

SPEED

SPEED RESPONDS TO THE CHALLENGE OF ENERGY EFFICIENCY FOR AI-ENABLED DEVICES

? WHAT IS SPEED?

SPEED is an IP platform that combines analog/mixed signal and digital IPs to enable highly energy efficient AI-enabled devices. SPEED includes:

- SPIDER power management
- BAT audio codec
- CHAMELEON MCU subsystem
- PANTHER multicore versatile DSP processor
- RAPTOR neural processing unit accelerators

These IPs were designed to tackle the energy efficiency challenge created by AI-enabled devices, which are either battery operated or have tight power constraints. SPEED elegantly combines fine-grained, adaptive power management with DSP and AI accelerators.

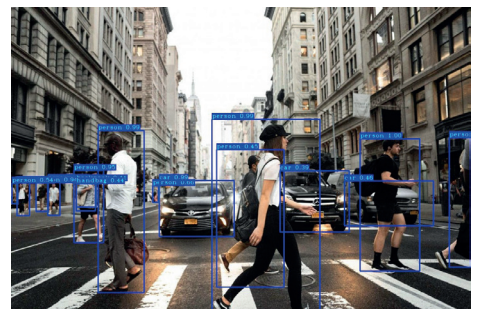
The best-in-class embedded AI capabilities of SPEED IP were made possible by Dolphin Design and CEA-List.

It offers the best tradeoff in terms of SW flexibility, energy efficiency, and peak performance for Edge AI devices by leveraging CEA-List's PNeuro® AI hardware and N2D2 /SESAM tools.

DEMO @ CES 2022

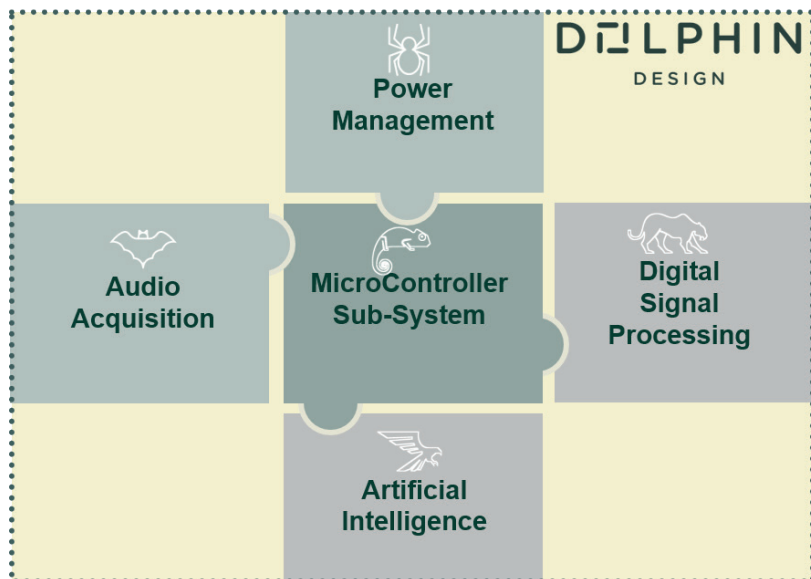
To demonstrate the gains, a demochip has been designed.

Demonstrations based on TinyML benchmarks are showcased @ CES 2022



! WHAT'S NEW?

SPEED is innovative in that it combines the processing of audio and video in a battery-powered system.



These features enable a level of performance previously only achievable on cloud or GPU-type systems. Performance has been demonstrated on a SoC designed using SPEED.

SCIENCE FOR A BETTER FUTURE

Processing by algorithm using low-power solutions will be crucial to coping with the data deluge created by 5G and IoT. It is estimated that 75% of data will be processed on Edge devices rather than in data centers by 2025. AI-based Edge computing, ideal for use in addition to cloud computing, can reduce data transmission by a factor of 20:1 and cut costs by two thirds.

INTERESTED IN THIS TECHNOLOGY?

Nicolas GAUDE
Business Development & Product Marketing Manager
Nicolas.gaude@dolphin.fr
Tel.: +33 750 594 571

APPLICATIONS

- Smart cities
- Image and activity analysis
- Smart sensors
- Gesture recognition
- People and face detection
- Augmented and virtual reality
- Industry 4.0
- Audio (keyword detection)

KEY FEATURES

- **>110** ULPMark-PP score in **22nm** node
- **3x** less energy for Signal Processing compared to state-of-the art DSP
- Near-memory computing CNN accelerator up to **128MAC/cycle**
- Adaptive Voltage and Body Bias IP
- In-chip margin monitoring

>> WHAT'S NEXT?

To support the rollout of SPEED, we will also release a new generation of our ultra-low-power neural network algorithms in July 2022. Our next release, expected in September 2022, will be a very-low-power signal processing IP to extract features upline from the neural network.

