

Deep Learning - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

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Report description:

The Deep Learning Market size is estimated at USD 24.73 billion in 2024, and is expected to reach USD 138.36 billion by 2029, growing at a CAGR of 41.10% during the forecast period (2024-2029).

Deep learning, a subfield of machine learning (ML), led to breakthroughs in several artificial intelligence tasks, including speech recognition and image recognition. Furthermore, the ability to automate predictive analytics is leading to the hype for ML. Factors such as enhanced support in product development and improvement, process optimization and functional workflows, and sales optimization, among others, have been driving enterprises across industries to invest in deep learning applications. Furthermore, the latest machine-learning approaches have significantly improved the accuracy of models, and new classes of neural networks have been developed for applications like image classification and text translation.

Key Highlights

- Technological advances, such as increasing data center capacity, high computing power and the ability to carry out tasks without human input, have attracted significant attention. In addition, the growth of the deep learning industry is fueled by rapidly adopting cloud computing technology across a number of sectors.
- Several developments are now advancing deep learning. According to SAS, improvements in algorithms have boosted the performance of deep learning methods. The increasing amount of data volumes has been supportive of the building of neural networks with several deep layers, including streaming data from the Internet of Things (IoT) and textual data from social media and physicians' notes. A significant amount of computational power is essential to solve deep learning problems, considering the iterative nature of deep learning algorithms-their complexity increases as the number of layers increases. The hardware running deep learning algorithms also needs to support the large volumes of data required to train the networks.
- Computational advances in graphic processing units (GPUs) and distributed cloud computing have put incredible computing

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power at the users' disposal. This development is led by hardware providers, such as NVIDIA, Intel, and AMD, among others, which have been improving the computational speeds among other features and making them compatible with most-used open-source platforms, such as Tensorflow, Cognitive Toolkit (Microsoft), Chainer, Caffe, and PyTorch, among others. Therefore, 'open-sourcing deep learning capabilities' have become increasingly popular across enterprises. These open-source frameworks enable users to build machine-learning models efficiently and quickly.

- Deep learning has a number of serious limitations that need to be overcome before it can achieve its full potential, such as the black box problem, overpopulation, lack of contextual understanding, data requirements and computational intensity, which might affect market

- As a result, COVID-19 has had an excellent impact for the technology sector. Deep learning algorithms have been employed for assisting diagnosis and detection of COVID-19 cases based on clinical images, e.g. chest Xray or CT scans. The growing demand for MRI analysis tools within the healthcare sector which has led to a rise in the deep learning market.

Deep Learning Market Trends

Growing Use of Deep Learning in Retail Sector is Driving the Market

- The retail industry has seen a drastic shift in its base of operations in recent times, with many notable brands choosing to reduce the number of onsite offerings in favor of online service. For retailers to remain viable, they need to meet customer expectations, act accordingly, or risk losing loyalty. It is also becoming vital for retailers to adopt burgeoning technologies to make this a reality. Deep learning allows retailers to automate customer experience and streamline processes in a way hitherto unknown. For example, shelf analytics in online scenarios can help with useful recommendations of merchandise and quick classification, which allows customers to make correct choices with more support more quickly.

- Online retailers such as Walmart are starting to use AI to get product recommendations from customers but are just barely utilizing the full potential the technology can offer. By using deep learning, retailers can truly harness the power of AI to optimize user experiences and automate time-consuming tasks. For instance, online retailers can use Deep Learning to automatically tag visual data to improve many facets of the user experience. They can use AI to refine the search and return better results to search queries or enhance product images' quality, especially low-quality product photos using color enhancement. Moving forward, retailers can quickly gather data and analyze information automatically using Deep Learning technology.

- A study by Snowflake Computing Harvard Business Review points out that retailers who choose to make data-driven decisions have survived longer. Undoubtedly, retail is rapidly becoming extremely data-oriented. As per the same study, 89% of retailers consider gaining improved insights into customer expectations a significant goal. The models that Deep learning in retail utilizes are sophisticated and advanced enough to handle the challenges that machine learning models fail at. For example, deep learning in retail application models is intelligent enough to understand that the release of smartphones with larger screens can eat up tablets' sales. In the case of missing data, deep learning in retail could learn from patterns whether an item isn't selling or is out of stock.

