

The Future of Machine Learning Platform

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Prevailing Industry Trends

Digitization is the new mantra where machine learning (ML) has been predicted to contribute substantially and act as a game-changer. Evolving technology trends will affect data management directly or indirectly. Along with digital transformations, innovations like augmented reality (AR), virtual reality (VR) and digital twins indicate hardware enhancements. ML- powered artificial intelligence (AI) systems have upstretched the bar of managing customer relations. There is a growing trend among enterprises to invest on digital disruption and ML has molded the global market in the following ways:

- Shift from traditional to machine-based market
- Increase in customer-centric conversation
- Result-oriented intelligent tracking
- Intelligent research-based market study
- Focus on micro markets

What is ML?

It is a set of algorithms that can excerpt information from raw data and it is also a way through which machines are programmed to improve their data performance. In traditional programming, human intervention was required to code every process. In a scenario, where recommendations are made based on past usage or viewing for millions of users, human processing is next to impossible. This is where ML comes into picture, easing the entire process through algorithms. It is a whole new process of data gathering, learning and predicting based on past data, that creates a thrust to move technology to its next level.

ML technique and neural networks (NN)

ML algorithm operates on neural networks (NN) mimicking a human brain neural system where each neural unit is called a node and each node is connected to another node with apt weights in between, which can result in a desired outcome.

ML is clearly a type of AI, whereas deep learning is a type of ML. To elaborate more, deep learning is an approach where there are more hidden layers in a neural network whereas, ML is considered deep when it possesses similar multiple nodes and connections. For example; deep learning is used to diagnose cancer and train self-driving cars.

A neural network algorithm (NNA) is the application of neural network architecture for ML which can be used to create a mining model. In such a structure, if multiple outputs are included, algorithm can create multiple networks.

The factors which made the application of ML successful are:

- Lower processing cost
- Increase in number of nodes
- Complex connections between nodes
- Automation

Types of ML

There are broadly three types of ML algorithms. They are:

• **Supervised ML algorithm**

The basic purpose of supervised ML algorithm is to isolate patterns and predict value within the data points.

• **Unsupervised ML algorithm**

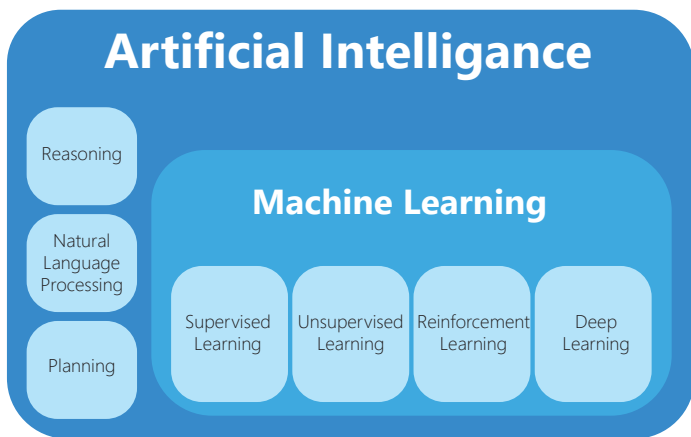
It accumulates complex data into clusters so that they look simple and can be organized for analysis.

• **Semi-supervised ML algorithm**

Semi-supervised ML algorithm gathers both, structured and unstructured data for classification, prediction and regression which in addition helps in cluster formation, continuity and assumptions.

• **Reinforcement ML algorithm**

Reinforcement ML algorithm is used when there is a scope of leveraging strategic changes based on requirements with a choice of appropriate action that suits the purpose.



Artificial Intelligence and Machine Learning: The relationship

Present and future of ML application

There is a huge impact of ML applications across the globe. ML affects the present and there is an arena of scope for ML to flourish in the future as well.

- ML, in the field of education, is definitely a future scope where teachers will be able to gauge and analyze the amount of knowledge that each student can grasp. Depending upon such data, it is easy to identify students who are lagging behind, and teachers can be proactive to reduce the percentage of failure each year.
- ML is largely used in search engines to improve the overall look and feel of an application. Voice recognition and image search are few important and interesting features that operate on ML. There is a huge scope to enhance such features in the days to come using ML.
- ML significantly helps in digital marketing. Since ML is capable of relevant personalization, companies can interact with customers based on acquired information. A renowned manufacturing company for electrical goods made their sales pitch through personalized emails using ML. This resulted in an increase in sales turnover for the company.

