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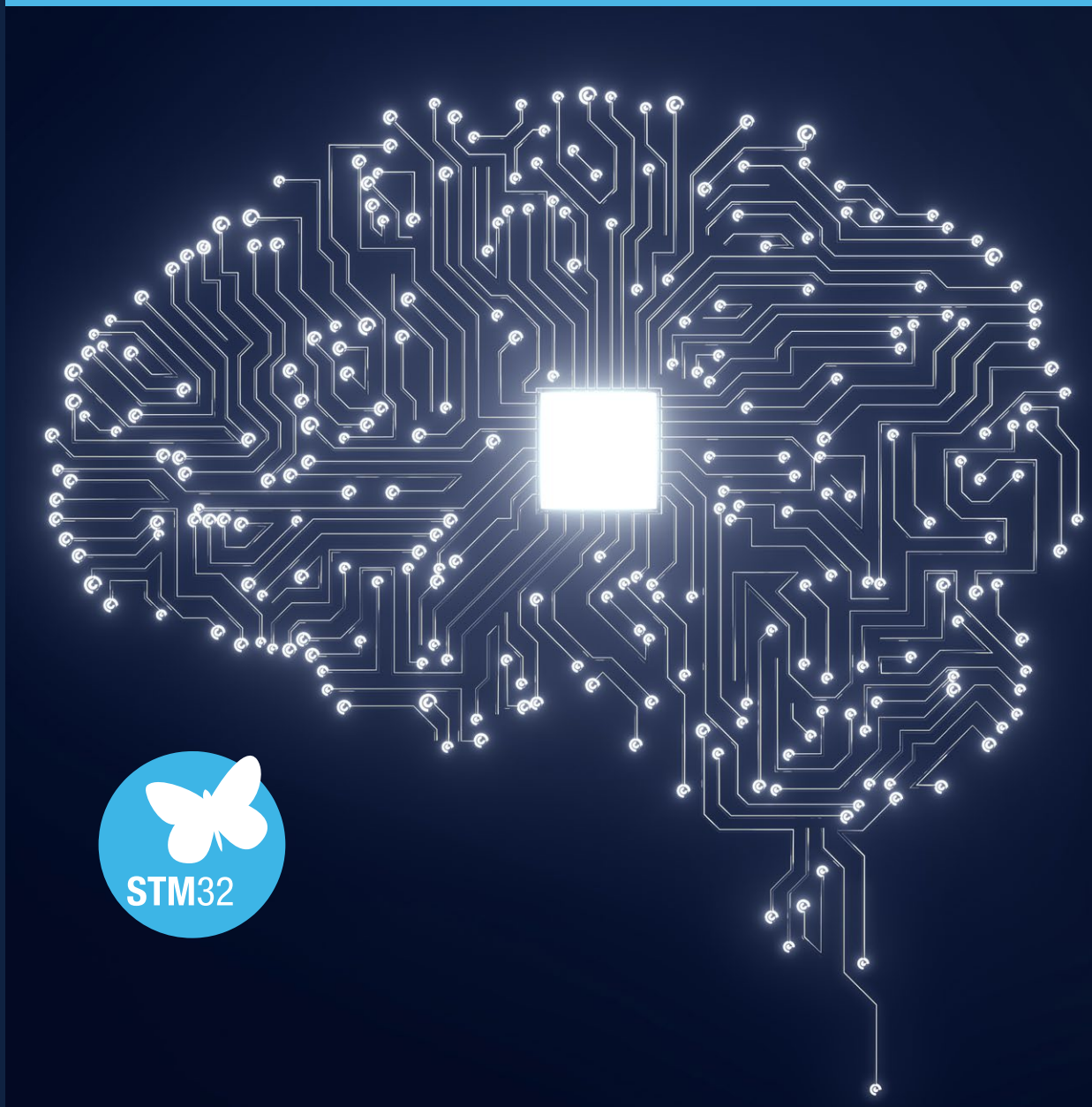
Add valuable new features using AI on STM32



ARTIFICIAL INTELLIGENCE SOLUTIONS

Use the power of Machine Learning and Neural Networks to enhance signal processing performance, increase productivity and add new capabilities to your STM32 application. STMicroelectronics offers microcontrollers and microprocessors that allow you to run AI algorithms locally without necessarily relying on cloud capabilities. Embed Machine learning and deep learning algorithms into your STM32-based solutions and take advantage of AI at the edge for added-value capabilities.

Better user experience

Real time, no latency

Reliable

Privacy by design

Optimized cloud usage

Sustainable

COMPUTER VISION AT THE EDGE

The growing demand for computer vision at the edge has brought about a very wide range of applications. ST is bringing tools and ecosystem to allow customers to run computer vision applications through all STM32 portfolio, from low-power microcontrollers to high performance MCUs and microprocessors. This includes person-presence detection, image classification, in-line inspection, aftermarket meter reading and many more.

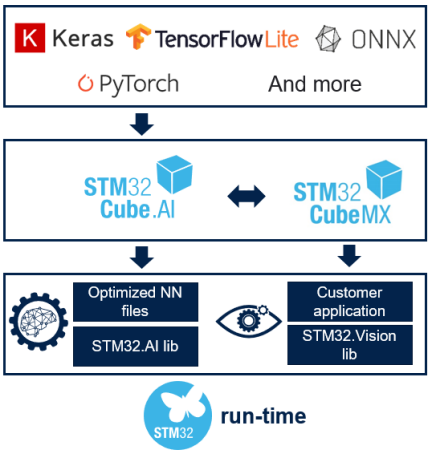
Rapidly prototype computer vision on small and low-power STM32 boards:

STM32H747I-DISCO

Flash and operate in real time the Convolutional Neural Network optimized using STM32Cube.AI to extend your project with machine vision

OpenMV H7 cam

Wide set of OpenMV computer vision libraries and simple run time configuration via microPython.



