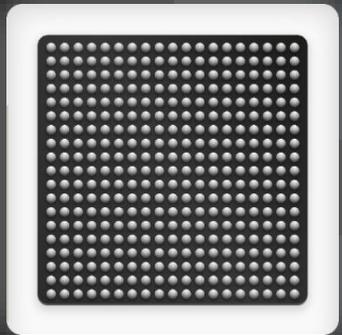


HAILO

Hailo AI Software Suite

Version 2024-10



October 2024

Hailo AI Software Suite October 2024 Release

2024-07

3.28

4.18

2.12

3.29

AI Software Suite Version 2024-10

- Hailo Dataflow Compiler version 3.29
- HailoRT version 4.19
- Model Zoo version 2.13
- TAPPAS version 3.30



2025-01

3.30

4.20

2.14

3.31

Software features legend:



Release



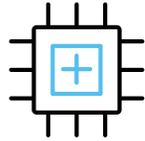
Preview

Hailo AI Software Suite Version 2024-10



Ease of Use

- Improved Transformers' parsing and compilation robustness



New Capabilities

- Added HailoNet (GStreamer plugin) Windows support



Enhanced Performance

- Multi-process service significant performance improvements



Pre-Trained Models

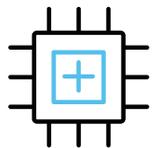
- Multi-view 3D object detection pipeline based on PETR v2
- New models: CAS-ViT, Yolo v10 models, CLIP text encoders



Application Examples

- Hailo-15 example supports multi-scale detection

New Capabilities



Added HailoNet Windows support, enabling GStreamer apps development for Windows

Enhanced Performance



Multi-process service significant performance improvements, improving the throughput of complex multi-stream multi-model multi-device systems



Hailo-15 throughput improvements across many models

Ease of Use



Improved Transformers' parsing and compilation robustness

New AI Models in Model Zoo

Advanced Driver-Assistance Systems



New task: Multi-view 3D object detection, enabling ADAS use cases with Hailo-8. This task's pipeline is based on PETR v2, which is a Transformer-based BEV model



New models: CAS-ViT, Yolo v10 base and x-large, CLIP text encoders

Bird Eye's View

Application Examples



Hailo-15 detection & face landmarks example now supports multi-scale detection, allowing to detect both small and large objects

Hailo-8 Measured Benchmarks*

NN Model	Input Resolution	FPS	Power (W)	FPS/W
Classification				
ResNet-50 v1	224×224	1371	3.7	375
MobileNet_v2_1.0	224×224	2597	2.2	1157
EfficientNet_M	240×240	984	4.2	232
ViT_base	224×224	139	2.7	51
Object Detection				
SSD_MobileNet_v1	300×300	1016	2.2	463
YOLOv5m	640×640	242	5.3	45
Semantic Segmentation				
stdc1	1024×1920	58	3.1	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 3.29.0 (SW version 2024-10)

Hailo-8L Measured Benchmarks*

NN Model	Input Resolution	FPS	Power (W)	FPS/W
Classification				
ResNet-50 v1	224×224	500	1.9	267
MobileNet_v2_1.0	224×224	1739	1.7	1053
EfficientNet_M	240×240	436	2.3	192
Object Detection				
SSD_MobileNet_v1	300×300	367	1.4	266
Tiny_YOLOv3	416×416	899	3.1	291
Semantic Segmentation				
deeplab_v3_mobilenet_v2	513×513	90	2.1	43

<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 3.29.0 (SW version 2024-10)

Hailo-15H Measured Models*

NN Model	Input Resolution	FPS
Classification		
ResNet-50 v1	224×224	969
MobileNet_v2_1.0	224×224	3454
ViT Base	224×224	202
Object Detection		
SSD_MobileNet_v1	300×300	1147
YOLOv5m	640×640	202
Semantic Segmentation		
stdc1	1024×1920	28

* 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 3.29.0 (SW version 2024-10)

Hailo-15M Measured Models*

NN Model	Input Resolution	FPS
Classification		
ResNet-50 v1	224×224	616
MobileNet_v2_1.0	224×224	869
ViT Base	224×224	142
Object Detection		
SSD_MobileNet_v1	300×300	591
YOLOv5m	640×640	138
Semantic Segmentation		
stdc1	1024×1920	25

