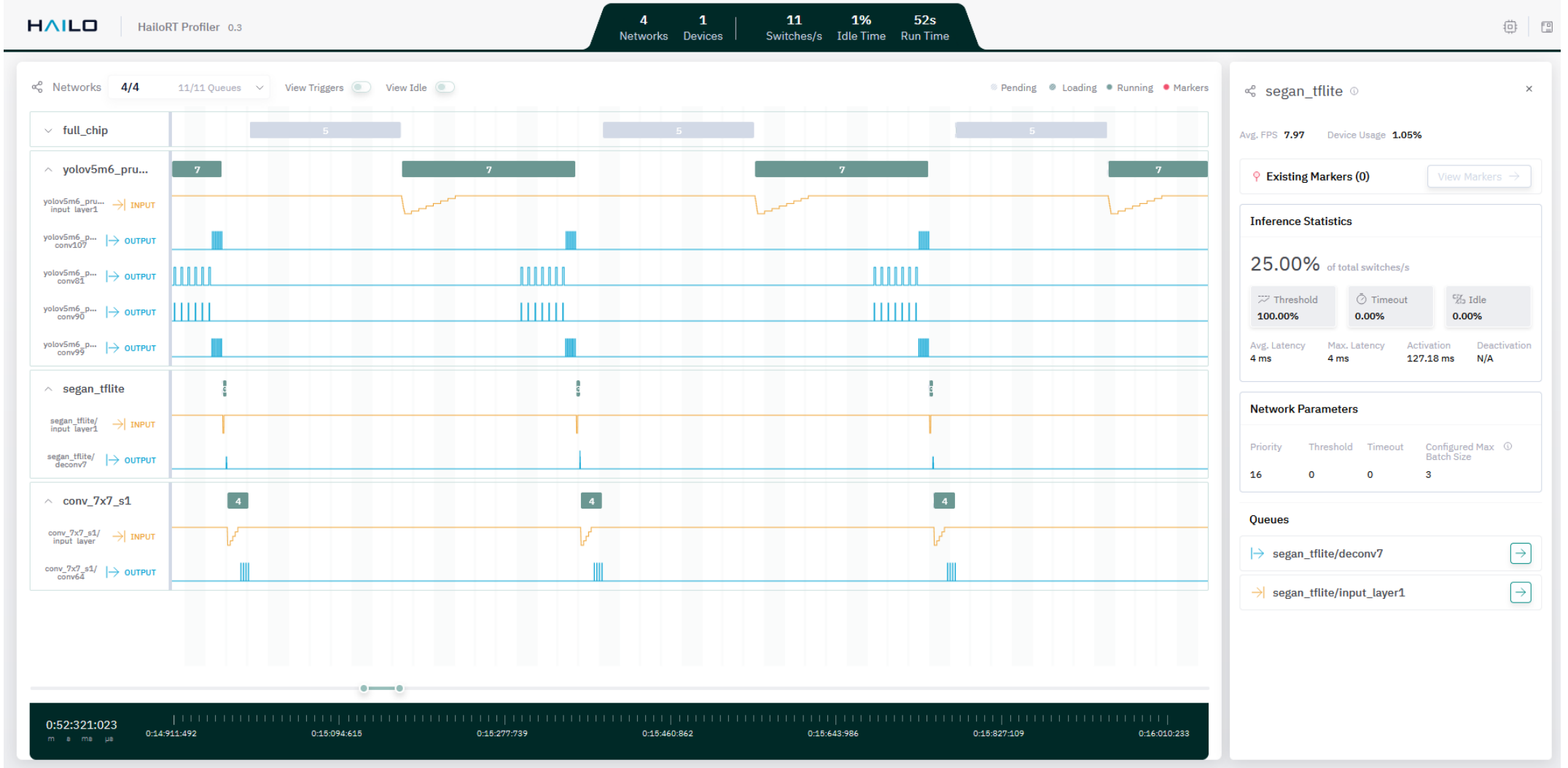


- Hailo-10H support across the AI Software Suite
- Introducing the Dataflow Compiler Studio, a new graphical tool for Hailo's toolchain
- Introducing the HailoRT Profiler, a new graphical tool to analyze the performance of complex pipelines and the behavior of the HailoRT scheduler

