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AI in Medical Diagnostics Market Assessment, By Component Type [Hardware, Services, Software], By Diagnosis Type [In-Vitro Diagnostics, Imaging Diagnostics, Others], By Application [Oncology, Neurology, Cardiology, Radiology, Gynecology, Others], By Technology [Natural Language Processing, Machine Learning, Context Aware Computing, Computer Vision], By End User [Hospitals, Diagnostic Imaging Centers, Diagnostic Laboratories, Others], By Region, Opportunities and Forecast, 2016-2030F

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Abstracts

Global AI in medical diagnostics market is projected to witness a CAGR of 26.40% during the forecast period 2024-2031, growing from USD 1,642.02 million in 2023 to USD 10,657.92 million in 2031. The market has experienced significant growth in recent years and is expected to maintain a strong pace of expansion in the coming years.

Artificial intelligence has made significant promises for the present and future medical diagnosis. Presently, AI-based diagnostic technologies help healthcare professionals decipher medical images like X-rays, MRI, and CT scans, resulting in rapid and more precise diagnoses. To make a predictive diagnosis, AI algorithms can examine patient information, symptoms, and medical background. The application of AI in medical diagnosis is anticipated to grow as the field develops.

AI in medical diagnostics market growth is governed by advancements in graphic card

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and GPU technologies, enabling the high throughput analysis of diagnosis data generated through equipment. The growing interest of investors in startups developing AI-based diagnostic solutions drives significant expansion in the market. The trend of personalized medicine, precision diagnostics, and the growing disease burden demands AI integration in diagnostics for better clinical outcomes. Furthermore, government initiatives to enhance technologies in the healthcare sector sustain a tendency for continuous market expansion.

The increasing global disease burden has significantly raised the demand for technology-driven diagnostics to lower the errors in clinical outcomes and reduce the burden on healthcare professionals, further driving the demand for AI-based diagnostic solutions. Investors have shown deep interest in AI-based startups in recent years which drives infrastructural development and enhanced scope for market expansion. Manufacturers are coming up with innovative solutions to establish their worth in the market.

For example, in January 2024, Google DeepMind Research unveiled AMIE (Articulate Medical Intelligence Explorer), a research AI system for diagnostic medical reasoning and conversations based on a large language model (LLM). Its purpose is to obtain the patient's medical history and discuss potential diagnoses with a physician. To create AMIE, several real-world datasets were employed.

Rising Prevalence of Chronic Diseases

Globally, as the geriatric population is increasing, the vulnerability towards chronic diseases such as cardiovascular diseases, cancer, diabetes, and respiratory illnesses is increasing, leading to higher demand for medical diagnostics. Sedentary lifestyle, unhealthy diet, tobacco use, and alcohol abuse are the leading risk factors for the rising chronic diseases in developing as well as developed countries. To combat these diseases, accurate diagnosis and early detection, along with timely intervention play a crucial role. AI in medical diagnostics assists in analyzing large datasets, assisting in image interpretation, and supporting pattern recognition. AI in medical diagnostics improves the efficiency, accuracy, and speed of diagnosing various complex medical conditions and contributes to promoting a person’s overall health outcomes.

According to WHO 2023 report, chronic diseases are responsible for 41 million deaths every year worldwide. Out of which, 77% of deaths are in low-and middle-income countries. Cardiovascular diseases are the leading cause of death, accounting for 17.9 million deaths annually, followed by cancer, which accounts for 9.3 million deaths.

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Moreover, chronic respiratory diseases and diabetes account for around 4.1 million deaths and 2 million deaths.

Growing Investments in AI-based Medical Diagnostics

With the growing demand for AI-based healthcare solutions such as AI-based medical diagnostics tools and appliances, both public and private companies are significantly investing in AI-based medical diagnostics, due to rapid analysis and high efficiency in accurate diagnosis of diseases. Publicly traded companies including tech giants, such as Google, Microsoft, and IBM are leveraging their financial strength, technological expertise, and are allocating significant resources like AI-based software and hardware to develop AI-driven diagnostic tools. Also, numerous private organizations and startups, funded by the government and other key market players, are focusing on advancing AI technology for medical diagnostics to improve health outcomes. The trend reflects the growing recognition of AI's potential to revolutionize diagnostics and improve efficiency in identifying complex medical conditions.

For instance, in August 2023, VitruvianMD, a pioneering medtech startup, raised an impressive USD 1.25 million in a seed extension II funding round. The funding was provided by 27four's social impact venture capital fund, The Nebula Fund which marks a significant milestone for VitruvianMD and is expected to help in its expansion. VitruvianMD is a provider of cutting-edge diagnostic solutions by integrating biomedical engineering with advanced artificial intelligence (AI).