* 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 3.29.0 (SW version 2024-10)

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

Model Build computer

Machine Learning Frameworks

TensorFlow TensorFlow Lite
Keras PyTorch ONNX

User Models

Hailo Model Zoo

Hailo Dataflow Compiler (SDK)

Runtime Environment

User Apps

TAPPAS

HailoRT

NN Core

Hailo Firmware

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)

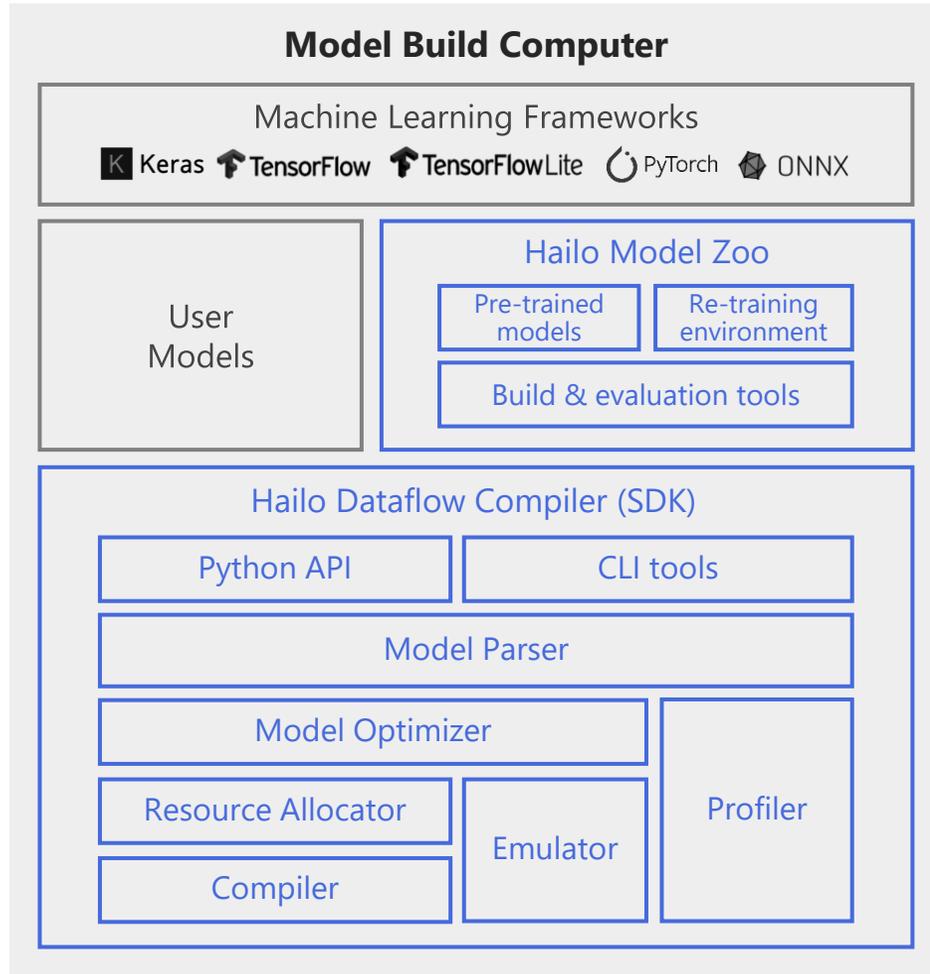
- NN Core is part of Vision Processor or AI Accelerator