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- Since last three years ML, in the healthcare domain, has gained popularity. Hospitals in US are rapidly adopting ML for enhancing their infrastructure. Hospitals in US such as; Mayo clinic, Cleveland clinic, Massachusetts General Hospital, Johns Hopkins Hospital, UCLA Medical Center adopted ML through chatbots, predictive analytics and healthcare trackers. This increased the ability to monitor patients and prevent emergencies, improving the overall healthcare infrastructure. Automation of physician inquiry added another feather to the healthcare infrastructure cap. Computer vision is again an active healthcare application recently introduced in hospitals on an image diagnostic tool to reduce emergency situations.

Advantages of ML

Due to certain advantages, ML has an open scope to flourish more in future.

- Data mining is merely a process of examining and analyzing data to generate information. This will soon be supplemented by ML which will also enable learning and prediction from the available data.
- Automation is an important advantage of ML that will define all future IT operations.

Looking at the future of ML

Research highlights the bright scope of ML in the days to come:

- Across industries, ML will be an integral part of AI systems which will encompass in almost every application. It is similar to what entertainment providers deliver, knowing exactly what to recommend to specific customers. This kind of personalization surely enhances customer experience.
- ML, in future, will be offered as a cloud-based service known as Machine Learning-as-a-Service (MLaaS). This will empower organizations to maximize the functionalities without investing on hardware storage and training of algorithms. Research suggests, by 2020, 60% of personal-device technology vendors will depend on MLaaS to create an “emotional user experience”.

- ML will learn from the new available information with the help of connected AI systems. ML-based algorithm will unceasingly retrain on relevant information so that the process doesn't get outdated.
- There will be an extensive redesigning of hardware to accommodate ML since, traditional CPUs are not compatible to share the load of enhanced technology. Experts recommend field-programmable gate arrays (FPGAs) for ML. Hence, hardware specialization and improvement will boost the future of ML. By 2020, 50% of IT budgets will be used in digital transformation initiatives.
- ML will enhance the capacity of data extraction and creation of context and meaning better than natural language processing (NLP). With the advancement in technology, communication can happen seamlessly without using codes.
- With emergence of IoT, collaborative learning has scope for future where multiple technologies are used in ML to improve learning and implementation.
- A future with personalized computing environment will look promising. With an access to API, designing and delivering intelligent application will become a cake-walk. Personalized ML algorithms can synthesize information in a data and make recommendation, based on a person's preferences.
- Cognitive service can be developed and improved using ML through an intelligent application in vision recognition, speech detection, and speech understanding.
- Quantum Computing will be able to increase the speed of ML algorithms. Heavy-duty computation to both supervised and unsupervised algorithms will become possible through quantum computing.
- The area of unsupervised ML algorithm can make progress for a higher business outcome to ensure the capacity of ML to identify complicated processes and patterns without any direct human intervention. Improvement in this field will result in faster and accurate ML predictions.

- With sophistication of ML, robotization is happening in full swing implementing drones and robots which work at an aggressive pace to accomplish complex tasks.
- The opportunity of ML algorithm is expanding in the realm of cyber security showcasing speed and accuracy as key drivers for the digitized future.
- ML will also transform the healthcare field into a more reliable infrastructure with timely diagnosis of patient conditions.

The banking and finance vertical uses blockchain to predict market trends and detect fraud for a consistent economy where market players can operate fearlessly.

Scope of machine learning for ITOps

Machine learning needs business context to operate appropriately in IT operations. It permits ITOps to invest more time on higher-value tasks and enables autonomous digital operations. One of the classic example of the scope of machine learning for ITOps is, open-box machine learning that creates visibility and automate IT operations in a scalable and cost-effective manner, so that IT Ops can enjoy all the benefits of machine learning.