- These days, demand forecasting and customer intelligence are only two examples of distinct internal activities that retail and consumer products companies utilize intelligent automation to carry out. Executives, however, intend to integrate intelligent automation and deep learning into more intricate operations over the course of the following three years. These procedures call for larger data sets, external cooperation, and extra system connections. The estimated penetration is anticipated to increase to above 70% across organizational domains that span the value chain over that period.

- For instance, sports footwear, apparel, and equipment manufacturer Nike Inc. has created a system that allows consumers to design their own shoes and wear them after they leave the store-utilizing the fresh automated system. Customers who participate in The Nike Maker Experience put on a pair of unadorned Nike Presto X sneakers and customize them via voice commands. The technology shows the buyer the created shoes using augmented reality, object tracking, and projection systems.

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North America is Expected to Hold Major Share

- North America is expected to have a significant share in the global deep learning market, owing to the sustained rise in considerable data volume, coupled with the anticipated increase in the demand for the integration of DL in consumer-centric solutions of enterprises. The growing emphasis on predicting the key trends and insights related to customer behavior and operations has been a critical driver for significant enterprises to veer toward the use of AI and big data for driving value and offering a personalized experience. For instance, Netflix built a machine learning platform based on JVM languages, like Scala. The platform helps break viewers' preconceived notions and find shows that they might not have initially chosen.
- In order to increase mission effectiveness, stretch workforce capacity, prevent waste, fraud, and abuse, and increase operational efficiency, agencies in the US now rely heavily on artificial intelligence and machine learning technology. The advancement of AI technology, a rising number of AI use cases and applications, and the expansion of commercial solutions have all helped to expand the usage of AI outside the R&D activities at specialized organizations like NASA and the Department of Energy.
- The United States Department of Transportation formed a new safety regulation to help eliminate blind zones behind vehicles and view people present behind vehicles. According to National Highway Traffic Safety Administration stats, around 292 fatalities and 18,000 injuries occur due to back-over crashes involving all vehicles. Such regulations are anticipated to encourage the adoption of ADAS, thereby offering opportunities for the region's deep learning market. Furthermore, the region is also seeing an increase in investments from automakers to develop advanced solutions, driving the growth of the market.
- Moreover, companies in the US are continuously expanding on their R&D to develop new products. For instance, in December 2022, Google LLC announced the launch of a new tool in order to enable users to develop artificial intelligence models in Google Sheets. The tool, dubbed Simple ML, is available in beta. It's provided as an add-on to Google Sheets that users can download at no charge.

Deep Learning Industry Overview

The deep learning market is fragmented as it consists of several large players, such as IBM, Google, and Microsoft, among others, with substantial industrial experience in big data/analytical platforms. Other new entrants also have been making their way into the market and have been successfully increasing the number of use cases of deep learning across industries. Prominent new entrants that have made a significant impact on the market include H2O.ai, KNIME, and Dataiku.

In November 2023 - In a step towards advancing the realm of machine learning (ML) technologies and artificial intelligence (AI) within the telecommunications industry, Telenor and Ericsson have signed an (MoU) for a three-year collaboration that aims to explore, develop, and test advanced AI/ML solutions towards enhancing energy efficiency without compromising on the quality of connectivity in mobile networks.

In October 2022, Zendesk Inc. announced the launch of a new AI solution, Intelligent Triage and Smart Assist, empowering businesses to triage customer support requests automatically and access valuable data at scale.

In September 2022, Altair, a company providing computational science and artificial intelligence, announced the acquisition of rapid miner, a leader in advanced data analytics and machine learning (ML) software. With this acquisition, Altair's looking forward to strengthening its end-to-end data analytics (DA) portfolio.

Additional Benefits:

- The market estimate (ME) sheet in Excel format

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