Hailo SW components

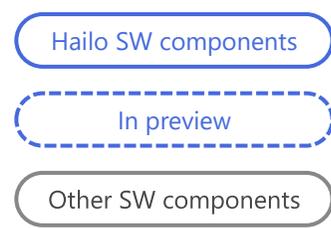
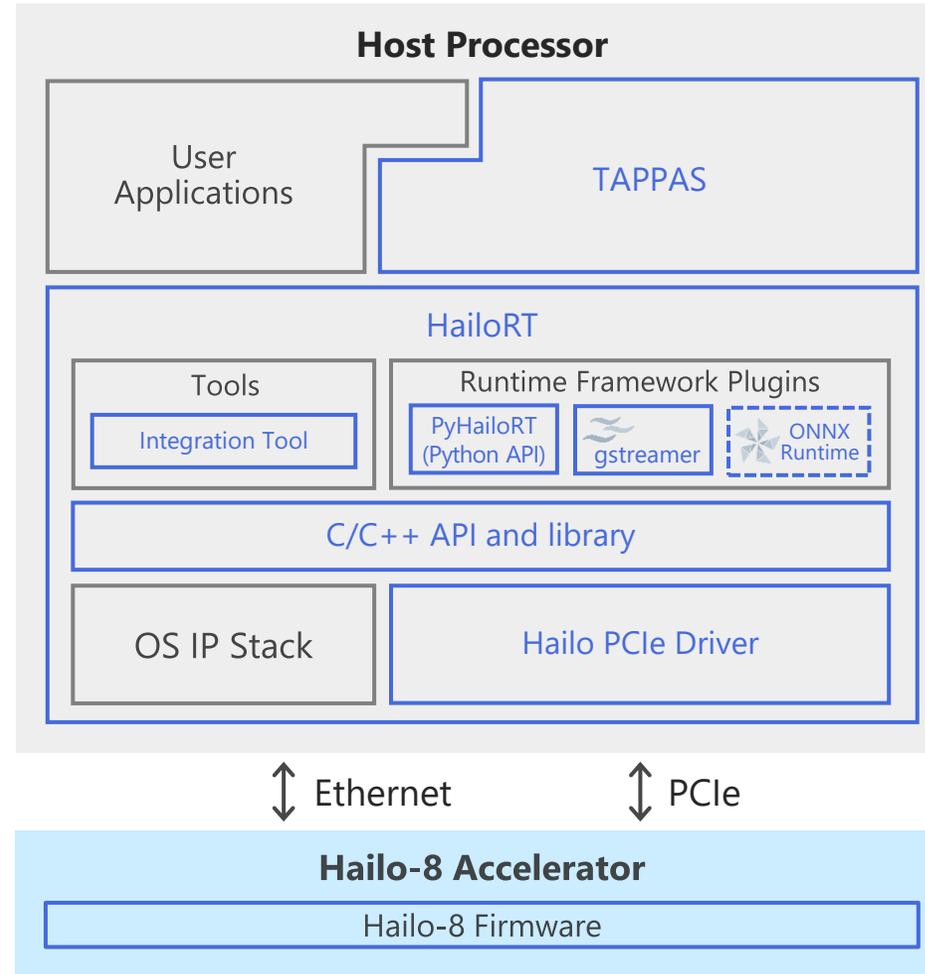
Other SW components

