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A study of Artificial Intelligence (AI) in the Enterprise

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Abstract
Digital transformation remains a top priority for businesses of all sizes and industries, and it is advancing quickly. Even companies in industries known for being slow to adopt change and heavily reliant on ingrained manual processes are changing the way they operate, resulting in one undeniable trend: a steady adoption of enterprise artificial intelligence (AI) to place even more emphasis on customers, data, and effective decision-making. Enterprise AI is ushering in a new digital era of automation, efficiency, and data-driven business decisions. The application of artificial intelligence in business is fundamentally changing the way businesses operate. AI technologies are being integrated into business operations to save money, increase efficiency, generate insights, and create new markets. Artificial intelligence (AI) can assist businesses in meeting customer demands and providing superior service. The paper contributes to the investigation of the factors influencing AI advancements. The findings of the study will help us better understand the innovations and the impact of AI on businesses and society in general. It will also improve understanding of how artificial intelligence (AI) can transform business operations and, as a result, the global economy. AI in the enterprise will transform how work is done, but companies must overcome several obstacles.

Keywords
Artificial Intelligence, Enterprise, Technology, Econemy.

Introduction
Artificial intelligence is quickly becoming a critical component of business operations, delivering tangible benefits such as improved processes, increased efficiency, and accelerated innovation. In general, Artificial Intelligence is a computing concept that enables a machine to think and solve complex problems in the same way that humans do. Machine learning advances, combined with high-performance computing and an abundance of data, have created a perfect storm for AI to transform organizations of all sizes.The application of artificial intelligence in the enterprise is profoundly changing the way businesses work. Companies are incorporating AI technologies into their business operations with the aim of saving money, boosting efficiency, generating insights, and creating new markets. There are AI-powered enterprise applications to enhance customer service, maximize sales, sharpen cybersecurity, optimize supply chains, free up workers from mundane tasks, improve existing products and point the way to new products. It is hard to think of an area in the enterprise where AI the simulation of human processes by machines, especially computer systems will not have an impact. To reap the value of AI in the enterprise, business leaders must understand how AI works, where AI technologies can be aptly used in their businesses, and where they cannot anoverwhelmingproposition because of AI's rapid evolution and a multitude of use cases. This wide-ranging guide to

artificial intelligence in the enterprise provides the building blocks for becoming successful business consumers of AI technologies.The domain of artificial intelligence is changing rapidly because of the tremendous amount of AI research being done. The world's biggest companies, research institutions, and governments around the globe are supporting major research initiatives on AI.

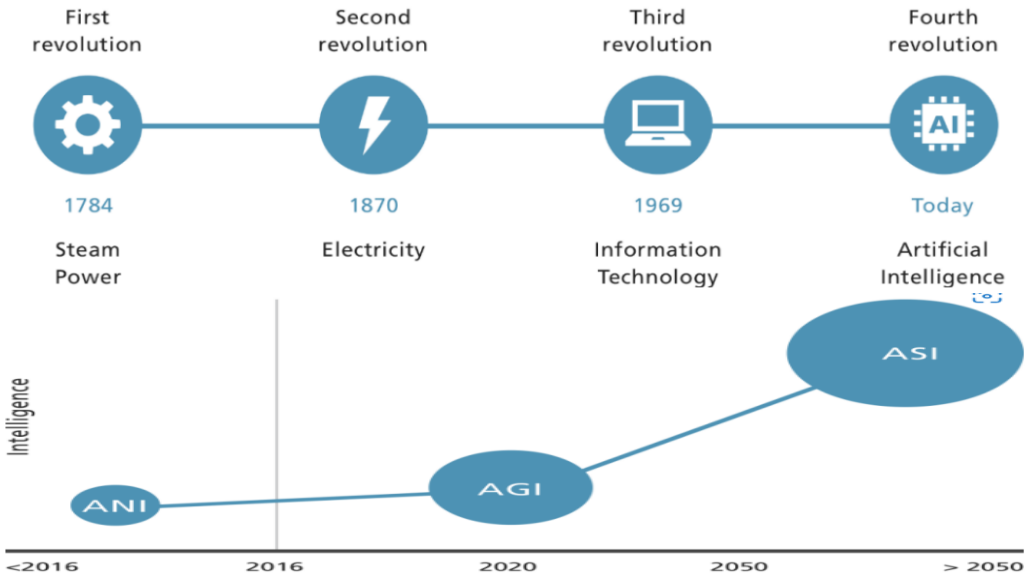
Definition of Artificial Intelligence (AI):

"Artificial intelligence is a branch of computer science dealing with the simulation of intelligent behavior in computers," according to Merriam-Webster. When a machine can make intelligent decisions, it is said to be artificially intelligent. Artificial intelligence (AI) is a collection of technologies that work together to enable machines to sense, comprehend, act, and learn with human-like intelligence. People frequently use the terms machine learning, deep learning, and AI interchangeably. Deep learning, on the other hand, is a subset of machine learning, which is a subset of AI.

