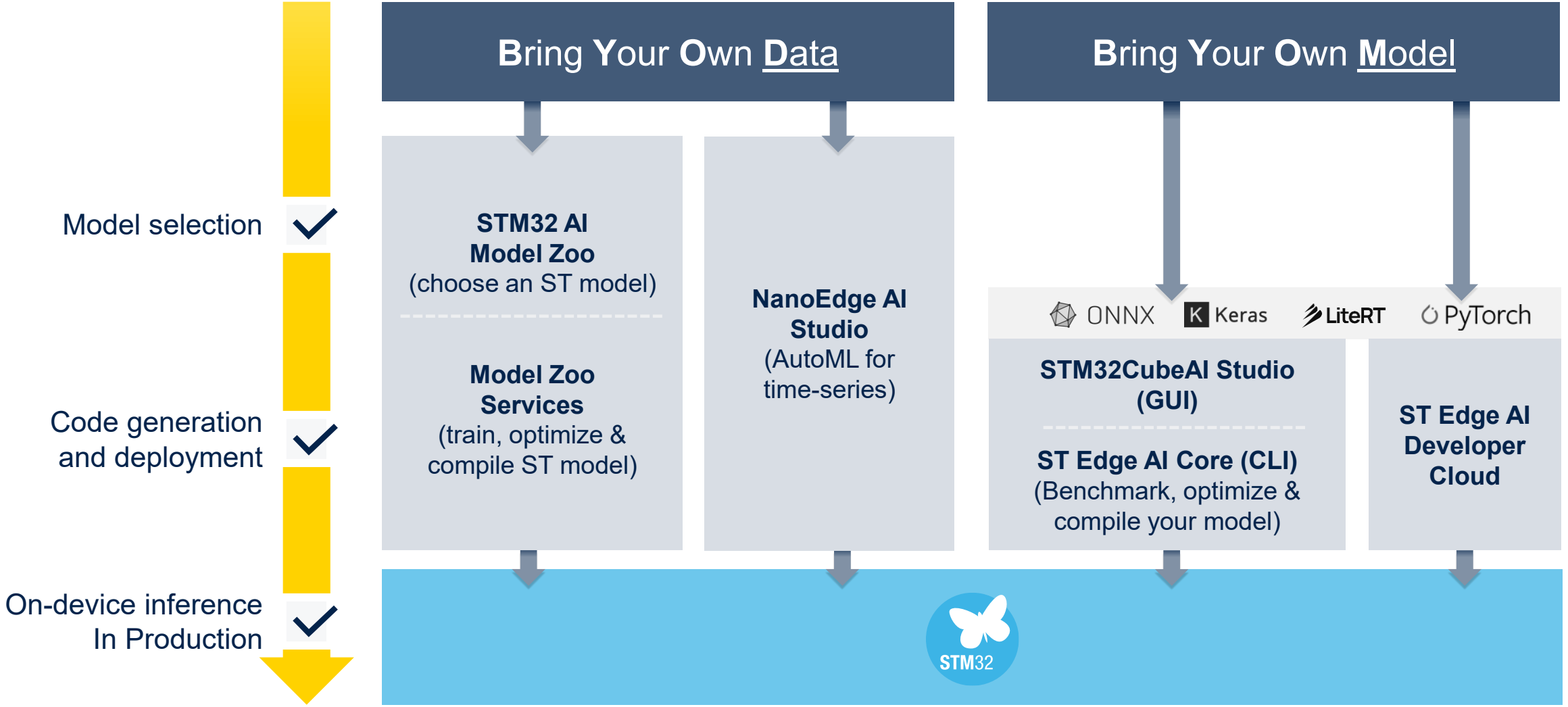
Deploying intelligence in embedded devices with STM32 edge AI tools