Hailo AI Software Suite for AI Inference Accelerators

Model Build Environment

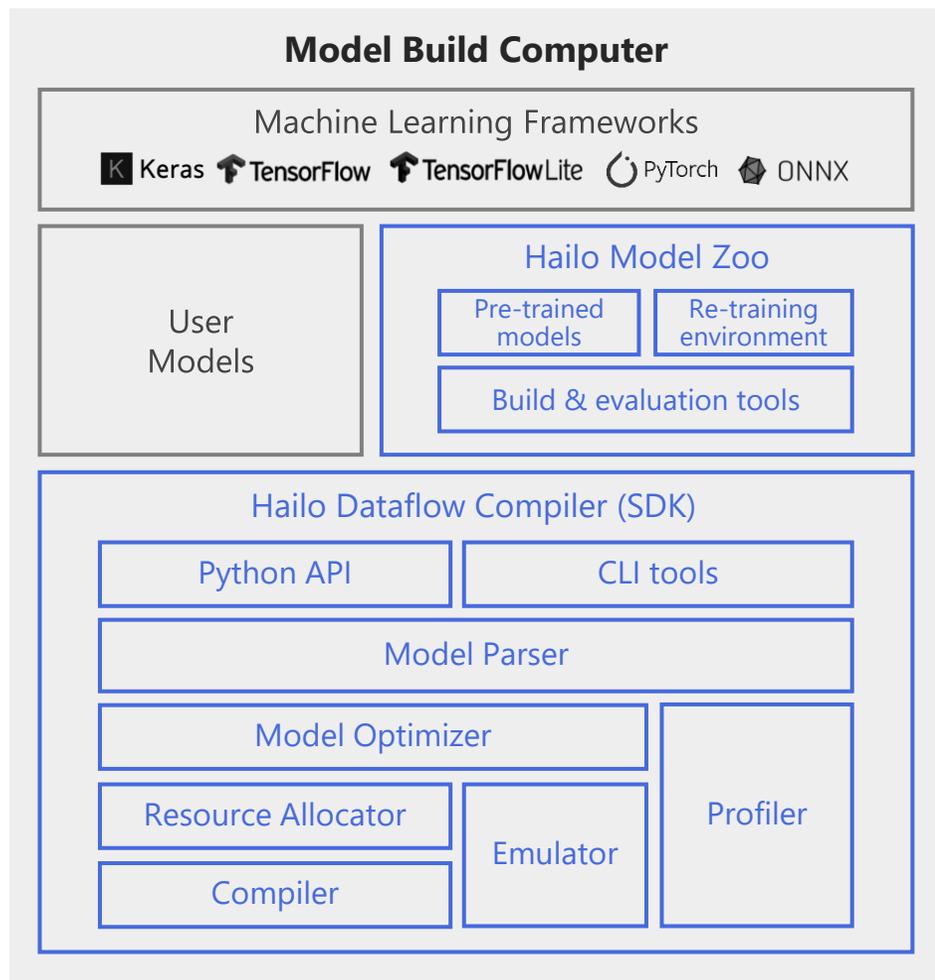


Runtime Environment

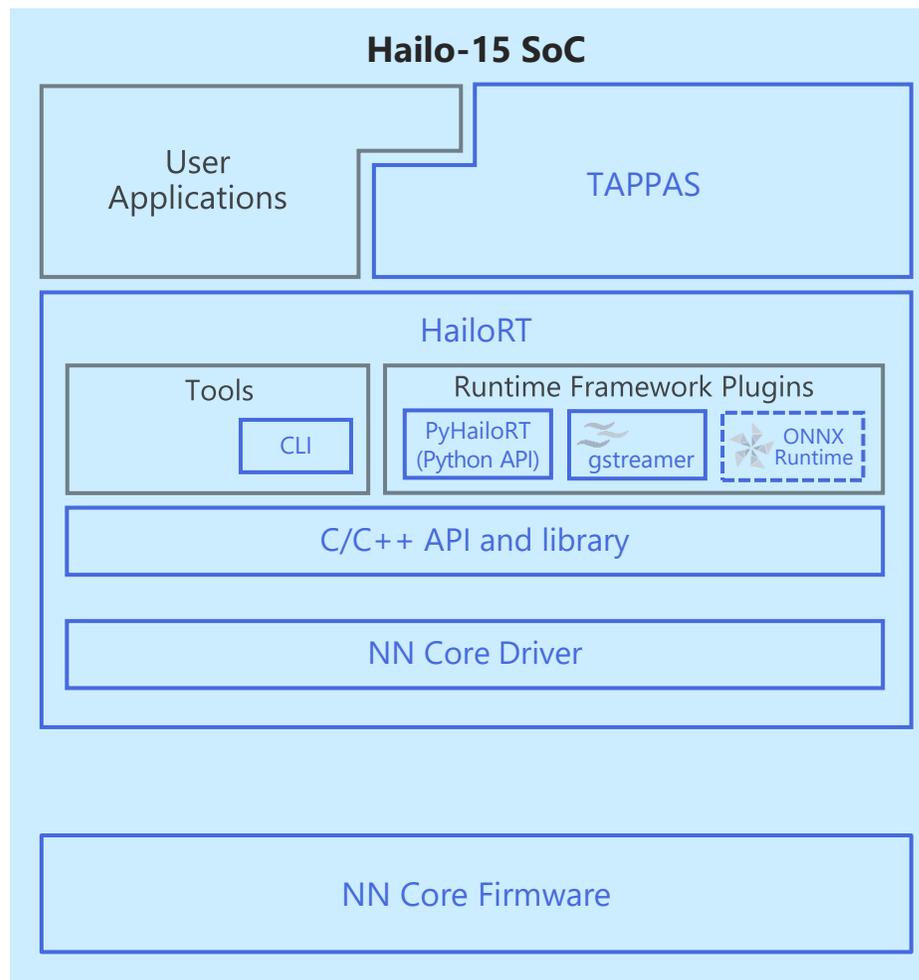


Hailo AI Software Suite for AI Vision Processors

Model Build Environment