Dataflow Compiler Studio



HailoRT Profiler



Enhanced Performance

- Significant FPS improvement for some of the benchmarks and Model Zoo models across the different Hailo products, including the Yolov5m benchmark
- PyHailoRT Async API support leads to better performance with Python apps

Ease of Use

- Added support for bounding box only Yolov8 post-processing, which means the NMS operation stays in the user's application, improving flexibility and robustness

Infrastructure & Frameworks

- PyHailoRT Python 3.11 support enables PyHailoRT on Raspberry Pi 5 as well as on other platforms

New AI Models in Model Zoo

- Latest Yolo detectors support: Yolo v10 nano and small
- Added many new Transformer models, including LayerNorm support: ViT, DeIT, DETR Resnet50, LeViT, others

Application Examples

- New Hailo-15 C++ based detection & face landmarks example app
- New Hailo-8 multi-device multi-stream detection example app with x86 hardware accelerated video decoding support

Hailo-8 Measured Benchmarks*

NN Model	Input Resolution	FPS	Power (W)	FPS/W
Classification				
ResNet-50 v1	224×224	1357	3.7	364
MobileNet_v2_1.0	224×224	2434	2.1	1176
EfficientNet_M	240×240	890	4.0	221
ViT_base	224×224	138	2.6	52
Object Detection				
SSD_MobileNet_v1	300×300	1016	2.2	455
YOLOv5m	640×640	242	5.3	46
Semantic Segmentation				
stdc1	1024×1920	58	3.0	19

https://hailo.ai/products/ai-accelerators/hailo-8-ai-accelerator/#hailo8-benchmarks

** Notes:*
1. *Batch size is 8*
2. *Measurements were taken at room temperature through PCIe interface on Hailo-8 evaluation board*
3. *System host: Intel® Core™ i5-9400 CPU @ 2.90GHz; Models compiled with Hailo Dataflow Compiler version 3.28.0 (SW version 2024-07)*

Hailo-8L Measured Benchmarks*

NN Model	Input Resolution	FPS	Power (W)	FPS/W
Classification				
ResNet-50 v1	224×224	504	1.9	260
MobileNet_v2_1.0	224×224	1739	1.7	1021
EfficientNet_M	240×240	434	2.2	202
Object Detection				
SSD_MobileNet_v1	300×300	356	1.4	256
Tiny_YOLOv3	416×416	899	3.1	290
Semantic Segmentation				
deeplab_v3_mobilenet_v2	513×513	64	1.6	40

https://hailo.ai/products/ai-accelerators/hailo-8l-ai-accelerator-for-ai-light-applications/#hailo8l-benchmarks

** Notes:*
1. *Batch size is 8*
2. *Measurements were taken at room temperature through PCIe interface on Hailo-8L evaluation board*
3. *System host: Intel® Core™ i5-9400 CPU @ 2.90GHz; Models compiled with Hailo Dataflow Compiler version 3.28.0 (SW version 2024-07)*

Hailo-15H Measured Models*

NN Model	Input Resolution	FPS
Classification		
ResNet-50 v1	224×224	972
MobileNet_v2_1.0	224×224	3456
ViT Base	224×224	197
Object Detection		
SSD_MobileNet_v1	300×300	1145
YOLOv5m	640×640	202
Semantic Segmentation		
stdc1	1024×1920	27

** Notes:*
1. *Batch size is 8*
2. *DDR, A53 and NN Core are active, but all other peripherals are on IDLE*
3. *Measurements were taken at room temperature on Hailo-15 evaluation board*
4. *Models compiled with Hailo Dataflow Compiler version 3.28.0 (SW version 2024-07)*

Hailo-15M Measured Models*

NN Model	Input Resolution	FPS
Classification		
ResNet-50 v1	224×224	571
MobileNet_v2_1.0	224×224	870
ViT Base	224×224	114
Object Detection		
SSD_MobileNet_v1	300×300	574
YOLOv5m	640×640	136
Semantic Segmentation		
stdc1	1024×1920	18

