AI Chip Market by Offerings (GPU, CPU, FPGA, NPU, TPU, Trainium, Inferentia, T-head, Athena ASIC, MTIA, LPU, Memory (DRAM (HBM, DDR)), Network (NIC/Network Adapters, Interconnects)), Function (Training, Inference) & Region - Global Forecast to 2029

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Report description:

The AI Chip market is projected to grow from USD 123.2 billion in 2024 and is estimated to reach USD 311.58 billion by 2029; it is expected to grow at a CAGR of 20.4% from 2024 to 2029.
The market for AI chips is expected to grow due to increasing adoption of machine learning and deep learning algorithms. The increase in AI server shipments will boost the demand for chips supporting AI capabilities. Moreover, the emerging trend of autonomous vehicles is expected to boost the market for AI chips used for real-time decision making.
"The Neural Processing Unit (NPU) segment is projected to grow at a high rate during the forecast period."
The Neural Processing Unit (NPU) segment is projected grow at a high rate in the AI chip market from 2024 to 2029. The market growth is attributed to the increasing adoption of high-end smartphones and AI PCs and laptops which requires dedicated AI capabilities at the edge. The NPUs helps to accelerate the neural network processing to perform the AI-driven tasks including advanced AI image processing and natural language processing. Market players are extensively focusing on developing high-end NPU solutions to stay competitive in the market. For instance, in September 2023, Apple Inc. (US) launched the iPhone 15 Pro series, featuring the A17 Pro chip. The new AI processor is incorporated with a dedicated 16-core Neural Engine which has capabilities of performing 35 trillion operations per second (TOPS). Such significant product developments and launches are expected to amplify the adoption of NPUs in the market over the forecast timeframe.
"Machine Learning segment of the AI Chip market to witness high market share during the forecast period."
The machine learning segment in AI chip market is expected to grow at a high rate during the forecast period. AI chips are critical in running large datasets to process and enable predictive analytics, supporting real-time decision-making, as they are optimized

to machine learning tasks such as training and inference. For this category of AI chips, the foremost drivers of adoption were flexibility and scalability of machine learning models within autonomous systems and personalized recommendations. This AI chip is widely used in many sectors-from cloud services and healthcare to finance, automotive, and retail-in which companies are developing powerful AI chips in support of machine learning capabilities, where business insights can be gained, the customer experience improved, and efficiency generally jacked. For instance, Google (US) announced Trillium in May 2024 as its sixth-generation TPU. It focuses on its cloud platform with an onboard accelerator for machine learning workload acceleration. Enterprises that have adopted TPUs widely bring machine learning power to predictive analytics, personalization, and operational efficiency. This represents increasing dependence on AI chips in this domain. As businesses seek to exploit the power of data for insight, efficiencies, and customer experience, demand is surging for machine learning capabilities.

"North America to hold a major market share of the AI chip market during the forecast period" North America took the largest market share for the AI chip market in 2023. The presence of prominent technology firms and data center operators are driving the AI chip market across North America region. The region hosts companies such as NVIDIA Corporation (US), Intel Corporation (US), Advanced Micro Devices, Inc. (AMD) (US), Google (US); and cloud service providers include Amazon Web Services, Inc. (AWS) (US), Microsoft Azure (US), and Google Cloud (US). For instance, in April 2024, Google (US) announced a USD 3 billion investment to expand their data centers across the US. These data centers are further backed by AI infrastructure to provide real-time services across the world. The region also hosts several startups set up in the area for providing AI chips for data centers, which include SAPEON Inc. (US), Tenstorrent (Canada), Taalas (Canada), Kneron, Inc. (US), SambaNova Systems, Inc. (US). North America has a well-established technological infrastructure that supports advanced AI research and development. There are very many modern data centers in this region, equipped with state-of-the-art AI hardware. They may include GPUs and TPUs, as well as specialized AI chips. The presence of large scale data centers and leading AI chip developers in the region are driving the market growth of AI chips.

Extensive primary interviews were conducted with key industry experts in the AI chip market to determine and verify the market size for various segments and subsegments gathered through secondary research. The break-up of primary participants for the report has been shown below:

The break-up of the profile of primary participants in the AI chip market:

- By Company Type: Tier 1 - 45%, Tier 2 - 32%, and Tier 3 - 23%
- By Designation: C-level - 30%, Director Level - 45%, Others- 25%
- By Region: North America - 26%, Europe - 40%, Asia Pacific - 22%, ROW- 12%

The report profiles key players in the AI Chip market with their respective market ranking analysis. Prominent players profiled in this report are NVIDIA Corporation (US), Intel Corporation (US), Advanced Micro Devices, Inc. (US), Micron Technology, Inc. (US), Google (US), Samsung (South Korea), SK HYNIX INC. (South Korea), Qualcomm Technologies, Inc. (US), Huawei Technologies Co., Ltd. (China), Apple Inc. (US), Imagination Technologies (UK), Graphcore (UK), Cerebras (US).

Apart from this, Mythic (US), Kalray (France), Blaize (US), Groq, Inc. (US), HAILO TECHNOLOGIES LTD (Israel), GreenWaves Technologies (France), SiMa Technologies, Inc. (US), Kneron, Inc. (US), Rain Neuromorphics Inc. (US), Tenstorrent (Canada), SambaNova Systems, Inc. (US), Taalas (Canada), SAPEON Inc. (US), Rebellions Inc. (South Korea), Rivos Inc. (US), and Shanghai BiRen Technology Co., Ltd. (China) are among a few emerging companies in the AI chip market.

Research Coverage: This research report categorizes the AI Chip market on the basis of offerings, function, technology, end user, and region. The report describes the major drivers, restraints, challenges, and opportunities pertaining to the AI chip market and forecasts the same till 2029. Apart from these, the report also consists of leadership mapping and analysis of all the companies included in the AI chip ecosystem.

Key Benefits of Buying the Report The report will help the market leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall AI chip market and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to position their businesses better and to plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the market and provides them with information on key market drivers, restraints, challenges, and opportunities.

The report provides insights on the following pointers:

-Analysis of key drivers (increasing data traffic and need for high computing power, emerging trend of autonomous vehicles,

growing adoption of industrial robots, rising focus on parallel computing in AI data centers, increasing adoption of machine learning and deep learning algorithms, increase in AI server shipments to boost the demand for AI chips), restraints (lack of AI hardware experts and skilled workforce, increasing power consumption), opportunities (surging demand for AI-based field programmable gate array (FPGA) technology, integration of AI-based solutions into defense systems, growing potential of AI-based tools in healthcare sector, planned investments in data centers by cloud service providers, rise of ASICs based on AI technology), and challenges (data privacy concerns associated with AI platforms, unreliability of AI algorithms, availability of limited structured data to develop efficient AI systems, supply chain disruptions) influencing the growth of the AI Chip market.
-□Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product & service launches in the AI chip market.
-□Market Development: Comprehensive information about lucrative markets - the report analysis the AI chip market across various regions
-□Market Diversification: Exhaustive information about new products & services, untapped geographies, recent developments, and investments in the Ai Chip market.
-□Competitive Assessment: In-depth assessment of market shares, growth strategies and product offerings of leading players like NVIDIA Corporation (US), Intel Corporation (US), Advanced Micro Devices, Inc. (US), Micron Technology, Inc. (US), Google (US), among others in the AI Chip market.

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