

POWERVR SERIES3NX NNA

Bringing multi-core scalability to the embedded AI market

The PowerVR Series3NX builds on our experience creating the ground-breaking PowerVR Series2NX neural network accelerator. The Series3NX range of cores, created from a single scalable architecture, delivers high-performance, low-power neural network acceleration in the most area efficient way, to meet a wide range of customer needs.



Mobile

Artificial intelligence (AI) is now deployed in a wide variety of mobile applications, such as face recognition and verification, object recognition, image enhancement, style transfer and music tagging to name but a few. To support this, our Series3NX NNA cores deliver a paradigm shift in performance, while simultaneously reducing battery consumption over pure GPU solutions.



Security & surveillance

PowerVR Series3NX NNA cores enable a new class of smart camera that perform high-performance neural network-based analytics for a wide range of verticals such as commercial and home surveillance, retail analytics and drones. It supports classic use cases such as number/license plate recognition, person/object recognition, behaviour detection and perimeter defence.



Automotive (ADAS)

Convolutional neural networks (CNNs) are playing a crucial role in developing self-driving cars. The Series3NX NNAs will power advanced driver-assistance systems (ADAS) including driver alertness monitoring, driver gaze tracking, seat occupancy, road-sign detection, drivable path analysis, road user detection and driver recognition.



Augmented and virtual reality

Neural network hardware acceleration will be critical to fulfil the potential of next-gen augmented and virtual reality use cases. Scene understanding will enhance augmented reality, while movement analysis, eye tracking and gesture recognition will provide context awareness in virtual reality to provide the best possible relative user experiences.

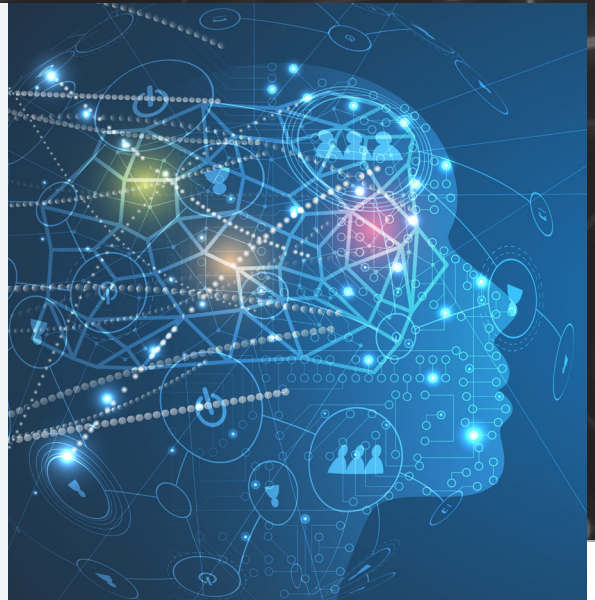


Data centre

Inference workloads can be demanding and require the highest TOPS performance from multiple inference engines.



PowerVR Series3NX is the fastest, most power-efficient embedded solution for hardware acceleration of neural networks in the market. Building on the success of its multi award-winning predecessor, Series3NX provides an unrivalled level of scalability, enabling SoC manufacturers to optimise compute power and performance across a range of embedded markets such as automotive, mobile, smart surveillance and IoT edge devices. Thanks to architectural enhancements, including lossless weight compression, the Series3NX architecture benefits from a 40% boost in performance in the same silicon area over the previous generation, giving SoC manufacturers a nearly 60% improvement in performance efficiency and a 35% reduction in bandwidth.



PowerVR Series3NX key features and benefits

▲ Flexible bit-depth data type support

As a fully flexible solution, the Series3NX supports neural network bit depths from 16 down to 4-bit, reducing bandwidth and increasing performance without compromising inference accuracy.

▲ Lossless weight compression

Complementing its low-bit depth support, the Series3NX introduces a new lossless weight compression scheme that reduces network model sizes and bandwidth thus increasing overall performance.

▲ Advanced security enablement

PowerVR Series3NX integrates with the industry-leading security architectures including a flexible infrastructure that enables integration into custom solutions, enabling rights holders to protect their content where required.

▲ Leading performance with low power consumption

With the industry's highest inference/mW, the Series3NX delivers class-leading neural network acceleration with the lowest power consumption.

▲ Multi-core performance scalability

The NNA architecture is designed to be used in a multi-instance SoC where multiple cores can be deployed for maximum inference performance.

▲ AI Synergy

PowerVR GPUs feature HyperLane Technology which allows AI workloads to run on the GPU and NNA synergistically, whilst protecting the performance of any graphics tasks. AI Synergy provides programmable GPU AI that can run in conjunction with dedicated neural network acceleration hardware, providing the best of both worlds; flexibility and performance.

