Unrivaled performance, easy implementation

SiMa.ai democratizes ML at the edge

SiMa.ai has not only left Nvidia far behind in the "MLPerf" benchmark, but has now presented a no-code development environment with which AI and machine learning in edge devices can be implemented very easily and without any specialist knowledge.

In the second "MLPerf Close edge ResNet50 Benchmark", SiMa.ai achieved a 20 percent improvement in its results for single-stream ResNet50 in terms of performance and energy consumption in the edge category compared to the first benchmark in April, while at the same time offering up to 85 percent higher ResNet50 multi- stream efficiency compared to Nvidia. Res-net50 is the most common and recognized benchmark for determining the performance of AI processors in machine learning for computer vision systems.

This means that the startup SiMa.ai has outperformed Nvidia's Jetson NX by no less than 85 percent. The fact that a startup was able to achieve something like this compared to a long-established competitor in the AI processor market is due to its special approach. "SiMa developed the hardware, i.e. the MLSoC, from the perspective of the software and optimized it specifically for use in edge devices. That's why we were able to achieve a jump in performance within the short period from April to today through improvements to our software," says Stephan Reichenauer, Director EMEA Sales, in an interview with Markt&Technik.

SiMa.ai, founded in 2018, achieved this leap exclusively through software optimization, particularly the "ML Accelerator". It contributes significantly to the fact that SiMa.ai's AI chip achieves more frames per second and watt than any other AI chip. In order to determine the values as realistically as possible, SiMai.ai applied ResNet50 not only to a single camera (single stream), but also to other AI loads such as multiple cameras (Batch8 or Multi-Stream). and data center workloads (Batch24 or Offline).

Krishna Rangasayee, Founder and CEO of SiMa.ai

" *With our new "Edgematic Palette" in combination with our currently worldwide best ratio of performance measured for power consumption in frames/s per watt users can use their AI as easily as possible to bring it to edge applications."* "

To understand why this jump in the "performance per watt " value, which is so crucial for edge AI devices, measured in "frames Second per Watt" is so interesting, a look at how AI chips have been developed so far: especially with regard to use in data centers. However, use in edge devices poses completely different requirements. The power consumption must be significantly lower and the entire system must offer the lowest possible latency. Trying to "force" the chips that were not originally intended for this purpose into the edge cannot lead to the desired results.

"Having surpassed the market leader in the AI chip sector for the second

time shows the performance of our technology. We want our leading position in "Continuously expand performance per watt – the crucial criterion for edge AI," says Krishna Rangasayee, CEO and founder of SiMa.ai.

The increase in performance is essentially due to the compiler technology and the memory management system. The fundamental improvements that SiMa. ai achieved here increase the performance of the chip for every machine learning network , not just for ResNet50. "We do not optimize benchmark-specifically, as others like to do, but rather with a variety of real applications in mind," explains Rangasayee.

But at the start, SiMai.ai not only set itself the goal of being able to solve every computer vision task with at least a factor of ten better performance per watt, but also of making it extremely easy for users to develop their respective AI systems. Create systems – without having to delve deeply into AI programming, but rather get working programs at the push of a button.

To this end, SiMa.ai has developed the "Palette" software , which allows users to easily adapt, test and optimize their AI systems for a wide range of highly specialized applications in edge devices.

Very easy by drag and drop

With the newly introduced "Palette Edgematic" extension, the company has gone one step further: via the browser -based, visual development environment, SiMa.ai opens up no-code access to edge AI and ML, especially for the Area.