Feb 2026

Develop faster with free STM32 edge AI tools

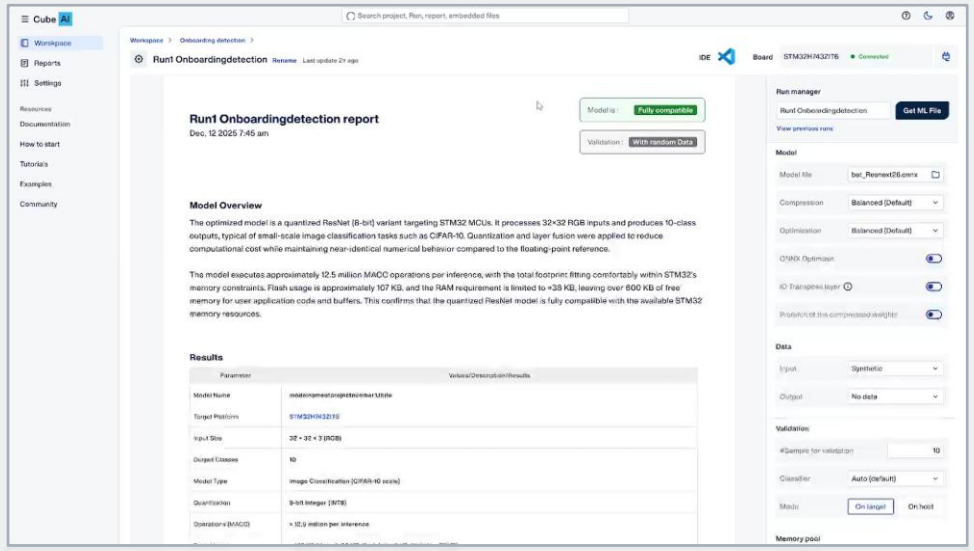
STM32 Edge AI User Flow



STM32CubeAI Studio

Keras PyTorch TensorFlow Lite

MATLAB LiteRT



Download Read documentation

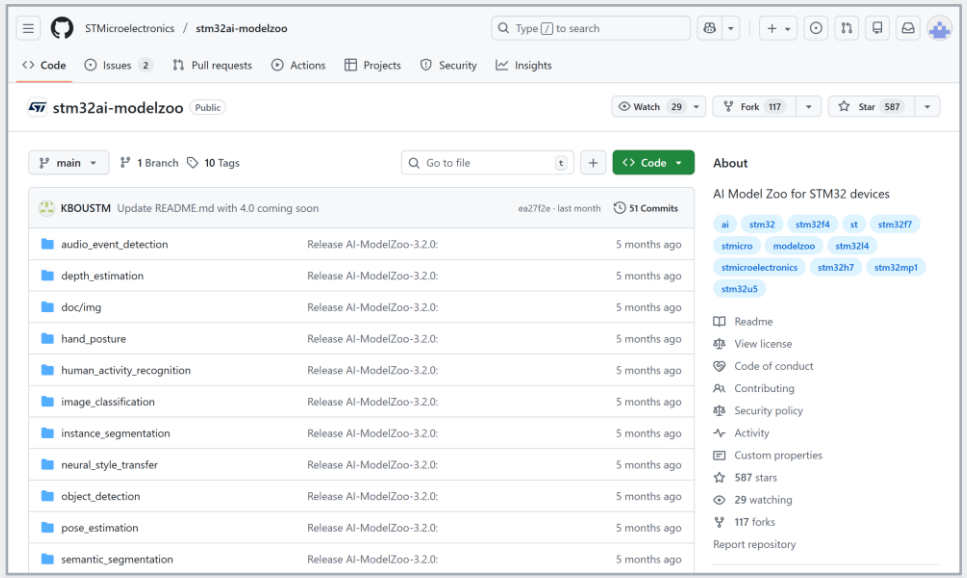
Current version: V1.0
(Feb 2026)

Evaluate, optimize and compile neural network models for STM32.

- Generate an STM32-optimized library from pretrained neural network and ML models
- Use detailed information about AI model RAM and flash memory sizes
- Validate optimized model against reference model on host and on target
- Support for ST Neural-ART Accelerator neural processing unit
- Support for 32-bit float and quantized neural network formats (TensorFlow™ Lite and ONNX Tensor-oriented QDQ)

An evolution of STM32Cube.AI supporting the latest generation of STM32 MCUs, and offering a smooth user experience.

