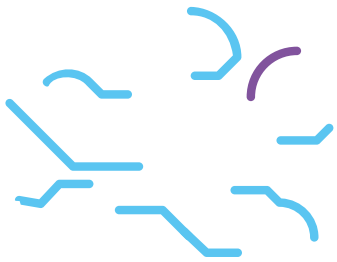
SYNOPSYS®

DesignWare IP for Amazing Artificial Intelligence SoCs



Deep Learning SoC Design Challenges

When incorporating deep learning capabilities, SoC designers encounter specific requirements for specialized processing, memory architectures, data connectivity, and security. Specialized processing is required to manage massive and changing compute intensities for machine and deep learning tasks. Memory performance becomes a critical design consideration to support new complex artificial intelligence models. Capacity and bandwidth are primary concerns for training, while inference optimizations create irregular memory access challenges. Real-time data connectivity between sensors, such as CMOS image sensors for vision, and deep learning accelerators become key components. Power consumption is reduced by minimizing data movement between the processor and memory, using key power management features, and designing in advanced FinFET technologies.

Benefits of DesignWare IP for Deep Learning

Specialized Processing

Synopsys provides a portfolio of embedded processors to efficiently execute the varied workloads of AI applications. This includes IP and tools for scalar, vector, and neural network processing. The ARC® EV Processors integrate heterogeneous computing elements optimized for embedded vision applications, including convolutional

AI Training in Data Centers		
Specialized Processing	ASIP Designer	Industry-leading tool to design your own scalar, vector, and deep learning processors; deploys hardware parallelism and custom datapaths while retaining programmability.
	Foundation Cores	