**Making easy to optimize and deploy Tiny Machine Learning on STM32 Microcontrollers**

Matthieu Durnerin, Artificial Intelligence Applications, Algorithms and Tools manager
STMicroelectronics

Providing machine learning based algorithms that are able to run efficiently on Tiny devices like microcontrollers is already a challenge. Making it easy and affordable for data scientists and embedded software experts is a key step for market adoption of this technology. STMicroelectronics has developed tool STM32Cube.AI so that customers have an easy path to enable neural networks on any device across the broad STM32 microcontroller portfolio. The tool maps and runs pre-trained Neural Networks on STM32 microcontrollers and supports a wide range of popular deep-learning training tools like Keras, Tensor Flow Lite, Caffe… and ONNX format. It also takes advantage of quantization by supporting post-training quantization and quantized-aware learning models. The presentation will include the latest features of the STM32Cube.AI tool.

To complement STM32Cube.AI, STMicroelectronics has developed software packages for quick and easy prototyping with end-to-end Audio, Motion and Vision examples. Audio and Motion use cases, such as human activity recognition and audio-scene classification, are running on STM32L4 ultra-low-power microcontrollers. Computer Vision examples, like food classification, are running on STM32H7 microcontrollers. Examples cover a wide range of options like quantized or float models and different memory configurations.