STM32 Model Zoo



GitHub

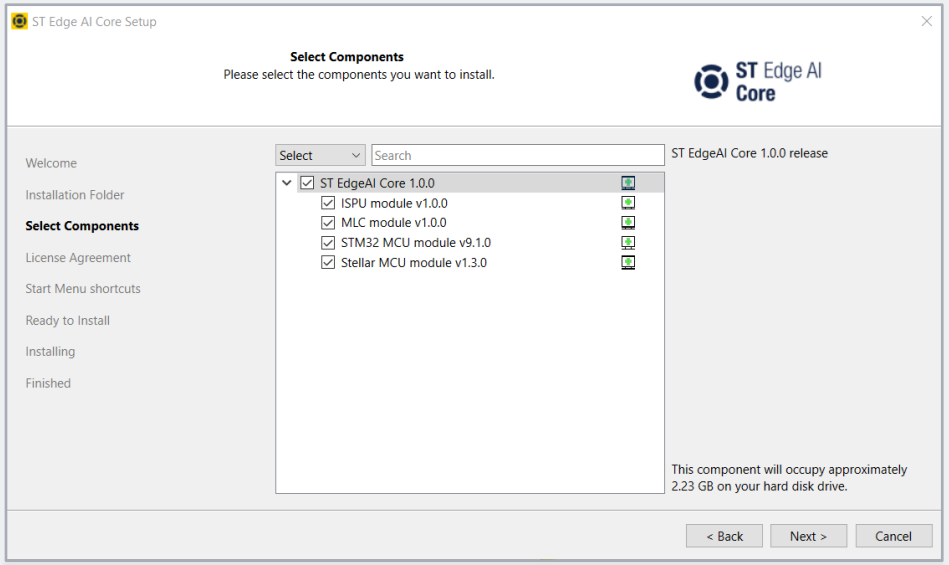
Access now

Current version: V4.0
(Feb 2026)

The largest collection of free reference edge AI models optimized for STM32

- Choose from a collection of AI models optimized for STM32 devices
- Retrain any model from datasets using the scripts
- Deploy AI models on the application using the scripts
- Bring your own model (BYOM) or bring your own data (BYOD)
- Available on GitHub
- Free-of-charge, user-friendly license terms

ST Edge AI Core



Download

Read documentation

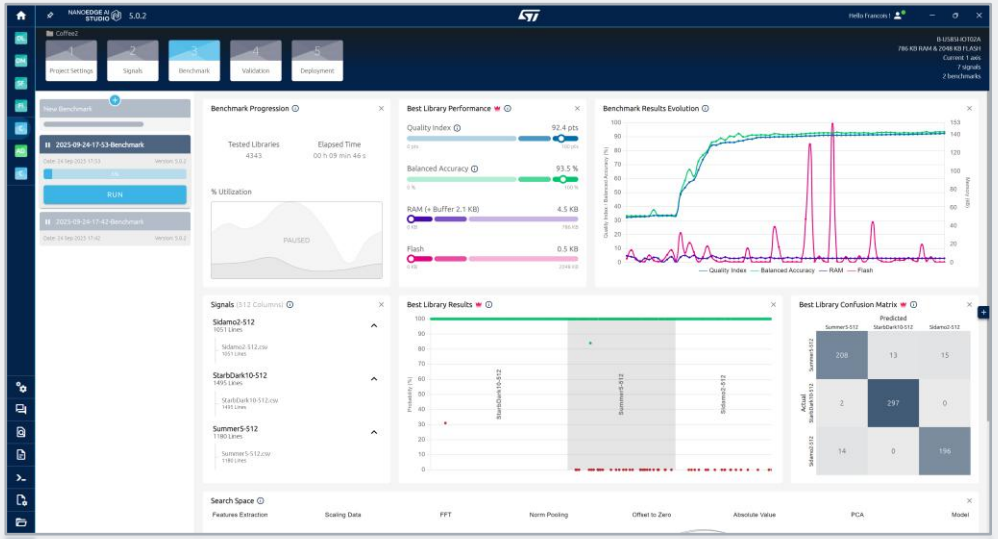
Current version: V3.0
(Dec 2025)

Optimize and compile edge AI models for STM32 with this command-line interface tool (CLI)

- Supports multiple ST devices, including microcontrollers, microprocessors, and MEMS sensors
- Import AI models from the most popular ML frameworks
- Review the detailed analysis of the selected algorithms
- Validate and optimize the models for different devices
- Generate executable code for the selected ST hardware
- Support ST Neural-ART NPU and HSP

