AI in Oncology Market by Player Type (Integrated Suite), Application (Drug Discovery, De Novo Drug Design, Diagnosis, Precision Medicine, Genomic), Technology (CNN, NLP), Cancer Type (Lung), End User (Hospitals, Pharma), & Region - Global Forecast to 2030

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Report description:

The global AI in Oncology market is projected to reach USD 11.52 billion by 2030 from USD 2.45 billion in 2024, at a CAGR of 29.4% from 2024 to 2030. The market's growth is fuelled by the growing demand for cost-effective cancer treatments & solutions, streamlining of the drug discovery process, rapid digitization of healthcare records and patient data, the growing volume of cancer cases, and regulatory compliance requirements.

In March 2024, the journal published by the American Cancer Society stated the following key points:

-More than 80% of AI devices that are FDA-approved are used in cancer detection & diagnosis. These devices have applications in the following: pathology (19.7%), radiology (54.9), and radiation oncology (8.5%).

-AI aided in decreasing the workload of radiologists in breast cancer screening by 30% and in comparison to healthcare professionals, AI maintained more accuracy.

-AI combined with human evaluations improved cancer detection rates by 8% in various studies.

-Precision medicine tools powered by AI contributed to the 33% decline in cancer mortality rates over the past 32 years by enabling better diagnoses, tailored treatments, and optimized clinical decision-making.

However, integration with existing healthcare systems, data privacy, and security constraints pose a significant challenge within this market.

"Machine learning held the largest share in technology type in the AI in oncology market in 2023."

The AI in oncology market is segmented based on technology into machine learning, natural language processing (NLP), context-aware processing and computing, computer vision, and image analysis (including optical character recognition). The

machine learning segment held the largest market share in 2023. Further, the machine learning segment includes deep learning (including convolutional neural networks (CNN), recurrent neural networks (RNN), generative adversarial networks (GAN), graph neural networks (GNN), others), supervised learning, reinforcement learning, unsupervised learning, other machine learning technologies. Among these, deep learning is the largest segment owing to its capability to analyze and process vast and complex datasets including medical images with improved efficiency. Within deep learning technologies such as CNNs are effective for image-based cancer detection, while RNNs and GANs are used to improve the temporal pattern analysis and data synthesis. Moreover, deep learning's scalability, adaptability and precision in analyzing and identifying the subtle patterns in cancer helped in improving the diagnosis, risk predictions and treatment optimization.

"By player type, the integrated solution segment is the largest and is also expected to register the fastest growth over the forecast period."

By player type, the AI in oncology market is divided into niche/point solution providers (including platform & service), integrated suite/platform providers (including platform & service), technology providers (only software), and business process service providers. The integrated suite/platform providers segment accounts for the largest and is projected to be the fastest-growing segment over the forecast year. "By player type, the integrated solution segment is the largest and is also expected to register the fastest growth over the forecast period." The growth is attributed to the fact that these providers offer comprehensive end-to-end solutions to streamline workflows across all treatment sectors of cancer such as detection, diagnosis, monitoring, and treatment planning. Such platforms help to integrate technologies including NLP, computer vision, and machine learning resulting in better clinical decision-making and offering seamless data interoperability.

Moreover, integrated suite/platform helps in decreasing the need for multiple vendors as they are unified systems due to their scalability and flexibility which results in cost effective solution. This holistic approach drives adoption and fuels rapid growth.

"Asia Pacific is estimated to register the highest CAGR over the forecast period."

The AI in Oncology market is segmented mainly into North America, Europe, Asia Pacific, Latin America, and Middle East & Africa. The AI in oncology market in Asia Pacific is projected to register at the highest CAGR rate during the forecast period. The growth of this region is due to the development of healthcare infrastructure, and government initiatives to modernize and digitalize the healthcare industry particularly due to rising cancer cases, growth in minimally invasive cancer treatments, and to increase in the survival rate of cancer patients. Countries such as Japan, China, and India are focusing on developing cost-effective solutions in cancer care emphasizing the importance of AI-driven data management to handle sensitive patient information and ensure compliance with regulatory mandates for healthcare data standardization. Various key players and startups in the countries are promoting AI use in cancer such as Niramai, a Bangalore-based health tech startup, developed Thermalytix, an AI-driven breast cancer screening solution. The technology uses non-invasive, radiation-free thermal imaging and machine learning algorithms to detect breast cancer at an earlier stage compared to traditional methods. The solution is designed for all ages and ensures privacy, portability, and high accuracy. It is available in over 30 cities across 200+ hospitals in India and is expanding globally to different countries, thereby, transforming preventive cancer care.

