

Global Edge Artificial Intelligence Market Size Study, by Processor (ASIC, CPU, GPU), by Component (Services, Solution), by Source (Biometric Data, Mobile Data, Sensor Data, Speech Recognition, Video & Image Recognition), by End-Use (Automotive, Energy and Utilities, Government & Public Sector, Healthcare, Manufacturing, Telecom), by Application (Access Management, Autonomous Vehicles, Energy Management, Precision Agriculture, Remote Monitoring & Predictive Maintenance, Smart Wearables, Telemetry, Video Surveillance) and Regional Forecasts 2022-2032

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Abstracts

The Global Edge Artificial Intelligence Market is valued approximately at USD 1.06 billion in 2023 and is anticipated to grow with a healthy growth rate of more than 24.80% over the forecast period 2024-2032. Edge artificial intelligence (AI) refers to a system where AI algorithms are processed locally on hardware devices, enabling real-time data processing and decision-making without reliance on the cloud. This decentralized approach, achieved through integrating advanced AI and machine learning capabilities directly into edge devices like smartphones, IoT devices, and autonomous vehicles, is gaining traction across various industries. The surge in demand for low-latency processing and real-time decision-making capabilities is driving the development and adoption of edge AI technology.

The proliferation of IoT devices and the need to process vast amounts of data at the source without overloading network bandwidth further fuel the demand for edge AI solutions. However, challenges such as data security and privacy concerns, coupled with the complexity of deploying and maintaining AI models on edge devices, could impede market growth. Nonetheless, significant opportunities exist in the healthcare, automotive, and manufacturing sectors, driven by advancements in semiconductor technologies and increased investments in AI research, leading to more powerful and efficient edge AI solutions. ASICs are preferred for their high efficiency and optimization for specific AI algorithms, making them ideal for high-volume, embedded devices requiring real-time processing. CPUs, as general-purpose processors, offer flexibility and are suitable for applications needing complex decision-making capabilities. GPUs excel in parallel processing tasks, beneficial for deep learning, video analytics, and AI model training, enhancing their use in edge AI applications. However, data security and privacy concerns and complexity of AI model deployment would stifle the market growth during the forecast period 2024-2032.

Edge AI enables real-time processing of biometric, mobile, sensor, speech, and video data, significantly reducing latency and enhancing privacy. The automotive industry utilizes edge AI for autonomous driving, predictive maintenance, and enhancing user experiences. Energy and utilities employ edge AI for grid operations and infrastructure maintenance. In the government and public sector, edge AI is pivotal for smart city initiatives, public safety, and transportation systems. Healthcare benefits from edge AI through patient monitoring, medical imaging analysis, and hospital logistics. Manufacturing leverages edge AI for quality control, predictive maintenance, and supply chain optimization, while telecom operators use it for network optimization and predictive analytics.

The key regions considered for the Global Edge Artificial Intelligence Market study include Asia Pacific, North America, Europe, Latin America, and the Middle East and Africa. Regionally, the North America is dominating the market share in edge AI adoption due to technological innovation and the prevalence of IoT devices. EMEA's growth is driven by strict privacy regulations and smart city initiatives, particularly in Europe and the Middle East. APAC is expected to witness the fastest growth rate, propelled by government support, technological advancements, and a large manufacturing base incorporating edge AI for real-time process optimization.

Major market players included in this report are:

Intel Corporation

Google LLC by Alphabet Inc.

Microsoft Corporation
Amazon Web Services Inc.
Hewlett Packard Enterprise Company
Lenovo Group Ltd.
International Business Machines Corporation
NVIDIA Corporation
Qualcomm Technologies, Inc.
Synaptics Incorporated
Adlink Technology, Inc.
BrainChip Holdings Ltd.
Nutanix, Inc.
Cloudera, Inc.
EdgeConneX

The detailed segments and sub-segment of the market are explained below:

By Processor:

ASIC
CPU
GPU

By Component:

Services
Solution

By Source:

Biometric Data
Mobile Data
Sensor Data
Speech Recognition
Video & Image Recognition

By End-Use:

Automotive
Energy and Utilities
Government & Public Sector
Healthcare
Manufacturing
Telecom

By Application:

Access Management
Autonomous Vehicles
Energy Management
Precision Agriculture
Remote Monitoring & Predictive Maintenance
Smart Wearables
Telemetry
Video Surveillance

By Region:

North America
U.S.
Canada

Europe
Germany
UK
France
Italy
Spain
Rest of Europe

Asia Pacific
China
Japan
India
South Korea
Australia
Rest of Asia-Pacific

Latin America
Brazil
Mexico
Rest of Latin America

Middle East and Africa
Saudi Arabia
South Africa

Rest of Middle East and Africa

Years considered for the study are as follows:

Historical year – 2022

Base year – 2023

Forecast period – 2024 to 2032

Key Takeaways:

Market Estimates & Forecast for 10 years from 2022 to 2032.

Annualized revenues and regional level analysis for each market segment.

Detailed analysis of geographical landscape with Country level analysis of major regions.

Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approach.

Analysis of competitive structure of the market.

Demand side and supply side analysis of the market.

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