NanoEdge AI Studio

Windows



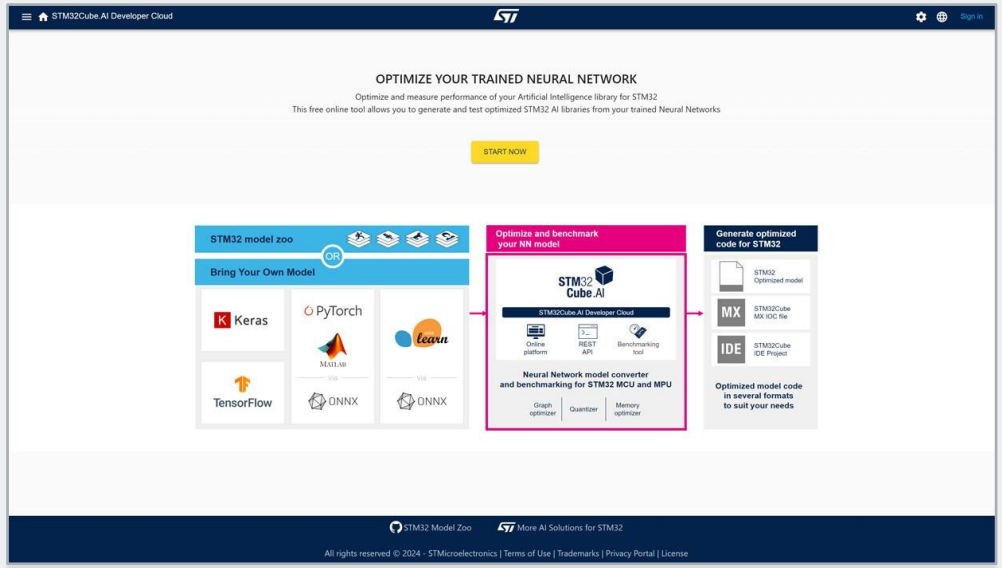
Download Read documentation

Current version: V5.1.0
(Feb 2026)

Free AutoML tool to develop your time series ML library in a fast and efficient way.

- Find and configure the best AI library for your embedded project.
- Supports STM32 microcontrollers and smart sensors
- Use synthetic data for creating anomaly detection models
- On-device learning for optimized anomaly detection
- Simplified data extraction from sensors
- Free-of-charge, user-friendly license terms

ST Edge AI Developer Cloud



Access now

Read documentation

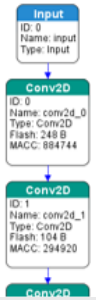
Evaluate and benchmark your edge AI models in the cloud

- Built on ST Edge AI Core to perform AI model optimizations and validations on multiple ST devices
- Online AI benchmark service on multiple ST devices
- Optimize and profile your AI model
- Run your AI models on the ST board farm

The 3 pillars of STM32Cube.AI

Graph optimizer

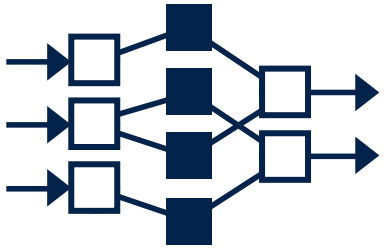
Automatically improve performance through graph simplifications & optimizations that benefit STM32 target HW architectures



- Auto graph rewrite
- Node/operator fusion
- Layout optimization
- Constant-folding…
- Operator-level info to finetune memory footprint and computation

Quantized model support

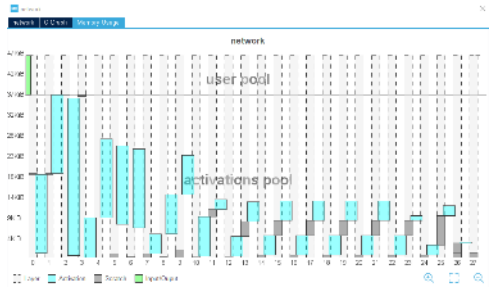
Import your quantized ANN to be compatible with STM32 embedded architectures while keeping their performance



- From FP32 to Int8 or mixed-precision
- Minimum loss of accuracy
- Code validation on target
  - Latency
  - Accuracy
  - Memory footprint

Memory optimizer

Optimize memory allocation to get the best performance while respecting the constraints of your embedded design