** Notes:*
1. *Batch size is 8*
2. *DDR, A53 and NN Core are active, but all other peripherals are on IDLE*
3. *Measurements were taken at room temperature on Hailo-15 evaluation board*
4. *Models compiled with Hailo Dataflow Compiler version 3.28.0 (SW version 2024-07)*

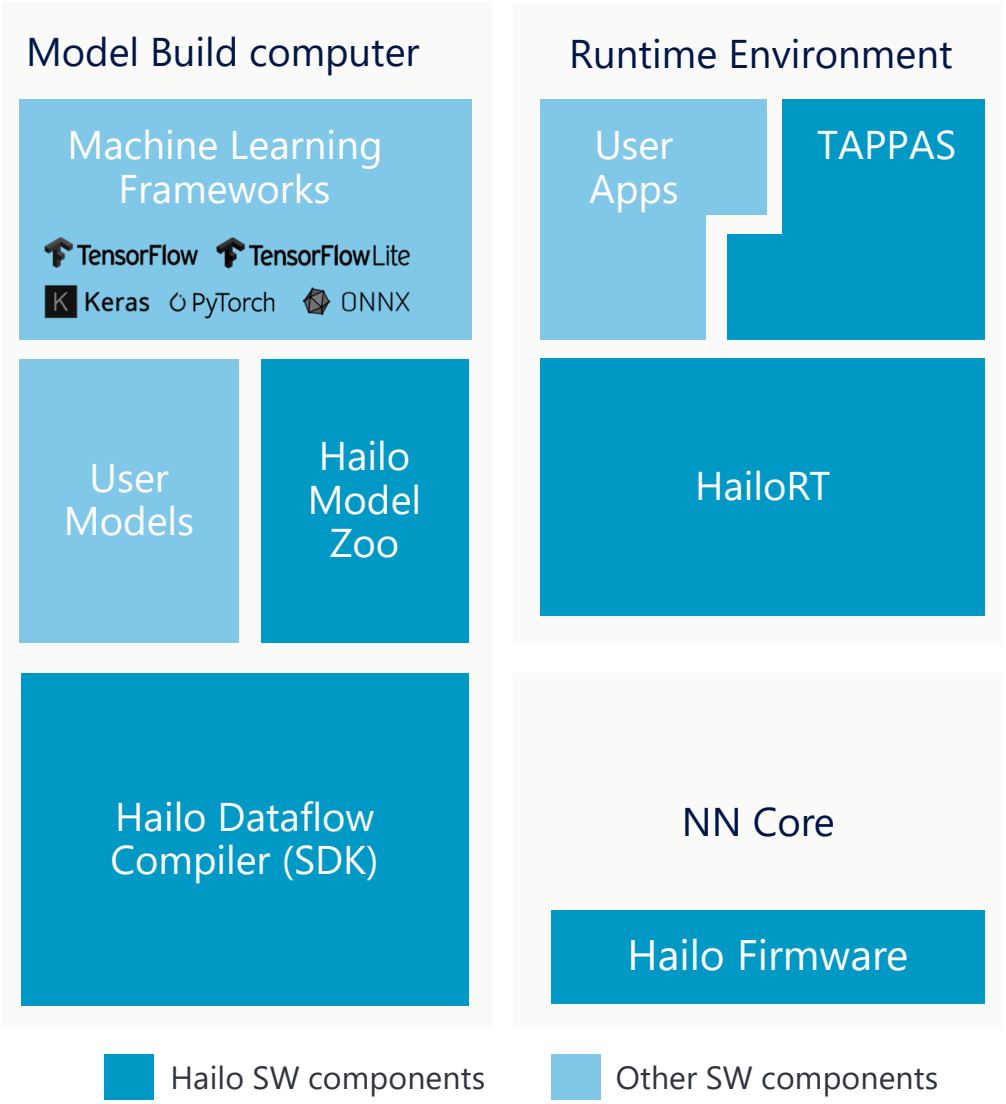
