ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Industry Insights and Applications

Abstract

Automation, Artificial Intelligence (AI) and Machine Learning (ML) are pushing boundaries in the software and hardware industry to what machines are capable of doing. From just being a figment of someone's imagination in sci-fi movies and novels, they have come a long way to augmenting human potential (reducing risk of human errors) in doing tasks faster, more accurate and with greater precision each time – driven by technology, automation and innovation.

This is indeed creating new business opportunities and is acting as a clear competitive differentiator that helps analyze hidden patterns of data to derive possible insights. AI and ML can certainly enrich our future thereby making the need for intelligent and sophisticated systems more important than ever.

Automation comes to the core of this modernization where mundane tasks are being automated using AI and ML. B2B and B2C companies are adopting this technology and everyone is becoming a digital technology enabler. This is predominantly a cultural shift that every organization is going through and thereby elevating user experience.

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Business and Technology Solutions using AI and ML

AI today is widely used and practically applied to help business make informed decisions and improve customer experience. AI is all about acting in a similar way, using algorithms as to what humans would do, but in a much more controlled, efficient and faster manner. It also refers to information derived by applying a set of algorithms with little or no human intervention.

Humans can put general reasoning, apply situational actions and make informed decisions much quicker. In simple terms, AI is the machine's ability to think for itself. It aims to augment human capabilities and not replace it. It is all about algorithms, processing data and recommendations to businesses to make decisions for very specific problems– at a greater speed, scale and velocity than what a human can do.

The first challenge that exists in implementing automation and AI is identifying a use case. AI is all around us – ranging from unlocking our phones with face recognition to self-driving cars.

Smart Home is an example of Artificial Intelligence where home appliances are connected to each other and communicate information that can help create alerts. Even the best of AI machines needs to be controlled by humans, as a computer would mean nothing unless intelligence is loaded onto it – through programs and software written by humans. Excessive automation can do more harm than good, and humans are underrated in that context; the true potential lies in not replacing humans but to augment and amplify them.

A lot of us today have AI enabled systems in their homes such as Siri, Alexa and Google Assistant to name a few . AI is becoming integral part of our daily lives which will go on to influence in much wider terms, in everything that we do. These are real-time interaction systems.

Business/Technology Trends

Most C-level executives either have already adopted or have plans to adopt AI into their organizations. The future of Artificial Intelligence in IT is going to be a landmark and will see an astronomical rise in the growth of the following key emerging technologies:

- Bots
- Artificial Intelligence
- Internet of Things (IoT)
- Blockchain
- Automation
- Cloud Computing

Bots are going to be the next buzzword in the years to come. They are no longer a hype and many organizations have started to bring alive the idea of getting closer to human-less and automated interactions which are more rule-based AI enabled .Auditory chat-bots that are more speech based are going to be following this. The key to a successful Chatbot is bringing in clarity to what is needed - plan to have a plan before building a Chatbot.

Artificial intelligence(AI) is getting into virtually every technology that is helping make systems take smarter decisions. Building intelligent Apps becomes a key here. For example, building a smart ERP assistant or a smart camera.

Internet of Things (IoT) is enabled by Artificial Intelligence / Machine Learning that is helping manage mind-boggling volumes of data. The sensors and chips that exist in physical things around us present a huge opportunity in tapping valuable data, running analytics and using those we can make informed and better decisions with. For example, Fitbit health, a fitness mobile device leading to better customer experience. In the times we live in, the power in our mobile device is much more than the power in our homes, enabled by AI performing human-like tasks with access to endless data.

The use of AI, on the other hand, can be completely **biased** on the data used to train the AI enabled systems.

Blockchain is another key technology that will define the way transactions are done, making it more simple, secure and cost effective, while ensuring a seamlessly distributed (not copied) networked financial system. It is often referred to digital gold as well and has built-in robustness. Blockchain can't be controlled by a single entity; hence is secure, has no single point of failure, is transparent, public and decentralized. **AML (Anti Money Laundering) and KYC (Know Your Customer)** practices adopted in blockchain are key contributors to its widespread acceptance.