Breakdown of supply-side primary interviews by company type, designation, and region:

- By Company Type: Tier 1 (40%), Tier 2 (35%), and Tier 3 (25%)
- By Designation: Directors (35%), Managers (40%), and Others (25%)
- By Region: North America (40%), Europe (30%), Asia Pacific (20%), Latin America (5%) and Middle East Africa (5%)

List of Companies Profiled in the Report

- Certara USA. (US)
- Siemens Healthineers (Germany)
- GE Healthcare (US)
- ConcertAI (US)
- Medtronic (Ireland)
- F. Hoffmann-La Roche Ltd (Switzerland)
- Oracle(US)
- NVIDIA Corporation(US)

o Koninklijke Philips N.V. (Netherlands)
o PathAI, Inc. (US)
o CureMetrix, Inc. (US)
o Mindpeak GmbH (Germany)
o Paige AI, Inc. (US)
o Predictive Oncology (US)
o Exscientia (UK)
o Insilico Medicine (US)
o Iktos (Paris)
o Tempus (US)
o Azra AI (US)
o CureMatch, Inc. (US)
o OncoLens (US)
o Triomics (US)
o Clinakos. (US)
o Perthera, Inc (US)
o Cellworks Group, Inc. (US)
o biomy, Inc. (Japan)

Research Coverage
This research report categorizes the AI in oncology market by player type [niche/point solution providers (including platform & service), integrated suite/platform providers (including platform & service), technology providers (only software), and business process service providers], by application [drug discovery {target identification & validation, lead identification & optimization, de novo drug design}, drug development {preclinical testing, predictive modeling for human trials, clinical trial optimization, adaptive trial design & monitoring}, diagnosis & early detection {imaging & radiology (mammography, computed tomography, magnetic resonance imaging (MRI), nuclear imaging (PET & SPECT), X-ray imaging, ultrasound, others), digital pathology & histopathology, liquid biopsy & biomarker detection, genetic risk prediction}, treatment planning & personalization {personalized treatment planning (precision medicine & genomic analysis, radiomics and radiogenomics, predictive models for treatment response, treatment recommendation systems), radiation therapy, chemotherapy, immunotherapy, targeted therapy (combination & dose optimization, AI-guided drug delivery), surgical planning & assistance (preoperative imaging and 3D modeling, intraoperative guidance and robotics, postoperative analysis & recovery)}, patient engagement & remote monitoring {symptom management & virtual assistance, remote patient monitoring, patient education & empowerment}, post-treatment surveillance & survivorship care {recurrence monitoring, long-term outcome prediction, mental health & support systems}, data management & analytics, other applications, by cancer type (solid tumors [including breast cancer lung cancer, prostate cancer, colorectal cancer, brain tumors, and other tumors], hematologic malignancies (including leukemia, lymphoma, multiple myeloma, other hematologic malignancies), by technology [machine learning {deep learning (convolutional neural networks (CNN), recurrent neural networks (RNN), generative adversarial networks (GAN), graph neural networks (GNN), others), supervised learning, reinforcement learning, unsupervised learning, other machine learning technologies}, natural language processing (NLP), context-aware processing and computing, computer vision, image analysis (including optical character recognition)], by deployment [on-premises model, cloud-based model, and hybrid model], by end user [healthcare providers {hospitals & clinics, specialty centers, laboratories & diagnostic centers, others}, pharmaceutical & biotechnology companies, medical device/equipment companies, academic & research institutions, government & regulatory agencies, healthcare payers, and others}, and region. The scope of the report covers detailed information regarding the major factors, such as drivers, restraints, challenges, and opportunities, influencing the growth of the AI in oncology market. A thorough analysis of the key industry players has been done to provide insights into their business overview, offerings, and key strategies such as acquisitions, collaborations, partnerships, mergers, product/service launches & enhancements, and approvals in the AI in oncology market. Competitive analysis of upcoming startups in the AI in oncology market ecosystem is covered in this report.

Reasons to Buy the Report

The report will help market leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall AI in oncology market and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to better position their businesses and plan suitable go-to-market strategies. The report also helps stakeholders understand the market pulse and provides information on key market drivers, restraints, challenges, and opportunities.

The report provides insights on the following pointers:

-Analysis of key drivers (supportive regulations, growing necessity to reduce healthcare costs, reduction in costs and improved operational efficiency with AI in oncology platforms, rising demand for streamlined clinical trials, technological advancements in AI algorithms, rising cancer prevalence globally), restraints (ensuring data security is a major concern for both patients and users, elevated costs associated with adoption of AI, resistance to adoption), opportunities (focus on personalized treatment plans, collaborative efforts, AI-driven drug discovery), and challenges (limited availability of datasets, interoperability issues) influencing the growth of the AI in oncology market

-Solution Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product & service launches in the AI in oncology market

-Market Development: Comprehensive information about lucrative markets ? the report analyses the AI in oncology market across varied regions.

-Market Diversification: Exhaustive information about new solutions, untapped geographies, recent developments, and investments in the AI in oncology market

-Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players such as Siemens Healthineers (Germany), GE Healthcare (US), ConcertAI (US), Medtronic (Ireland), F. Hoffmann-La Roche Ltd (Switzerland), Oracle(US), NVIDIA Corporation(US), Koninklijke Philips N.V. (Netherlands), PathAI, Inc. (US), CureMetrix, Inc. (US), Mindpeak GmbH (Germany), Paige AI, Inc. (US), Predictive Oncology (US), Exscientia (UK), and Insilico Medicine (US), among others in AI in oncology market.

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