Comprehensive AI Software Suite

Build Environment

Seamless integration with existing deep learning frameworks

Large variety of ~100 state-of-the-art and common free models

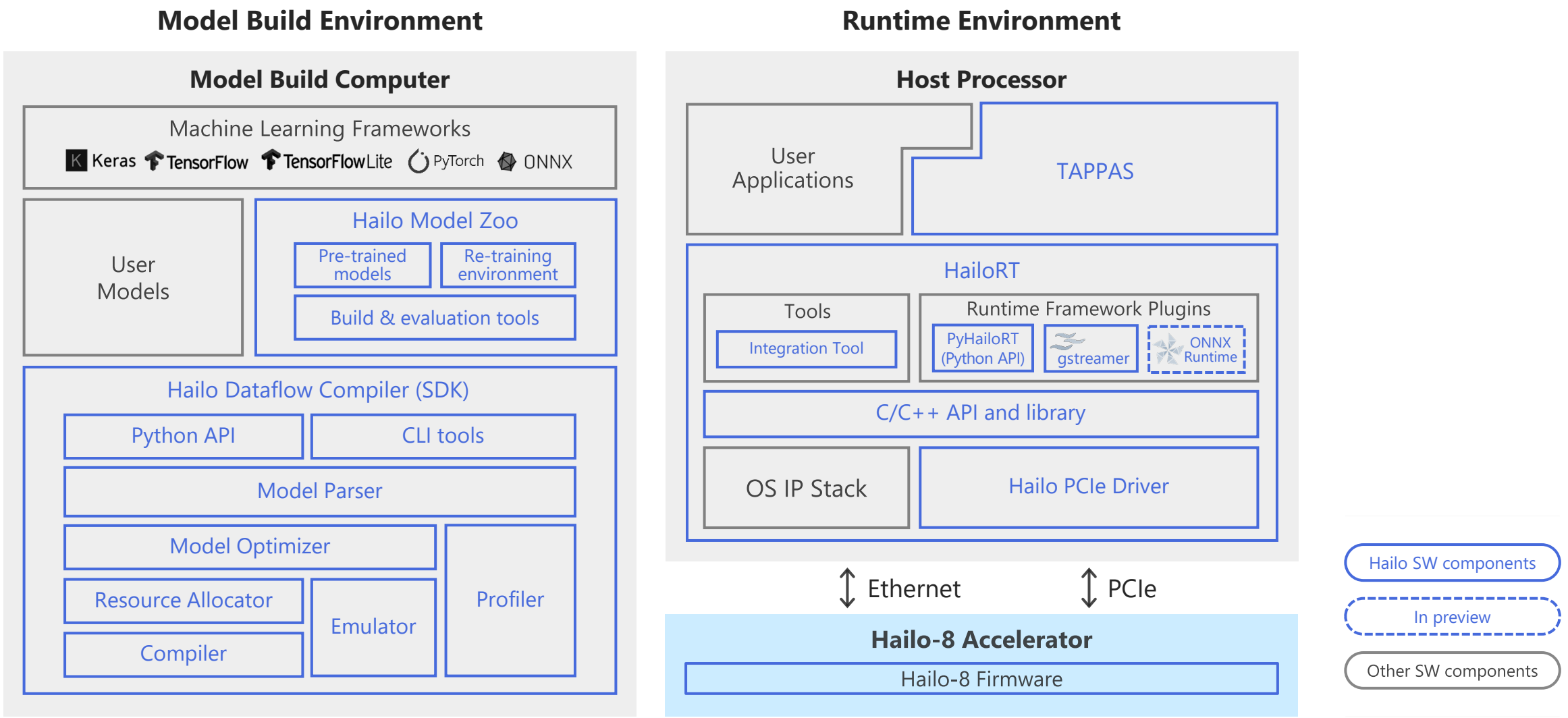
Maximizing AI compute performance by efficient utilization of NN core resources