Automation is leading the way things are being done today – simple tasks which are repeatable and with a defined behavior and pattern are best candidates for automation. Lots of tools/techniques are available in the market that help achieve it. Even a simple Unix script written that can execute the task unattended is automation in its simplest form. Oracle's announcement of Oracle 18c - autonomous / self-driving database is another perfect example of automation.

We must apply automation in everything we do. Mundane work must be done manually the first time only; the next time around must be automated.

Cloud Computing is gaining significant traction in the IT industry with an increasing number of companies planning to adopt cloud (SaaS, PaaS, IaaS, Public/Hybrid cloud) and has completely changed the way clients consume technology. More and more organizations are investing heavily in cloud computing to free bandwidth of their Information Technology resources in handling more complex/business-oriented tasks, thereby leading to a better Return on Investment (ROI) and Total cost of Ownership (TCO). Typical examples of this are Infrastructure and Datacenter outsourcing, Software on the cloud such as. Salesforce, Workday and more are leading to lower operational costs and better catalog-based services model. Cloud has truly become one of the mainstream core technology on which businesses run.

Practical approach to AI and its implementation

One of the pragmatic ways in which AI is ruling the world is creating doubts in people's s mind if it will eventually replace humans. The fact however is that it will not; it will augment and amplify what humans can do so that humans become more efficient. To give some perspective of this, can a teacher be made redundant when the student does their job well based on the instructions given by the teacher?

For example; if a human does 100 things as part of the job, AI tends to replace those 20-25 things that can be automated and are repeatable and the efforts saved here can be repurposed to other important tasks.

AI is all about instructing a machine to enable, repeatedly similar tasks, modify its operation based on a particular event, automating the processing of large amounts of data and helping humans make informed decisions by using insights presented by AI technologies.

Automation is at the core of AI; it helps in saving precious human hours so that mundane tasks can be done by robots and humans can focus on business centric tasks and other priorities.

We should embed intelligence into what we do as routine work and where it requires humungous efforts to process large volumes of data that require correlation to be built into multiple systems. Artificial Intelligence is there to augment and not replace human potential. AI is all about strategy, technology is just an enabler of that to drive insights and help with decision making.

Benefits and approaches to AI

AI has long term benefits in making things automated, processing large amounts of data at speed of the light, predicting outcomes using trends and patterns processing large amount of data.

One of the best approaches to implement AI is based on the four pillars below:

Assess	Select
Four Pillars of AI	
Foster	Implement
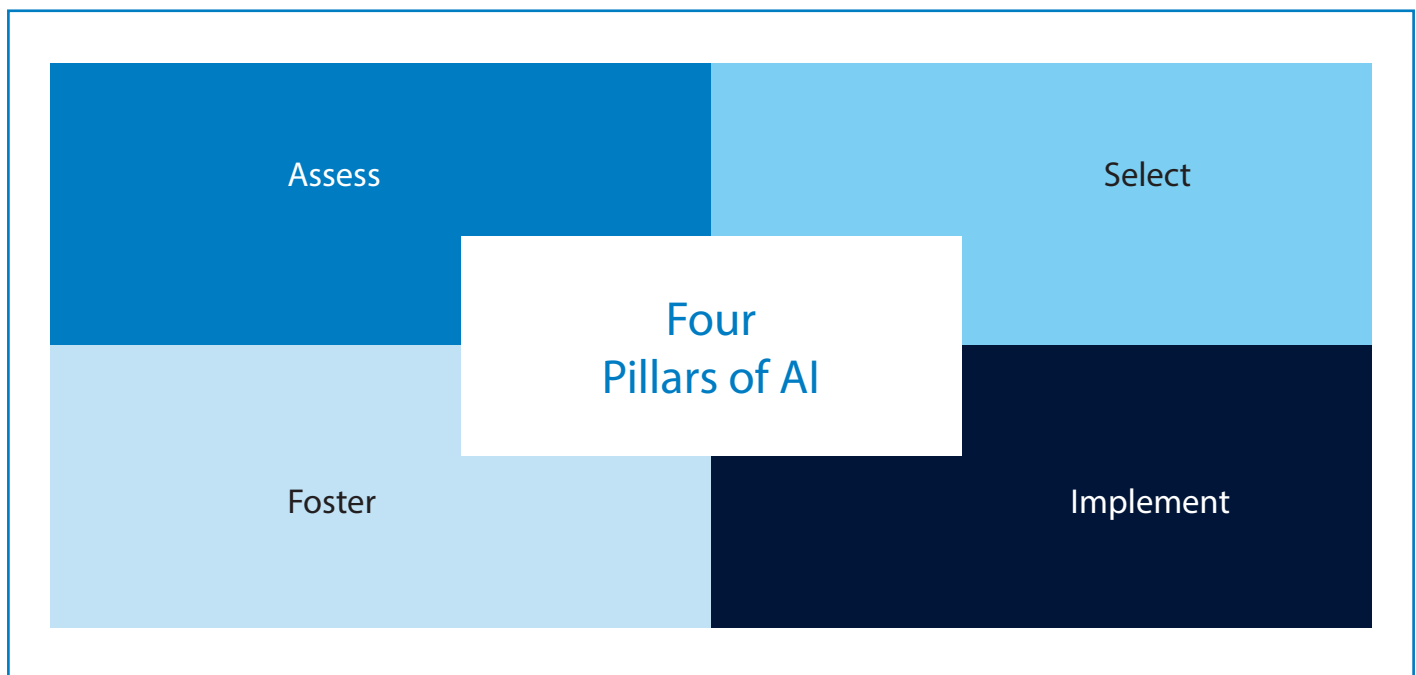
First and foremost, we need to carefully assess and develop a comprehensive strategy around data, our needs, skill assessment, timelines, training change management and TCO analysis.

Second, we need to select the right software, right platform (cloud / on-premise), costs associated with the implementation, people cost and cost to learn and sustain the systems.
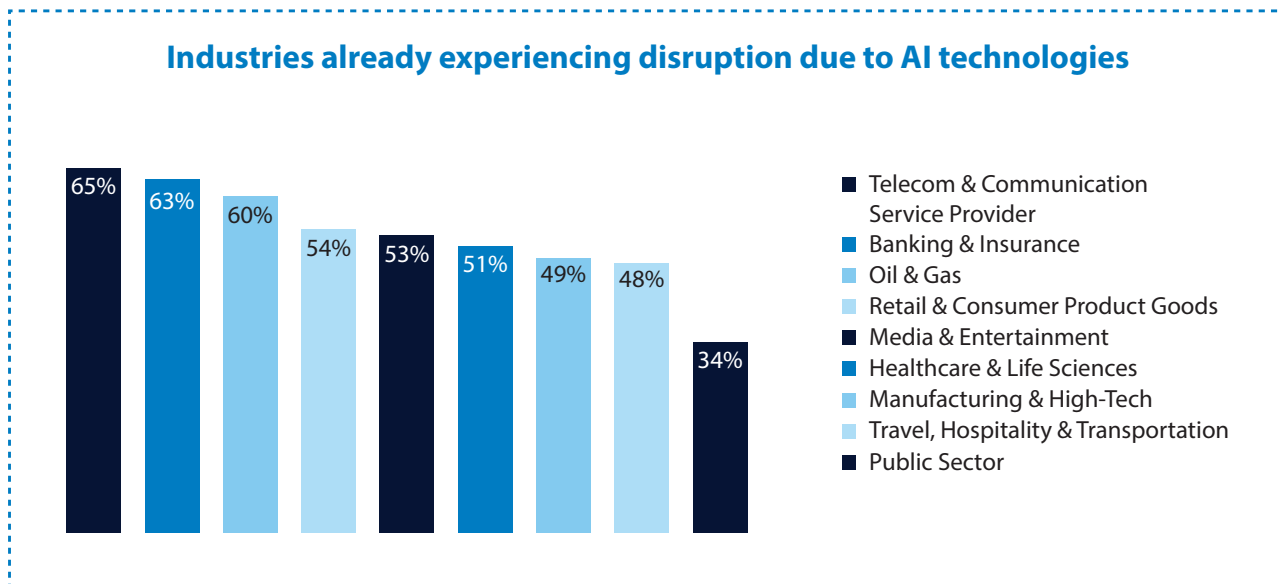
Third, is creating an environment of learning, implementing the change, monitoring the input/output, manage risks and training the teams needed to operationally run it.