Origins of artificial intelligence:

Despite the fact that artificial intelligence has been around for millennia, its true potential was not explored until the 1950s. AI was founded by a generation of scientists, physicists, and intellectuals, but it wasn't until Alan Turing, a British polymath proposed that people solve problems and make decisions using available information and reasoning. Alan Mathison Turing did the first significant work in the field of artificial intelligence in the mid-20th century. John McCarthy, an American computer scientist pioneer, and inventor was called the "*Father of Artificial Intelligence*" after playing a significant role in defining the field devoted to the creation of intelligent machines.The term "artificial intelligence" was invented in 1956 at Dartmouth College. Marvin Minsky, a cognitive scientist, was optimistic about the technology's future.

Evolution of artificial intelligence:



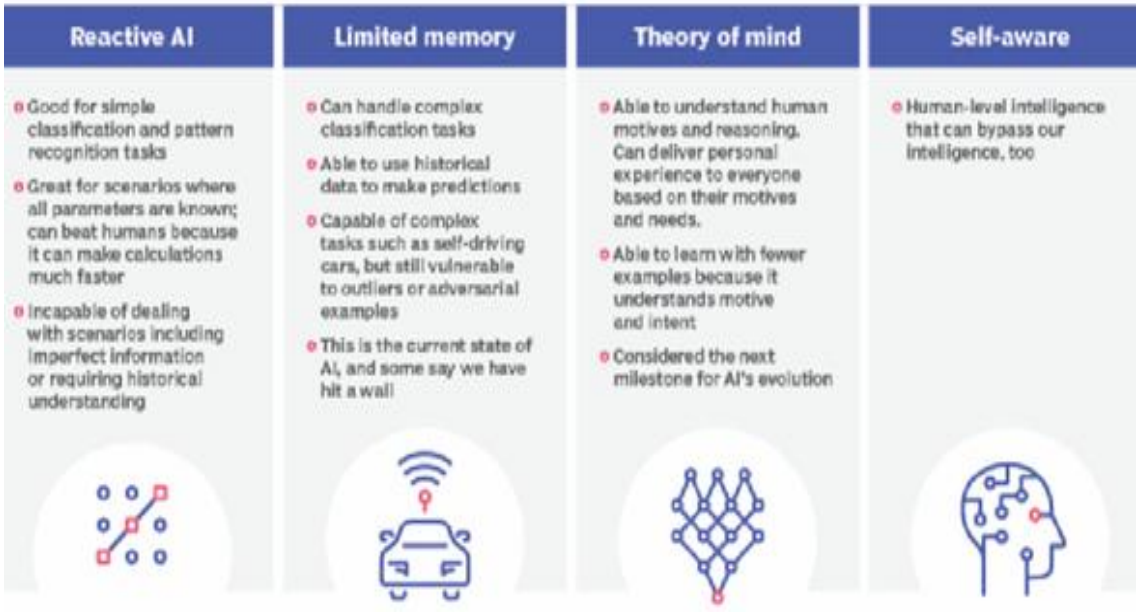
Source: UBS, as of 15 August 2016

In recent years, artificial intelligence has grown into a formidable tool, allowing robots to think and act like humans. Furthermore, it has attracted the attention of IT firms all over the world and is seen as the next major technological revolution following the growth of mobile and cloud platforms. Some have even referred to it as the "fourth industrial revolution." Researchers have created software that employs Darwinian evolution concepts

such as "survival of the fittest" to build AI algorithms that improve from generation to generation without the need for human intervention. The computer was able to recreate decades of AI research in just a few days, and its creators believe that one day it will be able to discover new AI techniques. AI has evolved into a powerful tool in recent years, allowing machines to think and act like humans. Furthermore, it has attracted the attention of tech companies all over the world and is regarded as the next significant technological shift following the evolution of mobile and cloud platforms.