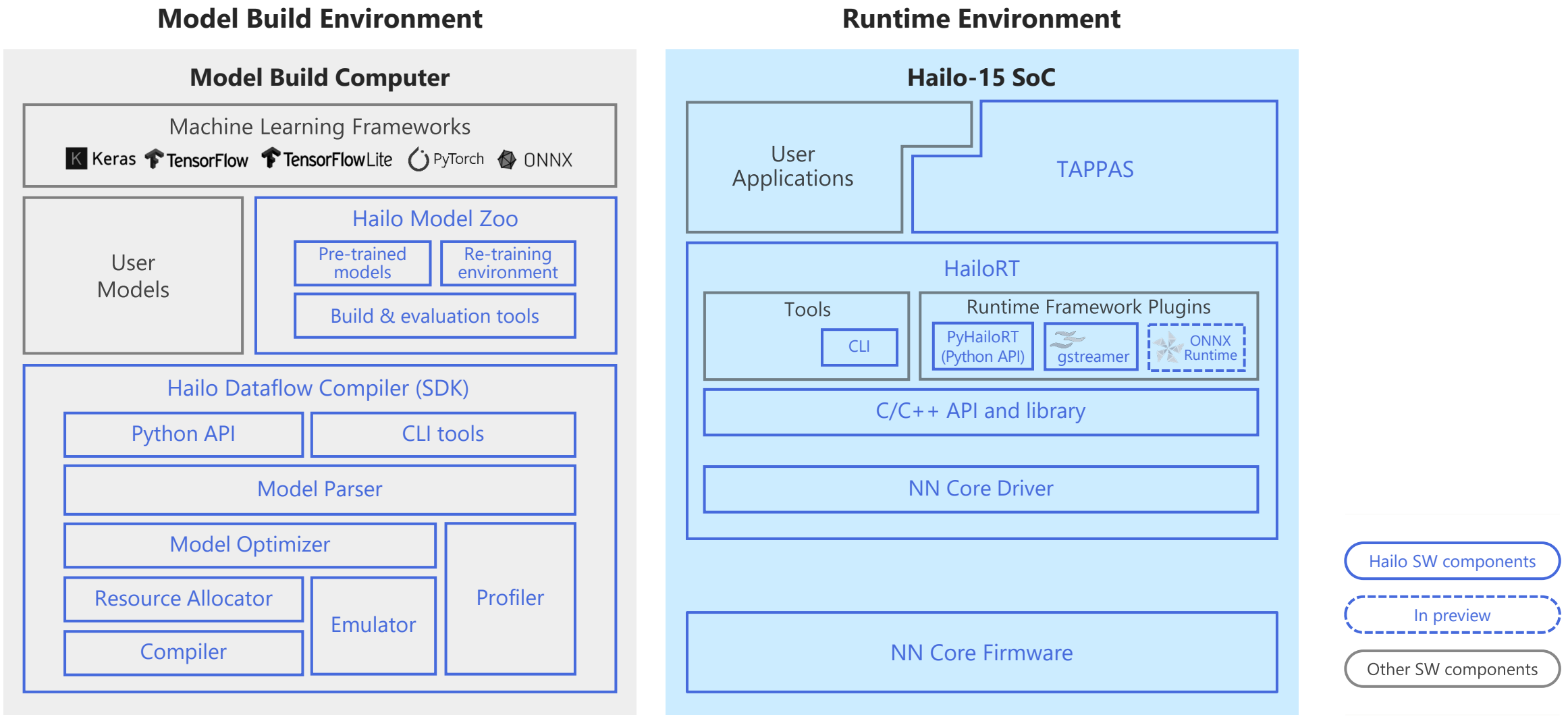
Runtime Environment

- **Application** examples, implementing pipeline elements and **pre-trained AI tasks**
- An inference **run-time library** with intuitive **API** for optimized performance (C/C++/Python)
- NN Core is part of Vision Processor or AI Accelerator

