Deep Learning Chipsets 2020 Report

Part of the AI & Intelligent Automation Service Area Package

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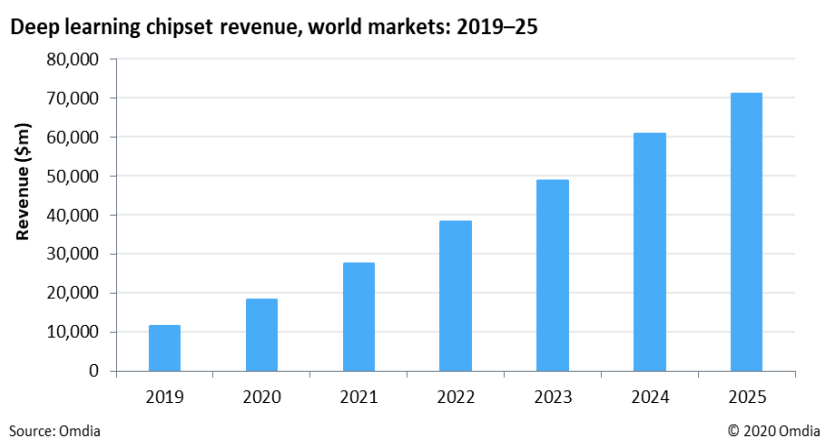
CPUs, GPUs, FPGAs, ASICs, SoC Accelerators, and Other Chipsets for AI Training and Inference Applications: Global Market Analysis and Forecasts

The need for artificial intelligence (AI) acceleration is widely recognized as of 2020. AI acceleration chipsets have become a standard feature requirement for device manufacturers within the enterprise (data center) and edge markets. As a result, the volume and revenue of AI chipsets have increased drastically in the last two years. NVIDIA's latest A100 offers petaOPS of compute performance under certain compute conditions, marking a tremendous jump from the petaOPS server DGX-1 introduced just two short years ago.

Deep learning (DL) is slowly moving past its hype cycle as proof-of-concept (PoC) AI applications developed in the past two years go into production. AI chipset customers have become more sophisticated in terms of chipset needs for AI application acceleration and are asking for specific benchmarks when talking to vendors. Customers' needs for chipsets are coming to the forefront, forcing chipset companies to rethink the applicability of their technology. All prominent chip companies, such as Intel, NVIDIA, and Qualcomm, have invested heavily in AI. Cloud companies have started rolling out graphics processing units (GPUs), field programmable gate arrays (FPGAs), and application-specific integrated circuits (ASICs), giving developers a choice for AI acceleration. Omdia forecasts that global revenue for DL chipsets will increase from $11.4bn in 2019 to $71.2bn by 2025.



Report Coverage

KEY ISSUES ADDRESSED

- What chipset types are being used for deep learning (DL) today, and how will they change through 2025 and beyond?
- What are the power consumption and compute capacity profiles of chipsets used for DL applications?
- What is the market opportunity for DL chipsets in enterprise environments versus edge devices?
- Which market sectors and industries will drive demand for DL chipsets?
- What is the state of technology development for DL chipsets, and which companies are driving innovation?
- What are some of the emerging architectures for DL chipsets?
- What are the key performance matrices for DL chipsets?
- What are some of the use cases for DL chipsets in different application markets?
- What has changed in the DL chipset market in the last two years?
- How are startups faring in the DL chipset market?

KEY MARKET FORECASTS

- Deep learning chipset revenue, world markets: 2019–25
- Deep learning chipset year-on-year revenue growth rates, world markets: 2020–25
- Deep learning chipset revenue by chipset type, world markets: 2019–25
- Deep learning chipset revenue, inference vs. training, world markets: 2019–25
- Deep learning chipset revenue by compute capacity, world markets: 2019–25
- Deep learning chipset revenue by power consumption, world markets: 2019–25
- Deep learning chipset revenue by market sector, world markets: 2019–25

COVERAGE

Chipset Types

- Central processing unit (CPU)
- Graphics processing unit (GPU)
- Field-programmable gate array (FPGA)
- Application-specific integrated circuit (ASIC)
- System-on-chip (SoC) accelerator

Chipset Market Sectors

- Enterprise
- Edge

Segments

- Training
- Inference

Power Consumption

- High (>100 W)
- Medium (5-100 W)
- Low (<5 W)

Compute Capacity

- High (>50 TOPS)
- Medium (5–50 TOPS)
- Low (<5 TOPS)

Regions

- North America
- Europe
- Asia Pacific
- Latin America
- Middle East & Africa

APPLICABLE TO

- Semiconductor and component manufacturers
- OEM companies building devices using AI chipsets
- Cloud companies using AI chipsets
- Service providers and systems integrators
- End-user organizations deploying deep learning systems
- Industry associations
- Government agencies
- Investor community

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AMD
ARM
Cerebras Systems
CEVA
Esperanto Technologies
Facebook
Google
Graphcore
Groq
Gyrfalcon Technologies
Habana Labs (acquired by Intel)
Huawei
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