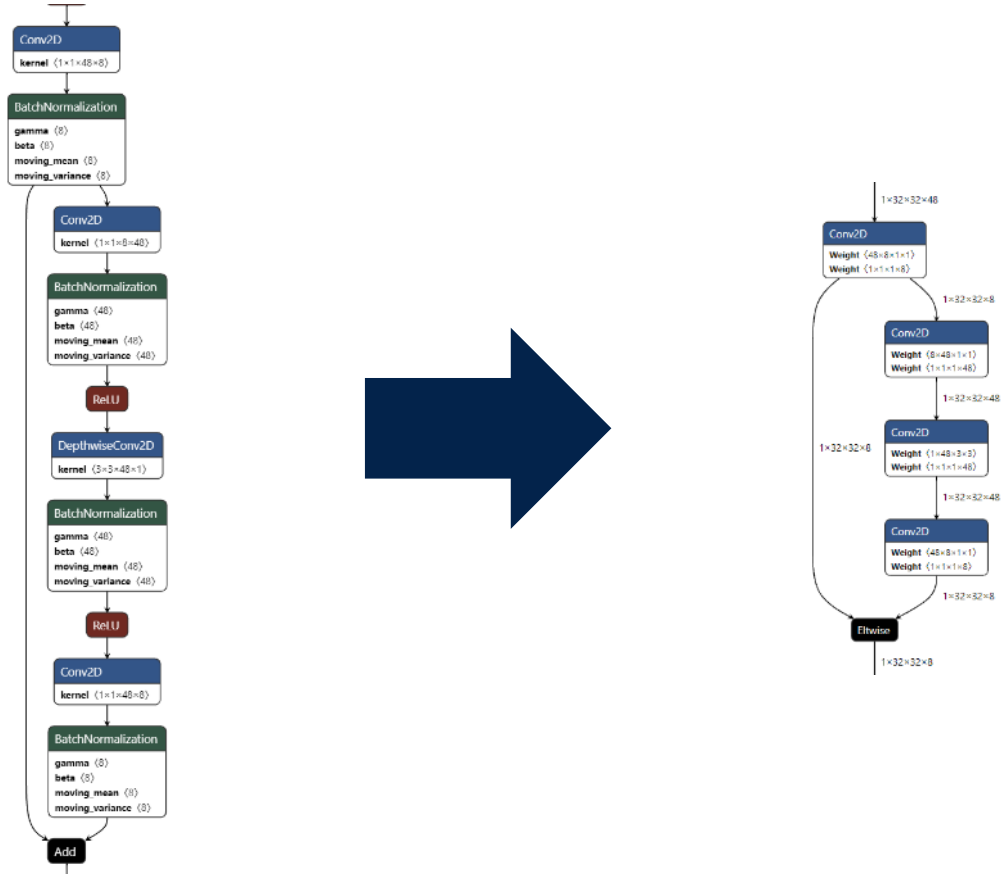


- Memory allocation
- Internal/external memory repartition
- Model-only update option

STM32Cube.AI is **free of charge**, available both in graphical interface and in command line.

Graph optimizer

Squeeze your graph to fit into an MCU!

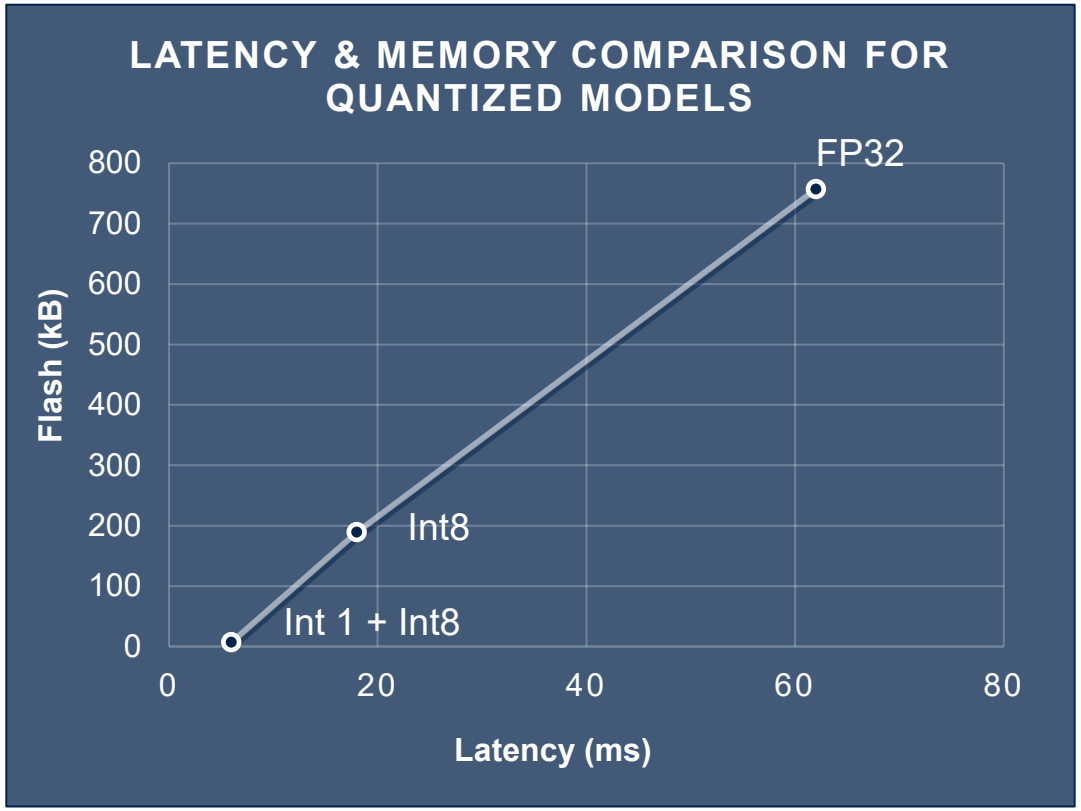


Fully automated process in the STM32Cube.AI workflow

- Your original graph is optimized at the very early stage for optimal integration into the STM32 MCU/MPU
- Loss-less conversion

Quantized model support

Simply use quantized networks to reduce memory footprint and inference time



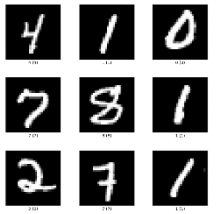
STM32Cube.AI supports quantized neural network models with **all parameter formats**:

- FP32
- Int8
- Mixed binary Int1 to Int8 (Qkeras*, Larq.dev*)

**Please contact edge.ai@st.com to request the relevant version of STM32Cube.AI*

HW Target: NUCLEO-STM32H743ZI2
Model: Low complexity handwritten digit reading
Freq: 480 MHz
Accuracy: >97% for all quantized models

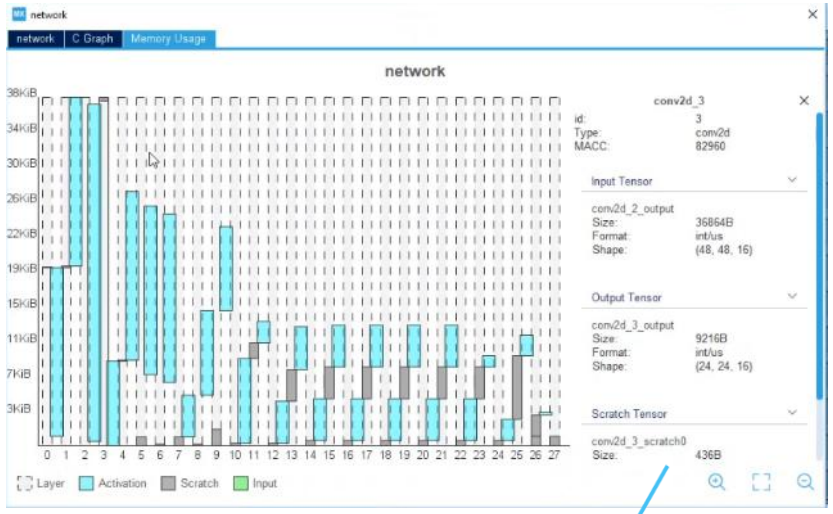
Tested database: MNIST dataset



MNIST dataset

Memory optimizer

Optimize performance easily with the memory allocation tool



Model RAM consumption per layer

- Easily identify the most critical layers

Model memory allocation

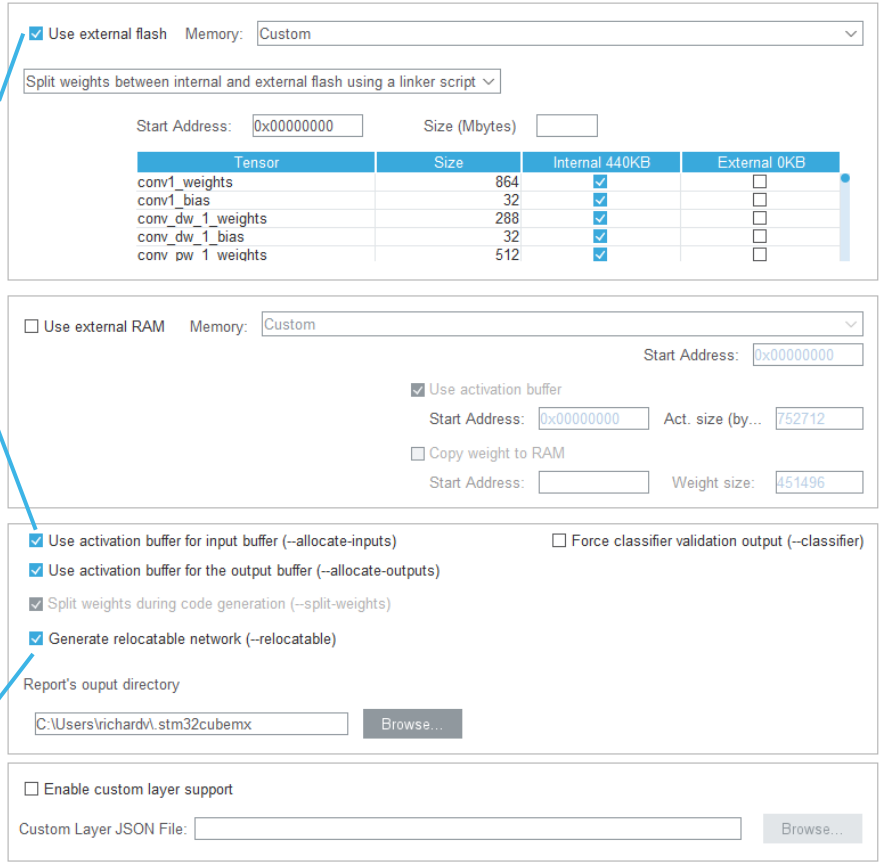
- Set your external memory
- Map in non-contiguous internal flash section
- Partition internal vs external flash memories

Re-use model input buffer to store activation data*

- Minimize RAM requirements

Relocatable network

- A separate binary is generated for the library and the network to enable standalone model upgrade



** Requires input and activation buffers in same memory*

ST edge AI model partners

Facilitating the design of custom-made solutions

ST and Authorized Partners deliver ready-to-use solutions and speed up customer application development.