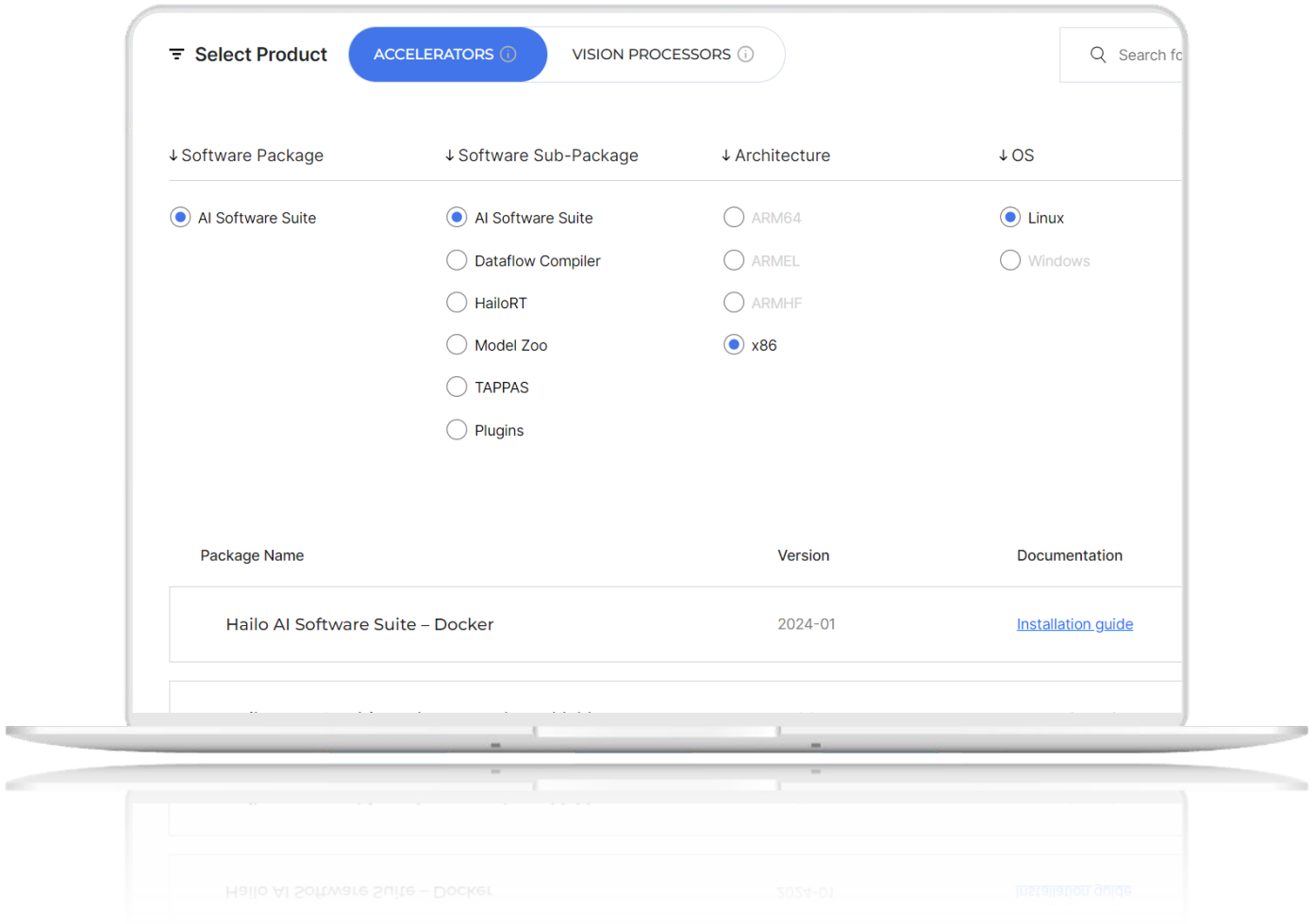
Hailo AI Software Suite for AI Inference Accelerators



Hailo AI Software Suite for AI Vision Processors



Software Available in hailo.ai/developer-zone



Hailo AI Software Suite and its components are available for download* at:

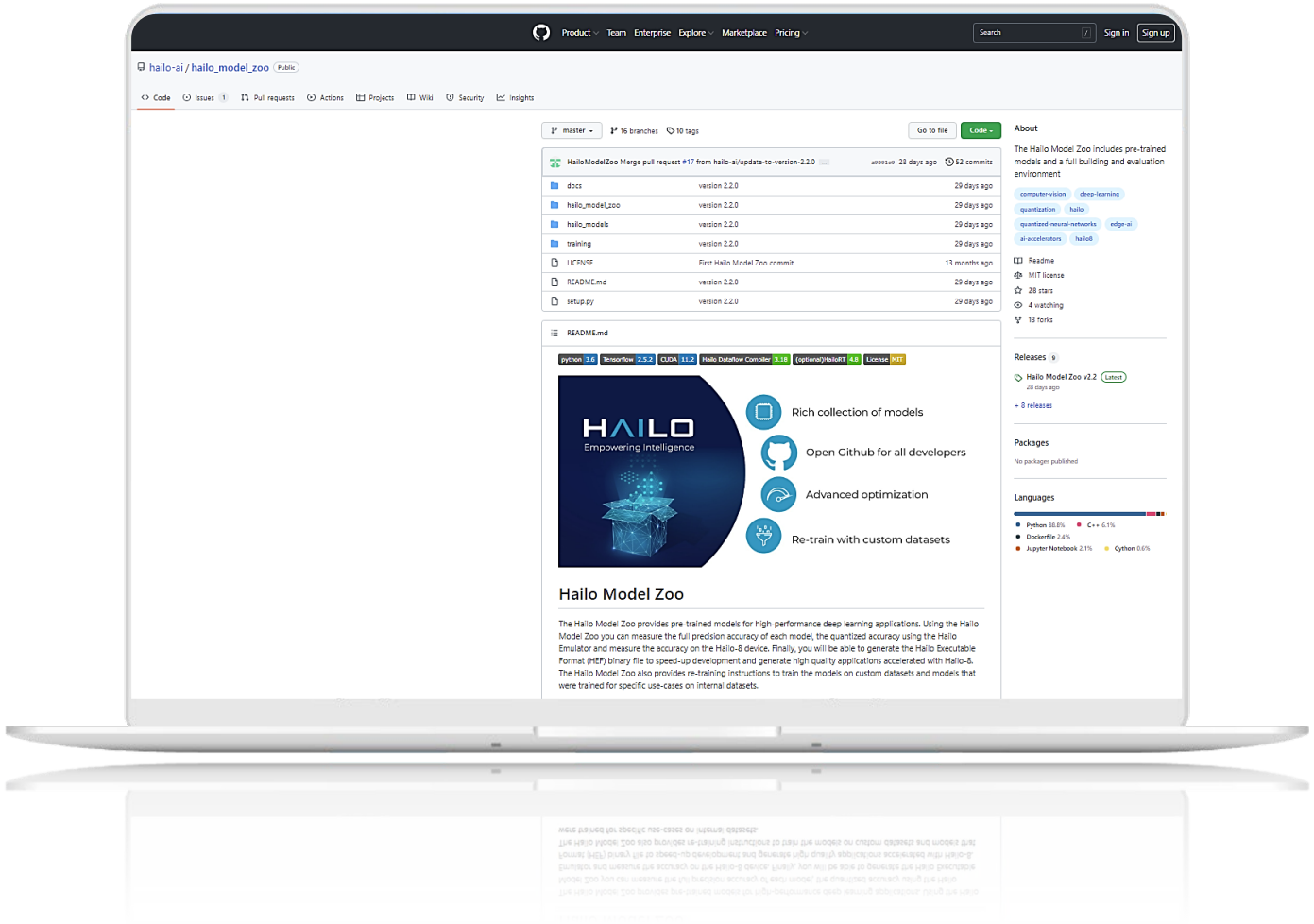
https://hailo.ai/developer-zone/sw-downloads/

Selection is now available:

- Entire AI Software Suite or selected components
- Architecture
- Operating System
- Python version

* Software downloads are available after signing-in

And in github.com/hailo-ai



For example: https://github.com/hailo-ai/hailo_model_zoo

Available in open source:

- hailo_model_zoo
- tappas
- hailort-drivers
- hailort

HAILO

Thank you.

Hailo.ai

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