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ANDANTE

AI for New Devices And Technologies at the Edge

D3.2 Tools and methodologies implementation

Deliverable No.	D3.2	**Due Date**	*30-May-2022*
Type	Report	**Dissemination Level**	*Confidential*
Version	1.0	**Status**	Final
Description	This deliverable provides a report of the implementation for the tools and methods developed in Task 3.1 Methods and Tools.		
Work Package	WP3 – AI building blocks, Methods and Tools.		

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Abstract (Published Summary)

Deliverable D3.1 describes the workflows and methodologies proposed by the ANDANTE partners to explore different algorithms, architectures and devices for artificial neural networks, or spiking neural networks. Moreover, this deliverable specifies the tools to be implemented in Task 3.1 and their requirements to train and deploy such neural networks in dedicated hardware accelerators.

The ANDANTE tools tackle the hardware/software co-design challenge when addressing neuromorphic hardware accelerators: They enable to set up an automated design flow starting from the neural network algorithm to the hardware implementation. The resulting design framework helps to reach the target figures of merit in terms of energy efficiency, memory footprint and hardware optimisation. These tools provide hardware-aware training, automatic hardware generation, compilers, energy consumption estimation or simulation of the hardware implementations.

A multidisciplinary approach combining neural network algorithms know-how, programming skills and integrated circuit design is necessary for developing software tools for neural network algorithms implementation considering the hardware design constraints.

The tools enable the optimization and verification of the hardware design, the reduction of time-to-market, and reach the targeted KPIs. Therefore, the tools developed in Task 3.1 together with the FPGAs developed in WP3, and the ASICs, SoCs and platforms developed in WP4 will serve the use cases to be implemented in WP5.

Although these tools are in most of the cases the first implemented version, they are a key milestone, for the partners, on the way to build a complete hardware and software ecosystem available for system and AI engineers that would like to implement neural networks in edge devices.

This document provides, for each tool, the following information: its objective, description, installation steps, way of usage and obtained results.