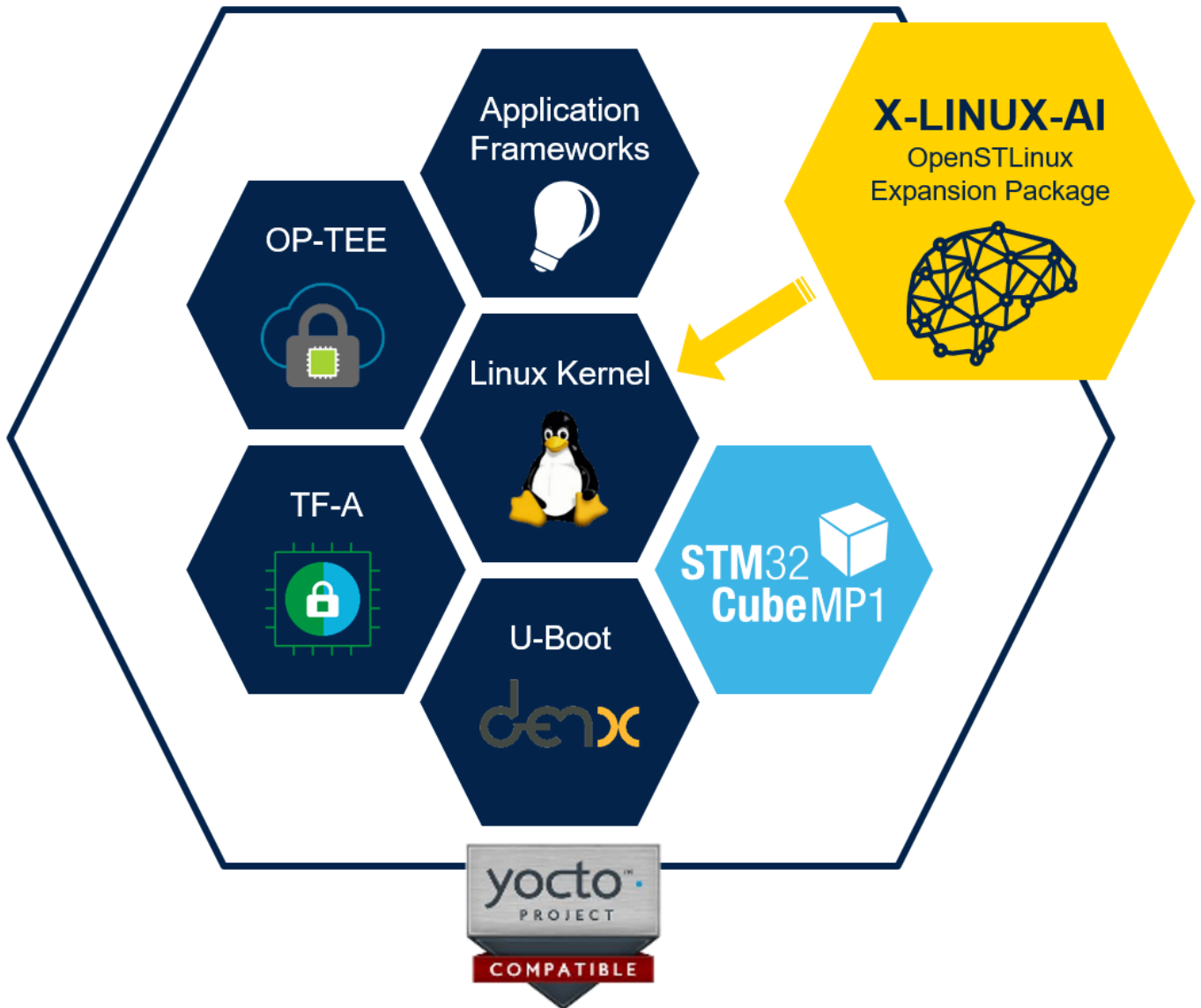


AI Expansion Package for STM32 MPU OpenSTLinux



Product status link

[X-LINUX-AI](#)

