LA Neuromorphic Chip - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-04-28 | 120 pages | Mordor Intelligence

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Report description:

The LA Neuromorphic Chip Market is expected to register a CAGR of 27.89% during the forecast period.

Key Highlights
- Neuromorphic is a specific brain-inspired ASIC that implements the Spiked Neural Networks (SNNs). It has an object to reach the massively parallel brain processing ability in tens of watts on average. The memory and the processing units are in single abstraction (in-memory computing). This leads to the advantage of dynamic, self-programmable behavior in complex environments.
- Companies, such as BrainChip Holdings Ltd, are forming multiple partnership activities to utilize neuromorphic chips in curbing the spread of COVID-19. In May 2021, BrainChip Holdings Ltd partnered with precision immunology company Biotome Pty Ltd to develop a fast, accurate COVID-19 antibody test. The companies will explore how the Akida neural processor could improve the accuracy and information quality of the antibody tests while Biotome is developing by providing advanced AI capacity at the point of care.
- Neuromorphic chips can be designed digitally, analog, or in a mixed way. Analog chips resemble the characteristics of the biological properties of neural networks better than digital ones. In the analog architecture, few transistors are used for emulating the differential equations of neurons. Therefore, theoretically, they consume lesser energy than digital neuromorphic chips. Besides, they can extend the processing beyond its allocated time slot. Thanks to this feature, the speed can be accelerated to process faster than in real-time. However, the analog architecture leads to higher noise, which lowers the precision.
- Digital ones, on the other hand, are more precise compared to analog chips. Their digital structure enhances on-chip programming. This flexibility allows artificial intelligent researchers to accurately implement various kinds of an algorithm with low-energy consumption compared to GPUs. Mixed chips try to combine the advantages of analog chips, i.e., lesser energy consumption, and the benefits of digital ones, i.e., precision.

- Neuromorphic architectures address challenges, such as high-power consumption, low speed, and other efficiency-related bottlenecks prevalent in the von Neumann architecture. Unlike the traditional von Neumann architecture with sudden highs and lows in binary encoding, neuromorphic chips provide a continuous analog transition in the form of spiking signals. Neuromorphic architectures integrate storage and processing, getting rid of the bus bottleneck connecting the CPU and memory.

Latin America Neuromorphic Chip Market Trends

Automotive is the Fastest Growing Industry to Adapt Neuromorphic Chip

- The automotive industry is one of the fastest-growing industries for neuromorphic chips. All the premium car manufacturers are investing heavily to achieve Level 5 of Vehicle Autonomy, which in turn, is anticipated to generate huge demand for AI-powered neuromorphic chips.
- The autonomous driving market requires constant improvement in AI algorithms for high throughput with low power requirements. Neuromorphic chips are ideal for classification tasks and could be utilized for several scenarios in autonomous driving. Compared with static deep learning solutions, they are also more efficient in a noisy environment, such as self-driving vehicles.
- According to Intel, four terabytes is the estimated amount of data that an autonomous car may generate through almost an hour and a half of driving or the amount of time a general person spends in their car each day. Autonomous vehicles face a significant challenge in efficiently managing all the data generated during these trips.
- The computers running the latest self-driving cars are effectively small supercomputers. The companies, such as Nvidia, aim to achieve Level 5 autonomous driving in 2022, delivering 200TOPS (trillions of operations per second) using 750W of power. However, spending 750W an hour on processing is poised to have a noticeable impact on the driving range of electric vehicles.
- ADAS (Advanced Driver Assistance System) applications include image learning and recognition functions among various automotive applications of neuromorphic chips. It works like conventional ADAS functions, such as cruise control or intelligent speed, assist system in passenger cars. It can control vehicle speed by recognizing the traffic information marked on roads, such as crosswalks, school zone, road-bump, etc.

Increasing Demand for Artificial Intelligence-based Microchips drive the market growth

- The Latin American neuromorphic chip market is experiencing high growth due to increasing demand for artificial intelligence and consumer preference towards small-sized products leading to the requirement of miniaturization of ICs. With the advent of smart technologies, smart sensors are being used in many end-user industries like automotive, electronics, and medical.
- Currently available semiconductors for AI applications are CPUs and AI accelerators. The AI accelerators are leading the market because of the computing limitations of CPUs. Available AI accelerators are GPUs, Application-Specific Integrated Circuits (ASICs), and Field-Programmable Gate Arrays (FPGAs). GPUs have many parallel processing cores, which give them a significant advantage for processing AI training and inference. However, they do have a high-power consumption cost which is not sustainable for future applications.
- On the other hand, emerging FPGAs can have ten times more power efficiency than GPUs but have lower performance. In applications where energy efficiency is the top priority, FPGAs can be the alternative solution. Among AI Accelerators, ASICs show the best performance, lesser power consumption, and efficiency. However, designing unique functioning ASIC is highly costly and is not reconfigurable. Therefore, ASICs should be used when the market of specific AI applications is adequate for the design investment.
- Compared to AI Accelerators, neuromorphic chips are poised to be the prominent option concerning parallelism, energy

efficiency, and performance. They can handle both AI inference and training in real-time. Moreover, edge training is possible through neuromorphic chips. However, learning methodologies should be improved their accuracy.

Latin America Neuromorphic Chip Industry Overview

As the market for neuromorphic chips is very niche and in the initial phase of development, the market has a presence of a few players, such as BrainChip Holdings Ltd, Intel Corporation, SynSense AG, etc. Top players are growing intensely in this consolidated market scenario through various market development strategies, such as collaboration, market expansion, product innovation, and R&D activities. Hence the market concentration is medium.

- March 2020 - SolidRun and Gyrfalcon developed First Edge Optimized AI Inference Server Janux GS31 that supports leading neural network frameworks. It can be configured with up to 128 Gyrfalcon Lightspeeur SPR2803 AI acceleration chips for improved inference performance for most complex video AI models.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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