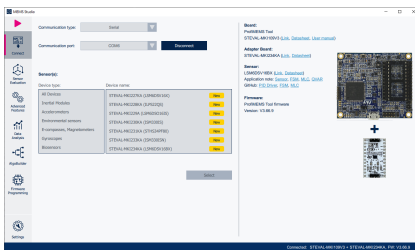
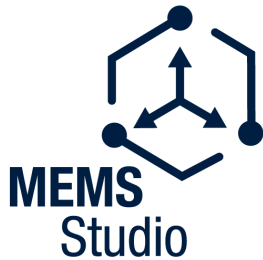


Software solution for MEMS sensors with graphical no-code design of algorithms and development of embedded AI features



Features

- Sensor configuration
 - Easy sensor configuration and evaluation
 - Access to the full sensor register map
 - Interrupt status monitoring
- Sensor data analysis
 - Runtime sensor data visualization charts (line charts, bar graphs, 3D plots, ...)
 - Data logging to .csv file
 - Offline data visualization, data labeling, and editing
 - Fast Fourier transform (FFT) analysis of online and offline data
 - Spectrogram analysis of online and offline data
- Application development
 - Testing of the advanced embedded features (FIFO, pedometer, free fall, ...) in the sensor
 - In-sensor AI design and programming for the finite state machine (FSM), machine learning core (MLC), and intelligent sensor processing unit (ISPU)
 - Embedded autoML tool (automatic filter and feature selection) to simplify the MLC configuration process
 - Visualization and data logging of the output of the embedded software libraries
 - Development of no-code algorithms for data processing in STM32 microcontrollers
- Support for Windows, macOS, and Linux operating systems
- Network updates with automatic notification of new releases

Description

MEMS-Studio is a complete desktop software solution designed to develop embedded AI features, evaluate embedded libraries, analyze data, and design no-code algorithms for the entire portfolio of MEMS sensors. This unique software solution offers a versatile development environment, enabling the evaluation and programming of all MEMS sensors, and launches a new generation of solutions to expand the functions of the well-established applications Unico-GUI, Unicleo-GUI, and AlgoBuilder.

MEMS-Studio facilitates the process of implementing proof of concept using a graphical interface without writing code for STM32 microcontrollers. This solution allows configuring sensors and embedded AI (machine learning and neural networks), leveraging on a machine learning core (MLC), neural networks for the ISPU, and finite state machines (FSM). It reuses embedded software libraries, combines multiple functionalities in a single project, and visualizes data in real time using plot and display.

Product summary	
MEMS Studio	MEMS-Studio
Professional MEMS tool	STEVAL-MK1109V3
STM32 Nucleo development boards	STM32 Nucleo
Motion MEMS and environmental sensor expansion boards for STM32 Nucleo	X-NUCLEO-IKS01A3 X-NUCLEO-IKS4A1 X-NUCLEO-IKS02A1
SensorTile.box PRO	STEVAL-MKBOXPRO
STWIN.box	STEVAL-STWINBX1

MEMS-Studio offers the following user experience:

- Sensor evaluation for motion, environmental, and infrared sensors in the MEMS portfolio
- Configuration and testing of in-sensor features such as the finite state machine (FSM), machine learning core (MLC), intelligent sensor processing unit (ISPU)
- Runtime and offline data analysis
- No-code graphical design of algorithms

MEMS-Studio is part of the [ST Edge AI Suite](#), which is an integrated collection of software tools, designed to facilitate the development and deployment of embedded AI applications. This comprehensive suite supports both optimization and deployment of machine learning algorithms and neural network models, starting from data collection to final deployment on hardware, streamlining the workflow for professionals across various disciplines.

The ST Edge AI Suite supports various ST products: STM32 microcontrollers and microprocessors, Stellar microcontrollers, and MEMS smart sensors.

The ST Edge AI Suite represents a strategic move to democratize edge AI technology, making it a pivotal resource for developers looking to harness the power of AI in embedded systems efficiently and effectively.

Revision history

Table 1. Document revision history

Date	Version	Changes
16-Nov-2023	1	Initial release
26-Mar-2024	2	Updated Features
24-Jun-2024	3	Added reference to ST Edge AI Suite in Description

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