Features

- TensorFlow™ Lite 2.5.0
- Arm NN 21.05
- OpenCV 4.1.x
- Python™ 3.8.x (enabling Pillow module)
- Support for the [STM32MP157F](#) devices operating at up to 800 MHz
- Support of the Avenger96 board from Linaro™ 96Boards based on the [STM32MP157A](#) microprocessor, either with a USB camera or the DesignCore® OV5640 camera mezzanine board from D3 Engineering tested with the OpenSTLinux Distribution v2.1.0
- Coral Edge TPU™ accelerator native support
 - libedgetpu 2.5.0 (built from master branch source code) aligned with TensorFlow™ Lite 2.5.0
- The [X-LINUX-AI](#) OpenSTLinux Expansion Package v2.1.1 is compatible with Yocto Project® build system Dunfell. As a consequence, it is compatible with OpenSTLinux Distributions v2.x and v3.x on [STM32MP157C-DK2](#) with a USB camera, and on [STM32MP157A-EV1](#) and [STM32MP157C-EV1](#) with their built-in camera module
- Support for the OpenSTLinux AI package repository allowing the installation of prebuilt package using `apt-*` utilities
- Application samples
 - C++ / Python™ image classification example using TensorFlow™ Lite based on MobileNet v1 quantized model
 - C++ / Python™ object detection example using TensorFlow™ Lite based on COCO SSD MobileNet v1 quantized model
 - C++ / Python™ image classification example using Coral Edge TPU™ based on MobileNet v1 quantized model and compiled for the Edge TPU™
 - C++ / Python™ object detection example using Coral Edge TPU™ based on COCO SSD MobileNet v1 quantized model and compiled for the Edge TPU™
 - C++ image classification example using Arm NN TensorFlow™ Lite parser based on MobileNet v1 float model
 - C++ object detection example using Arm NN TensorFlow™ Lite parser based on COCO SSD MobileNet v1 quantized model
 - C++ face recognition application using proprietary model capable of recognizing the face of a known (enrolled) user. Contact the local STMicroelectronics support for more information about this application or send a request to edge.ai@st.com
- Application support for the 720p, 480p and 272p display configurations
- Application user interface with updated look and feel

Description

[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 basic use cases such as computer vision (CV).

The examples provided in [X-LINUX-AI](#) are based on TensorFlow™ Lite models for image classification based on MobileNet v1, and for object detection based on the COCO SSD MobileNet v1 model. The face recognition application provided in [X-LINUX-AI](#) as a prebuilt binary is based on models retrained by STMicroelectronics. Contact the local STMicroelectronics support for more information about this application.

These examples use either the TensorFlow™ Lite inference engine supporting Python™ scripting and C/C++ applications, either the Coral Edge TPU™ accelerator supporting Python™ scripting and C/C++ application, or the Arm NN inference engine supporting C/C++ application.

[X-LINUX-AI](#) runs on the [STM32MP157C-DK2](#) with a USB camera, on the [STM32MP157A-EV1](#) and [STM32MP157C-EV1](#) with their built-in camera module.

It also runs on the [STM32MP157A](#)-based Avenger96 board from 96Boards (refer to <https://www.96boards.org/product/avenger96/>), either with a USB camera or D3 Engineering DesignCore® OV5640 camera mezzanine board (refer to <https://www.96boards.org/product/d3camera/>).

1 General information

The X-LINUX-AI Expansion Package runs on STM32 microprocessors based on Arm® Cortex® cores.

Note: Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.



1.1 Ordering information

X-LINUX-AI is available for free download from the www.st.com website. The face recognition application is available on demand only via direct request to edge.ai@st.com.

1.2 License

X-LINUX-AI is delivered under the *Mix Ultimate Liberty+OSS+3rd-party V1* software license agreement (SLA0048).