Artificial intelligence (AI) is classified into three stages: artificial narrow intelligence (ANI), artificial general intelligence (AGI), and artificial superintelligence (ASIS) (ASI).As the name implies, the first stage, ANI, is limited in scope, with intelligence restricted to only one functional area. ANI, for example, is on par with a newborn. The second stage, AGI, is advanced: it covers multiple fields such as reasoning, problem solving, and abstract thinking, and is mostly on par with adults. ASI is the final stage of the intelligence explosion, in which AI outperforms human intelligence in all areas.

Types of AI:



Source: forum.huawel.com

Reactive AI. The algorithms used in this early stage of AI have no memory and are reactive, which means that given a specific input, the output is always the same. This type of AI's machine learning models are effective for simple classification and pattern recognition tasks. They can process massive amounts of data and appear to be intelligent, but they are incapable of analyzing scenarios that include imperfect information or require historical understanding.

Limited memory machines. The algorithms underlying limited memory machines are based on our understanding of how the human brain works and are designed to mimic how our neurons connect. This type of machine deep learning can handle complex classification tasks and make predictions based on historical data; it can also complete complex tasks such as autonomous driving. (Discover the key distinctions between AI, machine learning, and deep learning.)

Theory of mind. This type of unrealized AI is defined as being capable of understanding human motives and reasoning and thus delivering personalized results based on an individual's motives and needs. Theory of mind is another term for artificial general intelligence (AGI). AI can learn from fewer examples than limited memory machines; it can contextualize and generalize information, as well as extrapolate knowledge to a wide range of problems. Artificial emotional intelligence, or the ability to detect and empathize with human emotions, is being developed, but current systems lack a theory of mind and are a long way from self-awareness, the next step in the evolution of AI.

Self-aware AI, aka artificial superintelligence. This type of AI is aware not only of other entities' mental states but also of its own. Artificial superintelligence (ASI), also known as self-aware AI, is defined as a machine with intelligence comparable to human general intelligence and capable of far exceeding human cognition by creating increasingly intelligent versions of itself. However, we don't know enough about how the human brain works to create an artificial one that is as intelligent as, or more intelligent than, the human brain in general.

Components of AI

1. Learning: Learning is a critical component of AI and occurs in a variety of ways. Trial and error is the most basic method of learning. In this form, the program remembers the section that produced the desired result while discarding the other trial actions and learning on its own. In chess (program) mate-in-one problems, for example, moves may be tried at random until one that achieves mate is found. The program remembers the successful move, and the next time the computer is presented with the same problem, it can produce the result instantly.

2. Reasoning: The reasoning is also known as logic or the process of generating judgments from a given set of facts. The reasoning is carried out based on a strict rule of validity to perform a specified task. There are two types of reasoning: deductive and inductive. The truth of the premises guarantees the truth of the conclusion in deductive reasoning, whereas in inductive reasoning, the truth of the premises supports the conclusion but it cannot be completely dependent on the premises. Deductive inferences are commonly used in programming logic. Reasoning entails making inferences that are relevant to the problem or situation at hand.

3. Problem Solving: AI is used to solve a wide range of issues. For example, determining winning moves in board games, planning actions to complete a task, identifying various objects from given images, and so on. There are two types of problem-solving methods: special-purpose methods and general-purpose methods. Methods that are general in nature can be applied to a wide range of problems. One technique used in AI is means-end analysis, which involves reducing the difference between the current state and the goal state step by step. Special purpose methods are designed to solve a specific type of problem.

4. Perception: To function in the environment, intelligent agents must scan the environment and the various objects within it using various sense-organs, both real and artificial. The agent scans the environment with sense organs such as a camera, a temperature sensor, and so on. This is known as perception. After capturing various scenes, the perceiver analyzes the various objects in them, extracting their features and relationships between them.

5. Knowledge representation: The data collected by sensors from the environment may not be in the format required by the system. As a result, it must be represented in standard formats for further processing such as learning various patterns, deducing inference, comparing with previous objects, and so on. Prepositional logic and first-order logic are two techniques for representing knowledge.

6. Language understanding: Natural Language Processing (NLP) is the process of using machines or robots to understand and process the language that humans speak, as well as infer knowledge from the speech input. It also includes active participation from a machine in the form of dialog, i.e. NLP is aimed at text or verbal output from the machine or robot. An NLP system's input and output can be spoken and written text, respectively.