Finally, is managing and sustaining an AI plan with a comprehensive roadmap to identify priorities and modifying them on an ongoing basis. This is the key to growing the capabilities and expanding horizons to allow a new set of application and needs.

AI and its use cases

As part of the recent study conducted by Infosys, the diagram below depicts the percentage of respondents in each industry who have already been experiencing disruptions due to AI technologies:

Industries already experiencing disruption due to AI technologies

Legend:
- Telecom & Communication Service Provider
- Banking & Insurance
- Oil & Gas
- Retail & Consumer Product Goods
- Media & Entertainment
- Healthcare & Life Sciences
- Manufacturing & High-Tech
- Travel, Hospitality & Transportation
- Public Sector

Bar values: 65%, 63%, 60%, 54%, 53%, 51%, 49%, 48%, 34%

AI can help us across industries and some of its abilities are as listed below:

- **The Finance industry** can greatly benefit from fraud detection and identity theft issues, do sales forecasting, use chat-bots, enable personalized offers, hedge fund management, customer centricity by recommending unique/customer specific offerings and lead generation. AI can also help banks detect margin improvement areas using Robotic Process Automation (RPA) that can enable bottom line growth. With the recent trends/incidents on financial frauds, detecting such incidents becomes all the more important for compliance and best governance.

- **The Healthcare industry** can be benefitted by analyzing tests and providing personal treatment, advice to patients using assistants/chatbots, monitor and recommend based on individual health data. AI can also be used to medically train people and augment capabilities of human reach.

- In the **Retail industry**, chat-bots can help consumers interact with your brand more efficiently. . For example, detect usage patterns and suggest options, perform social media monitoring and marketing

analytics. AI can help tremendously here as consumer spending power and decisions have direct impact on retail industry including logistics, transportation, manufacturing, suppliers, marketing etc. Any sort of insights that can influence consumer spending will be a great boon and can help retailers to take corrective actions using AI e.g. focus on geographies, seasons, under-performing stores, errors due to paperwork etc.

- **The Education industry** can use AI to revolutionize education delivery, personalizing and customizing based on student needs including global classrooms, checking and grading students, reviewing homework, recommending higher education institutes based on area of interest and past educational exposure/experience and recommending learning paths.

- **The Insurance industry** can use AI to detect frauds, process claims, suggest better policies and competitive policy pricing, risk management, enable personalized offers based on health status. This can be augmented by processing data from multiple systems including Internet of Things (IoT) devices

to offer personalized policies and data analytics and visualization and can help improve customer experience dramatically. .

Some of the **practical use cases** of Artificial Intelligence, in a nutshell, are:

- Detect usage patterns and suggest options

- Monitor infrastructure and recommend based on health data

- Predict analytics for data security and data theft

- Manage entire systems independently

- Manage knowledge base

- Do sales forecasting and lead generation

- Perform customer service using bots

- Assist HR analytics

- Perform data management, processing and monitoring

- Perform social media monitoring and marketing analytics

- Detect system anomalies - Anti-Money Laundering

- Predict technology failures - disk, file-system, reactive analysis

Conclusion

The key how quickly and smartly we can adapt, adopt and embrace these changes, which will mark our organization's and our clients' success in the years to come.

We look forward to 'riding the wave' with our clients from across the globe.

It is time to embrace AI in a controlled manner and ensure we excel in enabling our clients adapt to this technology through innovations we bring to the fore.

Exciting times ahead indeed and the day will come when even technology books will be written by AI based on topical and current context and events.

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