Limitations to keep in mind

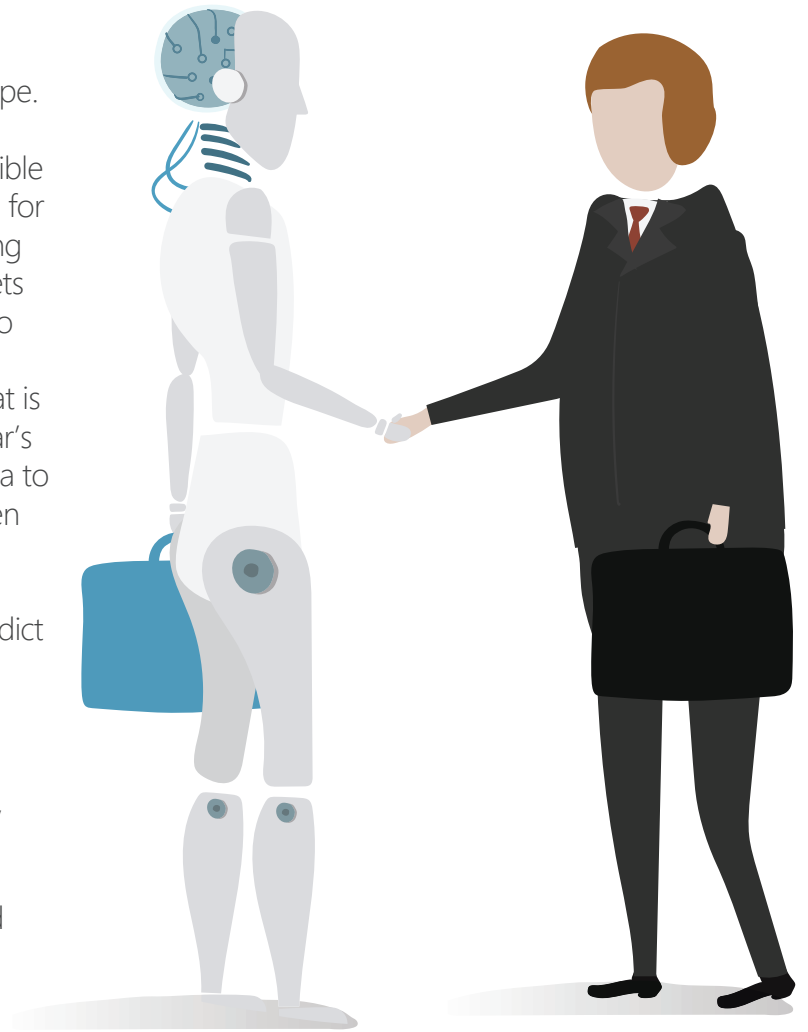
While making progress under the skillful guidance of machine learning, we should not forget to overcome the limitations that might cause hindrance to achieve digitalization.

- ML works best with repetitive patterns but requires time to learn and interpret something new. An immediate accurate prediction is not possible, so it'll be time-consuming.
- Predictions made by ML might not be suitable for all scenarios, so there might be situations where the predictions are not appropriate and due to unavailability of opportunities to gauge that, process will not be flawless.
- ML requires huge amount of data management. It also needs training and calibration.

Conclusion

To sum it up, although ML is still in its embryonic stage, it has largely reformed the business landscape. The rapid growth in technology will bring more cutting-edge application in the market with incredible capabilities. If we look at the ecommerce business, for example, when one opens an online merchandizing URL and sign-in in individual account, the page gets flooded with accurate recommendations specific to the user preference and interest. This is a huge benefit for both, the consumer and the vendor that is made possible through ML algorithms. Again, a car's computer system powered by ML can analyze data to recognize potential danger on the road, which then turns-on its alert mechanism to warn the driver, hence enhancing safety features of the vehicle. A weather system can use sensor information to predict the weather condition accurately.

Thus, it's evident that the market for automated ML and packaged apps are continuously growing, enabling intelligent solutions to get installed for data management. There is a continuous and sincere effort of connecting people, machines and businesses, thus more and more conversational platforms are overtaking the industry as a whole. From a bird's eye view, enterprises are steadily adopting event-driven business models using ML algorithm platforms.



About GAVS

GAVS Technologies is an automation-led digital transformation company with focus on AI, Predictive Analytics and robotics-led Infrastructure Management Services. GAVS' IP led solution, Zero Incident Framework™ (ZIF) is an AIOps solution that provides a 360-degree view of enterprise IT health, proactively detects incidents before they occur and remediates with minimal human interference. By focusing on eradication and proactive remediation of the incidents, ZIF enables organizations to trend towards a Zero Incident Enterprise™. GAVS is committed to improving user experience by 10X and reducing resource utilization by 40%.