AI work process:

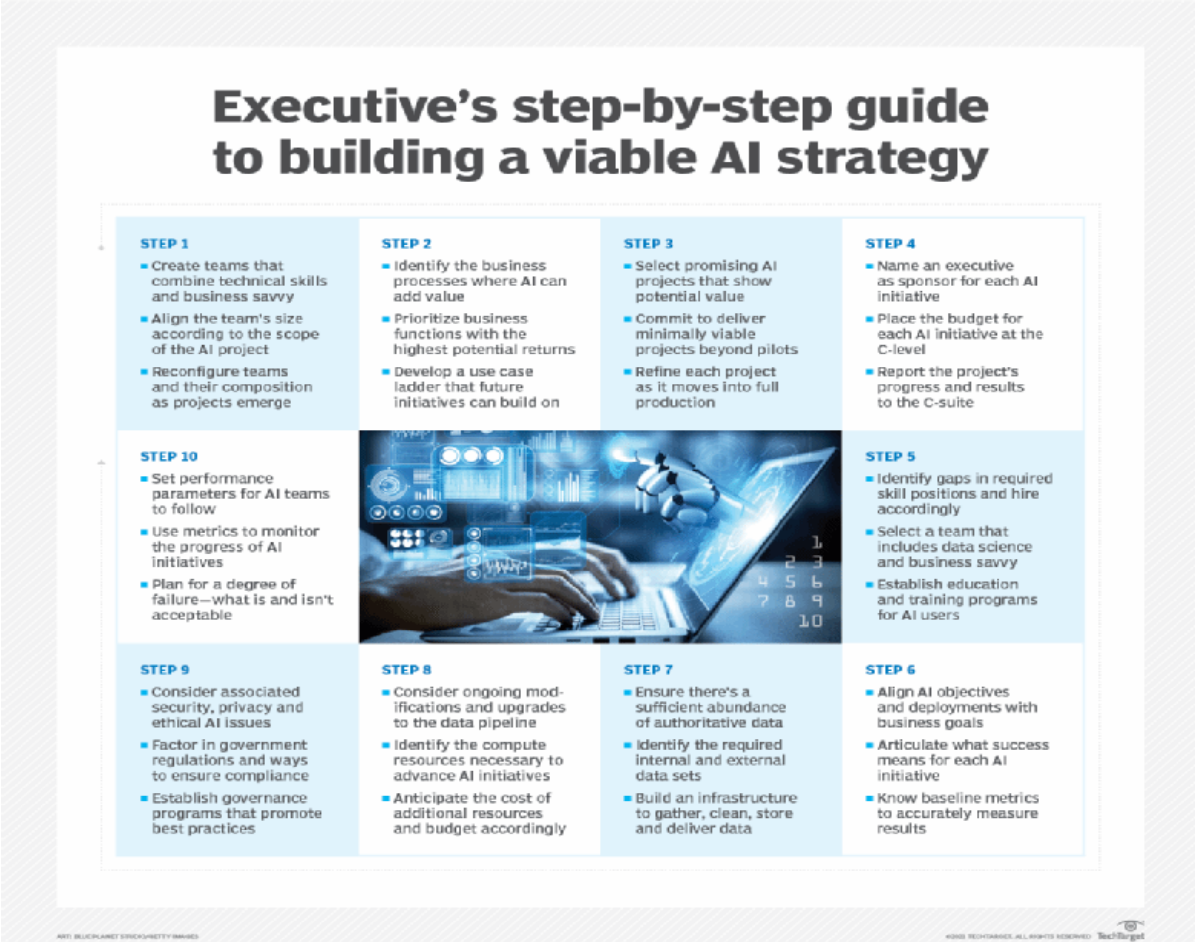
AI systems learn from patterns and features in the data that they analyze by combining large sets of data with intelligent, iterative processing algorithms. Every time an AI system processes data, it tests and measures its own performance and gains new knowledge.Because AI does not require rest, it can complete hundreds, thousands, or even millions of tasks in a single day.

AI programming focuses on three cognitive skills:

- The ***learning*** aspect of AI programming is concerned with acquiring data and developing rules for converting data into actionable information. Algorithms are rules that provide step-by-step instructions to computing systems on how to complete a specific task.
- The ***reasoning*** aspect involves AI's ability to select the best algorithm to use in a given context from a set of algorithms.
- The ***self-correction*** aspect is concerned with AI's ability to gradually tune and improve a result
  until it achieves the desired result.