Irida Labs

EmbedUR

Ultralytics

Siana Systems

ClearML

id3 Technologies

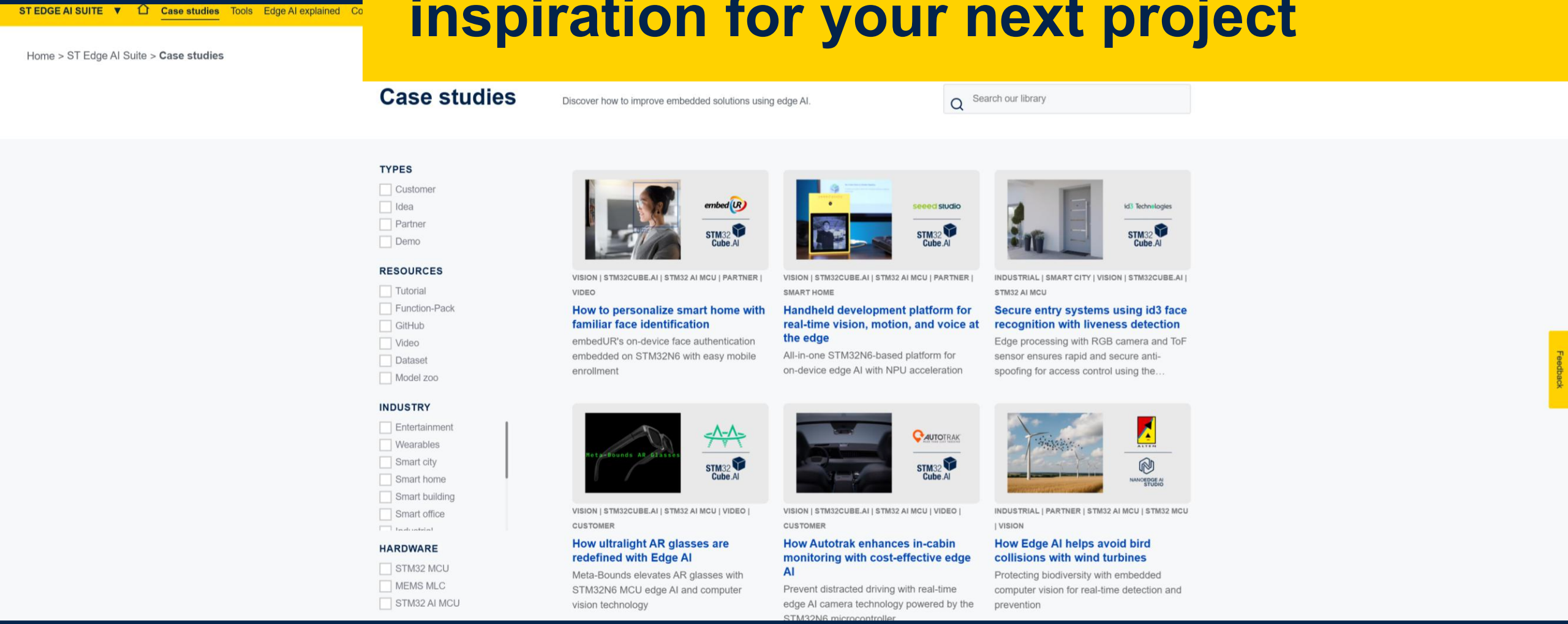
OpenMV

Rtone

Edge impulse

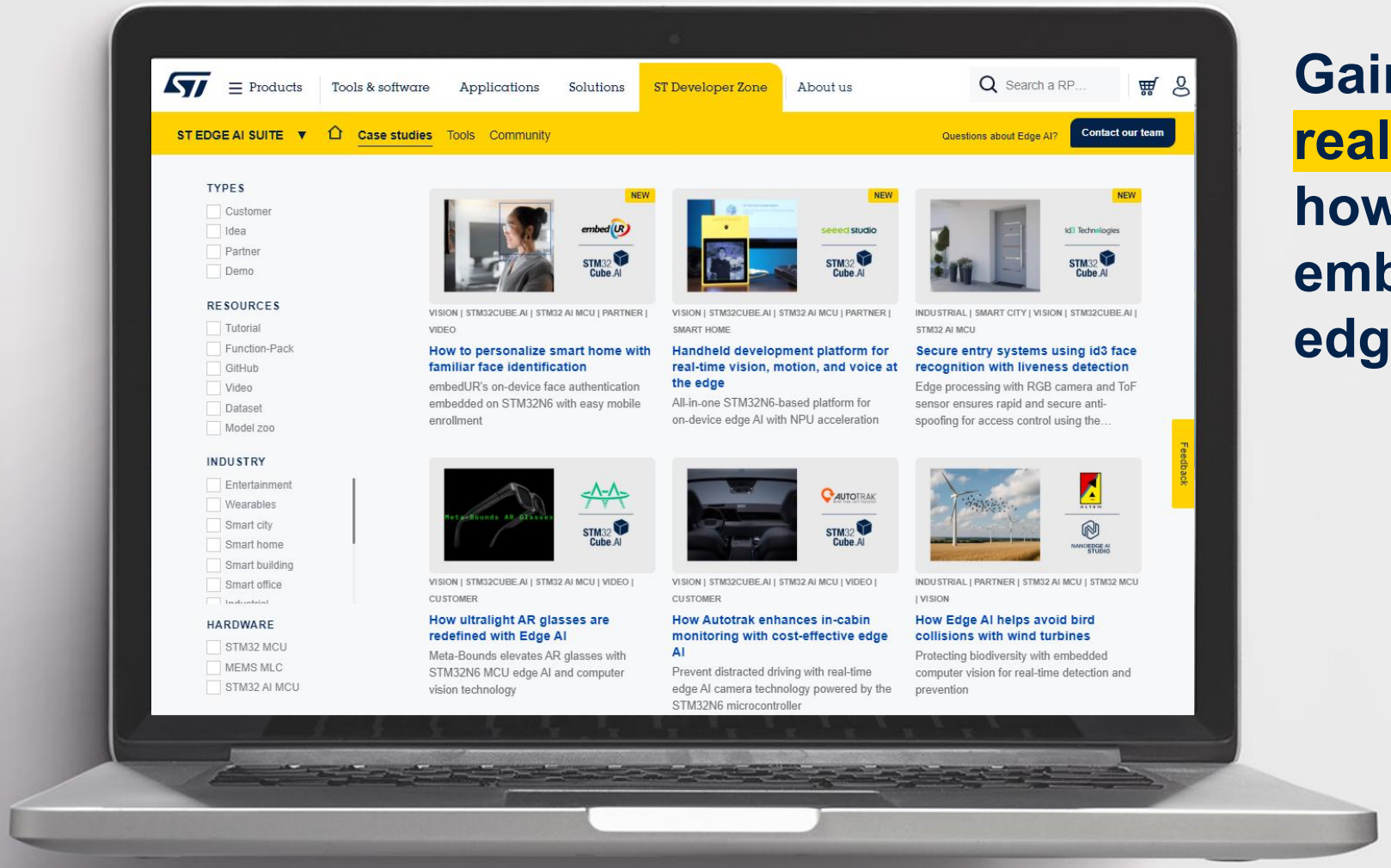
See all partners

Browse our case studies and find inspiration for your next project



ST Edge AI Suite

Explore inspiring case studies



Gain valuable insights from real-world case studies on how to improve your embedded solutions using edge AI.

Edge AI case studies

AR-Glasses
10 hours
On single-charge

Meta-Bounds 莫界

Panasonic

Virtual sensor
Tire pressure measured through the e-motor current consumption

~15-40%
Energy saving per washing cycle

Predictive maintenance
Multisensors and learning on device

oXYtronic

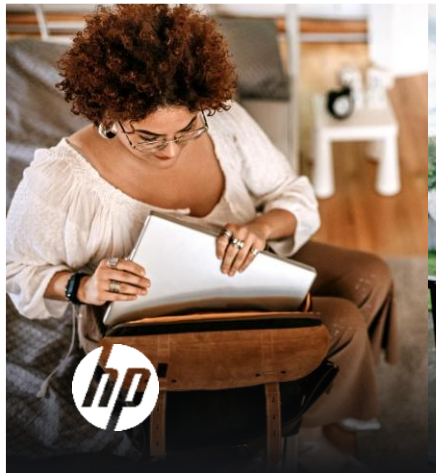
Electrical arc detection
Enhanced accuracy to avoid false detection

Computer vision on MCU
Cost-effective, compact, and low-power solution

AUTOTRAK™
MORE THAN JUST TRACKING

Virtual sensor
Measuring motor internal temperature based on external data

HPEGROUP



Smart context detection
In/out bag - on table

SOXAI

10+ hours
Battery-life with low-power sensor

Our technology starts with You

Find out more at www.st.com/st-edge-ai-suite