Government Initiatives and Key Player Focus Acting as Catalyst

The US FDA regulates artificial intelligence and machine learning-based healthcare products as medical devices and covers them as 'Software as a Medical Device (SaMD) in the United States. SaMD is software intended to be used for one or more medical purposes that perform purposes without being part of a hardware medical device. Regulatory bodies of all major countries are on their way to formulating regulations for analyzing the risks and benefits of using AI in medical diagnostics. Such government regulations and emphasis on building healthy ecosystems for AI-based diagnostics providers is anticipated to contribute for market expansion.

For instance, in June 2023, the National Health Service (NHS) under the United Kingdom government awarded an AI diagnostic fund of GBP 21 million to integrate AI imaging and decision support tools used for rapid diagnosis of conditions such as cancers, strokes, and heart conditions. These government initiatives are providing a

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great boost to the global AI in medical diagnostics market.

Dominance of Software Segment

The software segment dominated the global AI in medical diagnostics market in 2023, with a market share of 50.58% and is expected to continue its dominance during the forecast period, reaching 50.89% of the market in 2031. Artificial intelligence is majorly software-based solution that can process data at a faster pace without error. AI-based software component is added to diagnostic equipment like CT-scan machines, MRI machines, and others to perform high-speed data processing and analysis, due to which the software component holds a major share in the AI in medical diagnostics market. Market players are contributing to the dominance of software segment through strategic solutions.

For instance, in January 2023, Viz.ai announced the launch of artificial intelligence (AI)-enabled Viz Vascular Suite which is reported to allow automated detection of vascular conditions, shown through computed tomography (CT), ECG, and other imaging techniques, further facilitating timely collaboration among interdisciplinary teams.

Diagnostic Imaging to Dominate the Market

The diagnostic imaging segment dominated the global AI in medical diagnostics market with nearly half of the market share in 2023, which is expected to increase further by 2031. The segment dominates due to increasing demand for AI-powered and cloud-based solutions, which provide more diagnostic precision when evaluating medical images of a patient. AI algorithms are better designed to analyze image data generated by diagnostic imaging equipment, like MRI and CT scans, thus the role of AI integration is relatively higher in imaging, although AI-based solutions for in-vitro diagnostics are expanding with time. Market players are designing solutions for enhancing diagnostic imaging, further strengthening the dominance of the diagnostic imaging segment in the market.

For instance, in September 2023, Abbott launched Ultreon 1.0, which is a coronary imaging software in India. The software combines optical coherence tomography (OCT) with artificial intelligence (AI), allowing healthcare professionals to observe blood flow and blockages in the cardiovascular system. The software is capable of differentiating calcified and non-calcified blockages, the severity of blockage, and evaluating vessel diameter.

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Asia-Pacific Grows with the Highest CAGR

Asia-Pacific AI in medical diagnostics market is expected to be the fastest-growing region by 2031, registering a robust CAGR during the forecast period. The expected growth can be attributed to the rising investment in the healthcare and medical diagnostics sector. The growth of health ecosystems in Asia-Pacific, led by both hospitals and digital solution providers, is fostering cross-industry partnerships and collaborations that are driving the growth of AI in medical diagnostics. Along with it, the growing investors' traction toward AI-based diagnostic solution providers is helping in further market expansion.

Future Market Scenario

Growing prevalence of chronic diseases such as cancer, Alzheimer disease and others is raising the demand for technology-driven diagnosis and predictive analysis, further driving the growth in the AI in medical diagnostics market.

The recently observed growth in investment trends for AI-based diagnostic solution developers has significantly contributed to the drastic growth of AI in medical diagnostics market.

The software segment is the leading segment in the AI in medical diagnostics market owing to the widespread integration of AI in diagnostic equipment through innovative software.

Government initiatives to strengthen healthcare and inculcate technology-driven diagnostic approaches have significantly expanded the market.

Key Players Landscape and Outlook

The AI in medical diagnostics market comprises several local players and emerging startups that are coming with lots of pipeline products with drastic scope for development in the future. Investment from venture capital firms and leading players are fostering the landscape of the market.

In February 2023, GE Healthcare announced the acquisition of Caption Health to expand its multibillion-dollar ultrasound portfolio. The major focus of the deal is on

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Caption Health’s AI software which helps healthcare workers through the process of securing clear images from cardiac ultrasound exams.

In June 2023, Genomenon announced that it acquired the genomics interpretation and curation firm Boston Genetics. Genomenon aims to curate the human genome by combining its artificial intelligence-enabled genomic platform and expertise with insights from Boston Genetics’ team of genetic scientists.

In October 2023, Philips announced a collaboration with imaging biomarker specialist Quibim on AI-based imaging and reporting solutions for MR prostate exams. Philips’ AI-enabled MRI and Quibim’s AI-enabled image analysis software aims to help clinicians deliver faster, easier prostate cancer care, mitigate staff shortages, and lower the cost of care.

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