Enterprise in AI:

Enterprise artificial intelligence (AI) is a type of enterprise software that uses advanced artificial intelligence techniques to drive digital transformation. To develop and deploy Enterprise AI at scale, a new technology stack must be adopted. It is a form of enterprise software that uses advanced artificial intelligence techniques such as machine learning to drive digital transformation.



CAPTION: Learn the 10 steps to building an effective AI strategy for the enterprise.

Impact of AI in the enterprise:

The strategic value of artificial intelligence to 21st-century business has been compared to the strategic value of electricity in the early twentieth century, when electrification transformed industries such as manufacturing while creating new ones such as mass communications. "AI is strategic because the scale, scope, complexity, and dynamism in business today are so extreme that humans can no longer manage it," Chris Brahm, partner and director at Bain & Company, told TechTarget. The ability of AI to automate and augment jobs that are currently performed by humans will have the greatest impact on business in the near future.

Labor gains from AI are expected to outpace and even surpass those made by current workplace automation tools. AI will also generate the most efficient way to complete a task and adjust workflows on the fly as circumstances change by analyzing massive amounts of data.

AI is already assisting doctors in medical diagnoses and assisting call center workers in dealing more effectively with customer queries and complaints. AI is being used in security to automatically respond to cybersecurity threats and prioritize those that require human intervention. AI is being used by banks to speed up and support loan processing, as well as to ensure compliance. (See "Present and potential use cases.")

Top applications of AI in business:

Financial services. Artificial intelligence is changing the way banks operate and how their customers bank. Learn how Chase Bank, JPMorgan Chase, Bank of America, Wells Fargo,

and other banking titans are leveraging artificial intelligence to improve back-office systems, automate customer service, and create new opportunities.

Manufacturing. Collaborative robots, or cobots, work alongside humans on assembly lines and in warehouses as an extra set of hands; factories use AI to predict maintenance needs; and machine learning algorithms detect purchasing habits to predict product demand for production planning. In "10 AI use cases in manufacturing," you can learn about these AI implementations and potential new AI applications.

Agriculture. AI is being used in the $5 trillion agriculture industry to produce healthier crops, reduce workloads, and organize data. Kathleen Walch, a Cognilytica analyst, takes a deep dive into the use of AI technology in agriculture.

Law. AI is being used in the document-intensive legal industry to save time and improve client service. Law firms are using machine learning to mine data and predict outcomes, as well as computer vision to classify and extract information from documents and natural language processing (NLP) to interpret information requests. Watch Vince DiMascio discuss how his team is implementing artificial intelligence and robotic process automation at the large immigration law firm where he serves as CIO and CTO.

Education. AI is being used to assess students and adapt curricula to their needs, in addition to automating the time-consuming process of grading exams. Listen to this podcast with Ken Koedinger, professor of human-computer interaction and psychology at Carnegie Mellon University's School of Computer Science, to learn how machine learning is providing insights into how humans learn and paving the way for personalized learning.

IT service management. Natural language processing is being used by IT organizations to automate user requests for IT services. They are analyzing ITSM data with machine learning to gain a better understanding of their infrastructure and processes. In this review of ten AI use cases in ITSM, you can learn more about how organizations are using AI to optimize IT services.

AI adoption in the enterprise:

According to recent studies on AI adoption in the enterprise, AI deployments are increasing. Gartner predicts that by 2022, the average number of AI projects per company will rise to 35, a 250% increase from the average of 10 projects in 2020.

- **Trustworthy and explainable AI is critical to business.** The ability to explain how AI arrived at a decision is critical for 91% of businesses using AI.
- **The ability to access data anywhere is key for increasing AI adoption.** Almost 90% of IT professionals believe that the ability to run AI projects wherever the data resides is critical to the technology's adoption.
- **Natural language processing is at the forefront of recent adoption.** Almost half of businesses now use NLP-powered applications, and another quarter plan to start using NLP technology within the next year. The most common application of NLP is in customer service.
- **The top three barriers to AI adoption.** According to the survey, the main barriers to AI adoption for businesses are limited AI expertise or knowledge (39%), increasing data complexity and data silos (32%), and a lack of tools/platforms for developing AI models (28%).

Steps for implementing artificial intelligence in the enterprise:

- Build data fluency.
- Define your primary business drivers for AI.
- Identify areas of opportunity.
- Evaluate your internal capabilities.
- Identify suitable candidates.
- Pilot an AI project.
- Establish a baseline understanding.
- Scale incrementally.
- Bring overall AI capabilities to maturity.
- Continuously improve AI models and processes.