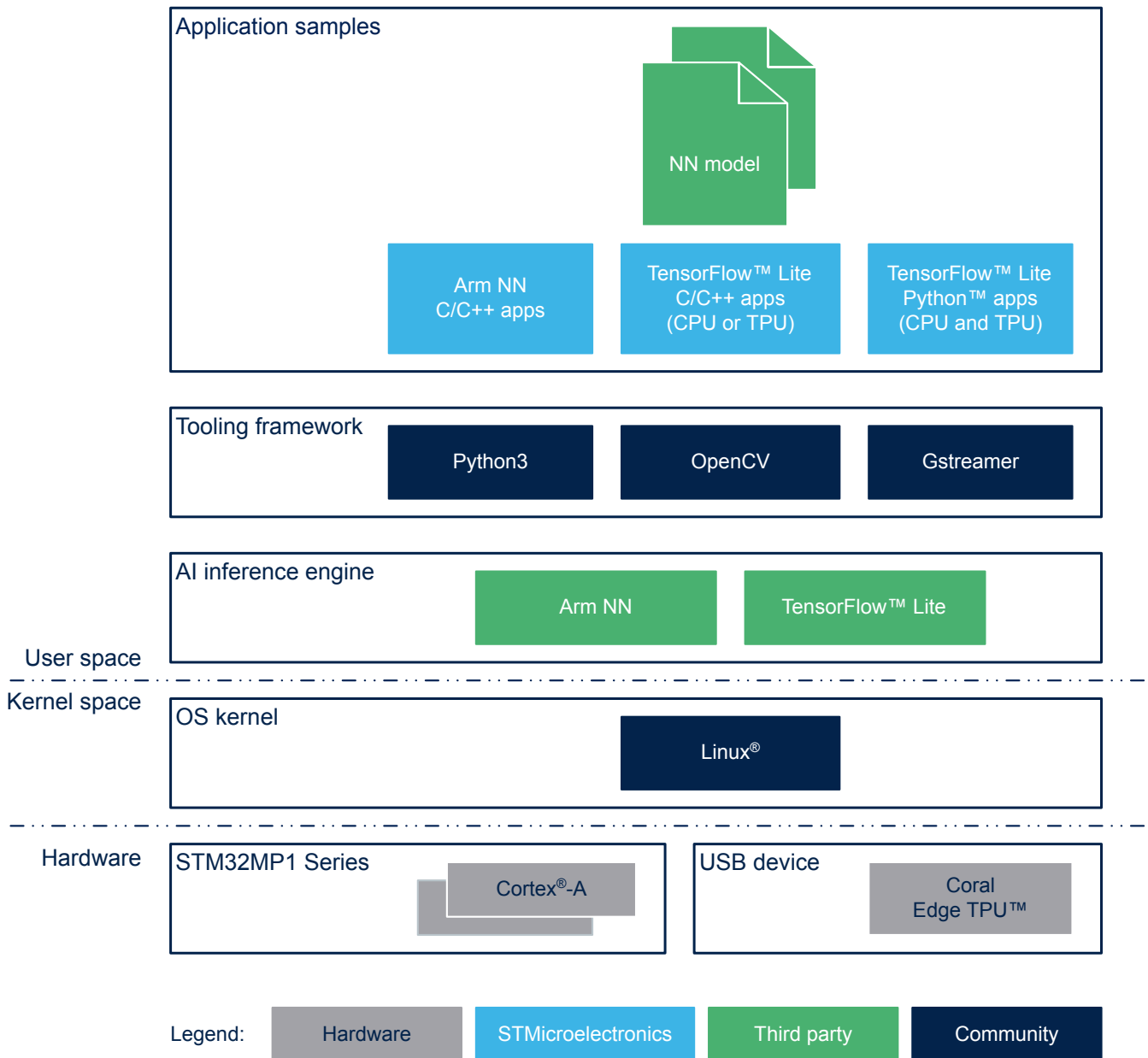
Software component license agreements

The software components provided in this package come with different license schemes. Refer to wiki.st.com/stm32mpu/wiki/X-LINUX-AI_licenses for details.

2 Software architecture

The top-level architecture of the X-LINUX-AI Expansion Package is shown in Figure 1.

Figure 1. X-LINUX-AI architecture



Revision history

Table 1. Document revision history

Date	Revision	Changes
1-Jul-2020	1	Initial release.
8-Feb-2021	2	Added the prebuilt face recognition application, and updated NN tools and OpenSTLinux versions in <i>Features</i> and <i>Description</i> . Updated <i>Ordering information</i> .
2-Jul-2021	3	Added display configuration support and updated component versions in <i>Features</i> for X-LINUX-AI v2.1.1.

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