Runtime Environment

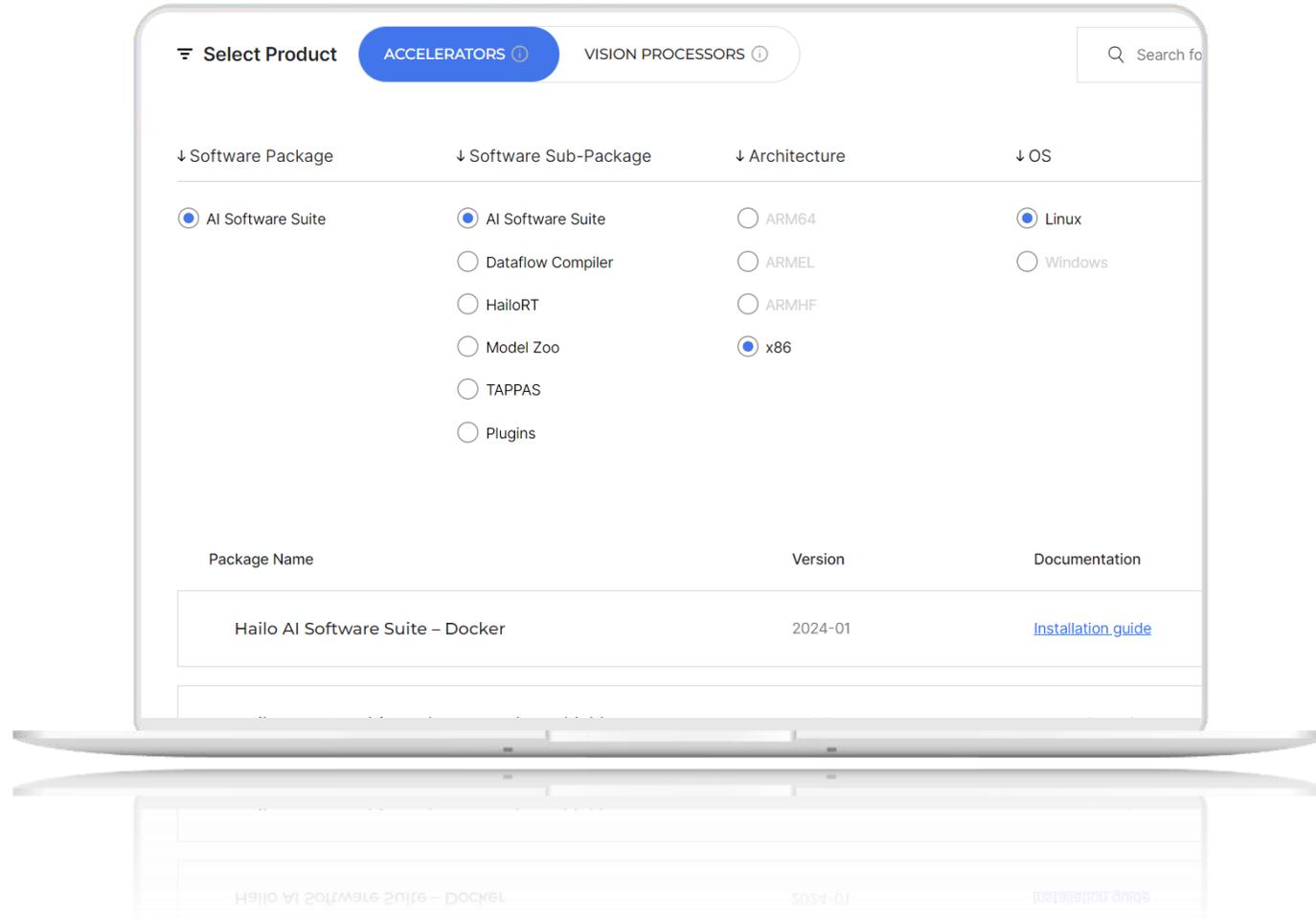


Hailo SW components

In preview

Other SW components

Software Available in hailo.ai/developer-zone



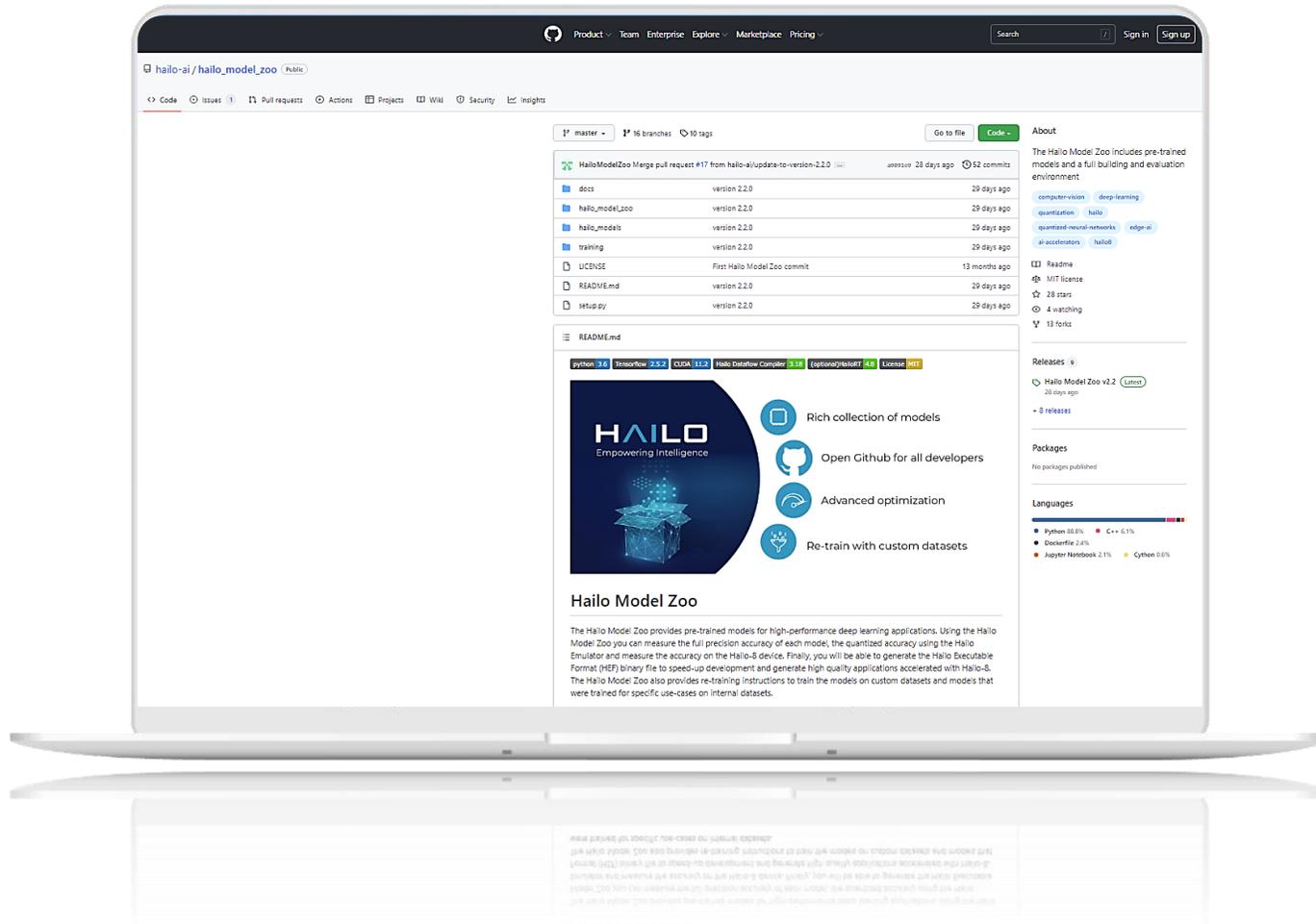
Hailo AI Software Suite and its components are available for download* at:

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

Selection is now available:

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

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

 contact@hailo.ai