CONDITION-BASED MONITORING AND PREDICTIVE MAINTENANCE

Predictive maintenance market benefits from the wide expansion of TinyML ecosystem. Machine learning algorithms bring enormous value to industrial applications by reducing maintenance cost and downtime. Condition-based equipment monitoring uses various sensors for motor vibration, current, pipe flow, or acoustic monitoring.

ST supports the development of Predictive Maintenance solutions for in-field retrofit of existing systems or for built-in systems. FP-AI-NANOEDG1 is a dedicated function pack to build a condition-monitoring application from data acquisition to inference on STM32.

Algorithms can be trained on the cloud or directly at the edge without any knowledge in data science or in Machine learning thanks to solutions from ST's Partners.

This function pack is supported by STM32L562E-DK and soon by the SensorTile Wireless Industrial Node (STWIN), embedding industrial grade sensors.

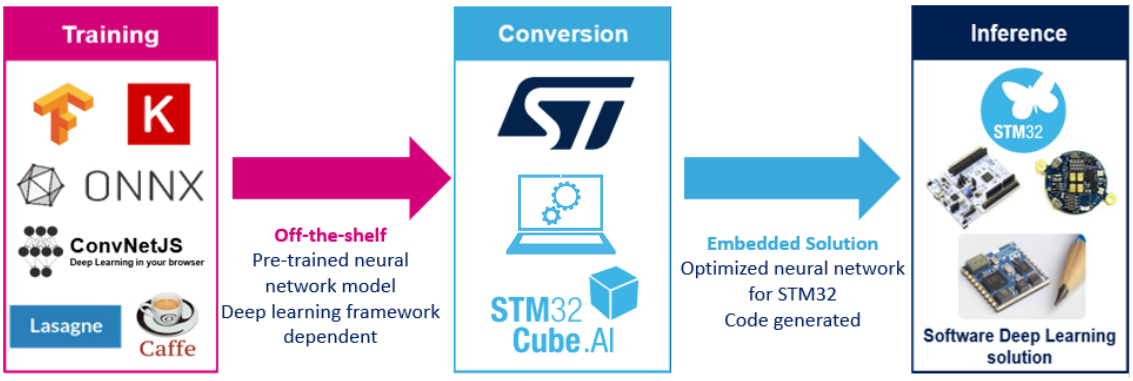
STEVAL-STWINKT1

AI ON MCUs: STM32Cube.AI

The STM32Cube.AI is an extension pack of the widely used STM32CubeMX configuration and code generation tool enabling AI on STM32 Arm® Cortex®-M-based microcontrollers.

It extends STM32CubeMX capabilities with the automatic conversion of pre-trained Neural Networks and the integration of generated optimized libraries into user project, instead of having to build hand-crafted code. STM32Cube.AI allows you to embed deep learning solutions on the broad STM32 microcontroller portfolio.

STM32Cube.AI provides Native support for various Deep Learning frameworks such as Keras, TensorFlow™ Lite, Caffe, ConvNetJs and Lasagne, and also supports all frameworks that can export to the ONNX standard format such as PyTorch™, Microsoft® Cognitive Toolkit, MATLAB® and more.



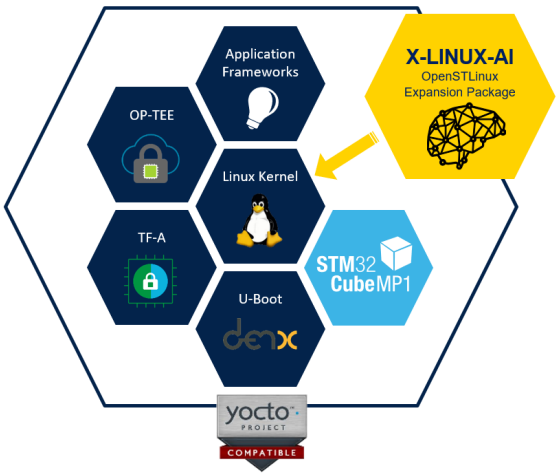
STM32Cube.AI allows the use of larger networks by storing weights in external Flash memory and activation buffers in external RAM and by supporting 8-bit quantization of Keras networks and TensorFlow™ Lite quantized networks. On-device validation enables fast comparison of model accuracy, and STM32Cube.AI allows you to easily port models across different STM32 microcontroller series.

This boosts productivity and ensures customers can use portable solutions but still highly optimized on STM32 target for their projects in production.

AI ON MPUs: OpenSTLinux

In addition to the Arm Cortex-M4 used with STM32Cube.AI and to take full advantage of the STM32MP1 capabilities, ST offers to run various AI frameworks on dual Arm Cortex-A7 thanks to OpenSTLinux distribution.

X-LINUX-AI is an STM32 MPU OpenSTLinux Expansion Package that targets Artificial Intelligence for STM32MP1 series microprocessors. It contains Linux® AI frameworks, as well as application examples to get started with some use cases such as computer vision.



Learn more on www.st.com/STM32CubeAI or contact us at edge.ai@st.com

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Order code: BRARTI1120

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