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AI Robotics Chips Market Forecasts to 2034 – Global Analysis By Chip Type (CPU, GPU, FPGA, ASIC, Neural Processing Units (NPUs) and Other Chip Types), Component, Technology Node, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global AI Robotics Chips Market is accounted for $8 billion in 2026 and is expected to reach $70 billion by 2034 growing at a CAGR of 31% during the forecast period. AI Robotics Chips are specialized semiconductor processors designed to power artificial intelligence capabilities in robotic systems. These chips enable real-time data processing, computer vision, motion control, and decision-making in robots. They are optimized for low latency, high efficiency, and edge computing, allowing robots to operate autonomously without relying heavily on cloud connectivity. Applications include industrial automation, autonomous vehicles, service robots, and drones. Increasing demand for intelligent automation is driving innovation in AI chips, making them essential components in next-generation robotics and smart machines.

Market Dynamics:

Driver:

Increasing automation across industries

Sectors such as manufacturing, logistics, healthcare, and agriculture are rapidly integrating robotics to enhance productivity and efficiency. AI-enabled chips play a critical role in enabling real-time decision-making, vision processing, and intelligent control in robotic systems. These chips support advanced functionalities such as machine learning, object detection, and autonomous navigation. The growing demand for smart and autonomous systems is further accelerating the deployment of AI robotics chips. Therefore, the widespread adoption of industrial automation is expected to strongly propel market growth.

Restraint:

Complex chip design and development

Designing AI-specific chips requires advanced semiconductor expertise, high research and development investments, and sophisticated design tools. The integration of AI capabilities into compact and energy-efficient chips presents additional technical challenges. Development cycles can be lengthy, involving multiple testing and validation stages. Additionally, maintaining performance while reducing power consumption adds to design complexity. Consequently, these challenges may limit the speed of innovation and market expansion.

Opportunity:

Expansion in autonomous systems and drones

Autonomous robots and unmanned aerial vehicles rely heavily on AI chips for navigation, obstacle detection, and real-time data processing. These technologies are increasingly being used in sectors such as defense, agriculture, surveillance, and logistics. The demand for high-performance, low-latency processing units is growing with the advancement of autonomous applications. Furthermore, continuous improvements in AI algorithms are enhancing the capabilities of robotic systems. Therefore, the rapid expansion of autonomous technologies is expected to drive significant demand for AI robotics chips.

Threat:

Supply chain disruptions in semiconductors

The global semiconductor supply chain is highly complex and sensitive to geopolitical tensions, trade restrictions, and raw material shortages. Any disruption in chip manufacturing or component supply can impact production timelines and increase costs. Additionally, dependence on a limited number of semiconductor manufacturing hubs can create supply bottlenecks. These challenges may affect the availability of AI chips for robotics applications. As a result, supply chain instability could hinder market growth.

Covid-19 Impact:

The COVID-19 pandemic had a notable impact on the AI Robotics Chips Market. During the initial phase, semiconductor production and global supply chains experienced disruptions, affecting chip availability. However, the pandemic also accelerated the adoption of automation and robotics across industries. Increased demand for contactless operations, remote monitoring, and automated processes boosted the need for AI-enabled robotic systems. Industries such as healthcare, logistics, and manufacturing increasingly relied on robotics to maintain operations. This surge in automation created additional demand for AI robotics chips.

The processing units segment is expected to be the largest during the forecast period

The processing units segment is expected to account for the largest market share during the forecast period as it forms the core component of AI-enabled robotic systems. These units are responsible for executing machine learning algorithms, data processing, and decision-making functions. High-performance processors enable robots to perform complex tasks such as image recognition and real-time analytics. The increasing complexity of robotic applications is driving demand for advanced processing capabilities. Additionally, continuous innovation in chip architecture is enhancing processing efficiency and performance.

The autonomous robots segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the autonomous robots segment is predicted to witness the highest growth rate due to rapid advancements in robotics and artificial intelligence technologies. Autonomous robots are being widely adopted across industries for tasks such as material handling, inspection, and delivery. These systems require advanced AI chips for real-time decision-making and navigation. Increasing demand for automation, labor efficiency, and operational safety is driving the adoption of autonomous robots. Additionally, the expansion of smart factories and Industry 4.0 initiatives is further supporting growth.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share owing to the region has a strong presence of leading semiconductor companies, AI technology providers, and robotics manufacturers. Significant investments in research and development are driving innovation in AI chip design. Additionally, early adoption of automation technologies across industries supports market growth. Government initiatives and private sector investments in advanced technologies further strengthen the market landscape.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR driven by rapid industrialization and strong growth in electronics manufacturing. Countries such as China, Japan, and South Korea are major hubs for semiconductor production and robotics development. Increasing adoption of automation in manufacturing and logistics is driving demand for AI robotics chips. Governments in the region are also promoting digital transformation and smart industry initiatives. Additionally, expanding investments in AI and robotics technologies are supporting market expansion.

Key players in the market

Some of the key players in AI Robotics Chips Market include NVIDIA Corporation, Intel Corporation, Advanced Micro Devices, Inc., Qualcomm Incorporated, Samsung Electronics Co., Ltd., Taiwan Semiconductor Manufacturing Company, Broadcom Inc., Texas Instruments Incorporated, STMicroelectronics N.V., NXP Semiconductors N.V., Renesas Electronics Corporation, MediaTek Inc., Apple Inc., Google LLC, Graphcore Ltd., Horizon Robotics and Cambricon Technologies.

Key Developments:

In January 2026, Intel signed a formal cooperation memorandum with JAKA Robotics to establish a deep strategic partnership centered on 'computing power and operational capability integration' for embodied AI applications. The collaboration focuses on developing customized technology integrations for industrial manufacturing and commercial service scenarios using Intel Core Ultra processors to create rapidly deployable intelligent robotics solutions.

In September 2025, NVIDIA launched the Newton open-source physics engine in collaboration with Google DeepMind and Disney Research to enable more accurate simulation of complex robotic movements, such as walking on uneven terrain or manipulating delicate objects.

Chip Types Covered:

- CPU
- GPU
- FPGA
- ASIC
- Neural Processing Units (NPUs)
- Other Chip Types

Components Covered:

- Processing Units
- Memory Modules
- Connectivity ICs
- Power Management ICs
- Other Components

Technology Node Covered:

- 7nm and Below
- 10nm–14nm
- 16nm–28nm
- Above 28nm

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Applications Covered:

- Industrial Robots
- Service Robots
- Autonomous Robots
- Humanoid Robots
- Agricultural Robots
- Other Applications

End Users Covered:

- Manufacturing
- Healthcare
- Logistics & Warehousing
- Defense & Security
- Retail
- Other End Users

Regions Covered:

- North America
  - United States
  - Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

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Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of Africa

What our report offers:

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

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Company Profiling

- Comprehensive profiling of additional market players (up to 3)
- SWOT Analysis of key players (up to 3)

Regional Segmentation

- Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

- Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Table 33 Global AI Robotics Chips Market, By Other End Users (2023–2034) ($MN)
Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) are also represented in the same manner as above.

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