

# Neuromorphic Chips for Autonomous Vehicles Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2025 - 2034

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## Abstracts

The Global Neuromorphic Chips For Autonomous Vehicles Market was valued at USD 9.11 billion in 2024 and is estimated to grow at a CAGR of 20.7% to reach USD 59.16 billion by 2034.

The accelerating demand for self-driving vehicles is driving the need for advanced computing systems that can rapidly process vast amounts of sensory input. Neuromorphic chips, which emulate the human brain's structure, enable faster decision-making and greater energy efficiency than traditional processors. As vehicles integrate multiple cameras, LiDAR, and radar technologies to enhance safety and reliability, the requirement for instantaneous data processing continues to rise. With the evolution of electric and autonomous vehicles, energy optimization and heat management have become key concerns. Conventional GPUs and CPUs often face thermal throttling during continuous AI tasks, which limits scalability. In contrast, neuromorphic processors handle only relevant data using parallel, event-driven computation, which significantly reduces power consumption and improves battery performance in electric vehicles. The growing adoption of neuromorphic technology is further supported by advancements in sensor systems. Next-generation bio-inspired and event-based sensors produce data streams optimized for neuromorphic processing, enabling asynchronous and spike-driven data handling that is not possible with conventional architectures.

In 2024, the digital neuromorphic chips segment accounted for a 43.2% share. Their dominance stems from seamless integration with existing automotive AI systems and electronic control units, allowing automakers to implement them without major redesigns. Their compatibility with current AI frameworks, along with strong support

from top semiconductor manufacturers, ensures scalability, reliability, and consistent innovation in this segment.

The on-board (edge) deployment model generated USD 3.95 billion in 2024, owing to its critical role in real-time sensor data processing. Edge computing allows vehicles to analyze information locally, eliminating latency and enabling instantaneous response to road and traffic conditions. This architecture is crucial for safety applications that require split-second decision-making, such as automated braking and collision prevention.

United States Neuromorphic Chips for Autonomous Vehicles Market generated USD 2.5 billion in 2024. The U.S. continues to benefit from robust investment in artificial intelligence and autonomous driving technologies, supported by both public and private sectors. A strong innovation ecosystem and the presence of key technology firms contribute to ongoing research in neuromorphic computing for high-speed, real-time decision-making. The nation's growing focus on intelligent and energy-efficient vehicle systems further accelerates the integration of neuromorphic chips in the automotive industry.

Key companies active in the Global Neuromorphic Chips for Autonomous Vehicles Market include Accenture, Applied Brain Research Inc., Aspinity Inc., BorgWarner Inc., BrainChip Holdings Ltd., Cadence Design Systems Inc., Figaro Engineering Inc., General Vision Inc., Grayscale AI, Gyrfalcon Technology Inc., Hewlett Packard Enterprise Development LP, IBM Corporation, Intel Corporation, MemryX Inc., Micron Technology Inc., Mythic Inc., NVIDIA Corporation, Polyn Technology, Prophesee SA, Qualcomm Technologies Inc., Samsung Electronics Co. Ltd., and Sony Corporation. To strengthen their position, leading companies in the Neuromorphic Chips for Autonomous Vehicles Market are prioritizing strategic collaborations, product innovation, and scalable manufacturing. Many are investing heavily in R&D to enhance chip efficiency, reduce power usage, and improve data processing accuracy. Partnerships between semiconductor firms and automotive manufacturers are accelerating integration and testing within next-generation vehicle systems. Several players are also focusing on expanding their geographic reach and forming alliances with AI software developers to align neuromorphic technology with emerging automotive standards.

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