Benefits of AI in the enterprise:

1. Saving Time and Money: When it comes to productivity, machines outperform humans. AI machines can work continuously without getting bored. They also do not need to sleep or take breaks like humans. This means they are completely dependable whenever you need to work with them. They can notify you about significant events whenever you want them to. Machine learning can also analyze large amounts of data in a matter of seconds. They usually make decisions in less time if they have relevant information. As a result, this technology saves time and works more efficiently than humans.

2. Generate Business Insights to Make Smart Decisions: Data is an invaluable resource in today's economy for any business. However, if you can't understand it, your business data is useless. AI machines are adept at quickly processing data to generate relevant answers to any business question. Based on what they learn, they provide accurate predictions and customer needs. No human will be as quick and as accurate as AI technology in predictive analytics.

3. Improving Customer Experience: AI-powered chatbots enable businesses to provide customer service 24 hours a day, seven days a week. AI has allowed businesses to automate communications via emails, online chats, and even phone calls. The benefit of AI is that it can interact with multiple customers at the same time and effectively respond to their questions on websites or apps.

4. AI Technology Enhances Productivity: When you remove tasks from your employees' to-do list, they are more likely to focus on doing their jobs well. With AI technology, you won't have to overload your employees with work because AI will handle the majority of it. This frees up your workforce to focus on what they do best, increasing productivity. If your company relies on constant communication with customers throughout the day, AI can help.

5. Reducing Errors:While artificial intelligence is not without flaws, it is far more accurate than humans. Even for highly urbane systems, AI technology accuracy typically ranges from 99 to 100 percent. Cash flow forecasting is the most time-consuming and prone to human error process in any company. AI technology can aid in increasing the accuracy of cash flow forecasting without the need for human intervention. This increases the likelihood of the company's success.

Challenges of AI:

- **There is lack of trust in AItechnology.** There is still a lack of trust in AI technology, ranging from expectations that AI will replace jobs to concerns about data privacy and security. This poses a significant challenge for businesses as they work to instill trust in the new technology that powers their operations while also ensuring that the necessary cybersecurity safeguards are in place to protect consumer data.
- **The workforce is not equipped to manage the rise in AI technology.** We need a skilled workforce to manage AI technology to ensure that it works as expected. We will likely see some stagnation in AI adoption until businesses can upskill their workforce to meet AI-focused challenges.
- **AI technology requires a wealth of clean data.** The data we use to train machine learning algorithms determines the quality of AI. Without a large number of clean data sets, AI's ability to learn and analyze will be limited.
- **AI requires large amounts of computing power.** Analysis of billions of data points necessitates supercomputing power, and such technical hardware is not cheap. Businesses will require enterprise-level computing resources to fully leverage the capabilities of AI and big data.

The future of artificial intelligence:

One of the characteristics that has distinguished humans throughout our several hundred thousand-year history on Earth is our singular reliance on tools, as well as our determination to improve on the tools we invent. Once we figured out how to make AI work, it was only a matter of time before AI tools became increasingly intelligent. What is the future of artificial intelligence? It will be inextricably linked to the future of everything we do. Indeed, it won't be long before AI's novelty in the workplace is no more than that of a hammer or plow.However, AI-infused tools are qualitatively distinct from all previous tools (which include beasts of burden as well as machines). We can communicate with them, and they can converse with us. They have quickly invaded our personal space because they understand us, answering our questions, solving our problems, and, of course, doing more of our work.

Conclusion

Artificial intelligence technologies in business play a significant role in increasing the efficiency of businesses and their employees. By increasing the speed and accuracy of strategic decision-making processes, AI enables organizations to make better decisions, solve problems, and improve core business processes. In the future, the combination of AI and human intelligence will lead to the development of sophisticated cybersecurity innovations. AI will make it possible to fight rising cyberattacks and crimes more effectively. Artificial intelligence has a lot to offer the transportation and manufacturing industries. As this technology advances, the world will witness new startups, numerous business applications, and consumer applications, as well as job displacement and the creation of entirely new roles. Artificial intelligence, like the internet of things, has the potential to dramatically reshape the economy. Every company must invariably adopt AI in a way that is relevant to their business objectives. Before embarking on the AI journey, every company must assess its strengths, weaknesses, and long-term objectives. When AI tools gain traction throughout the enterprise, hierarchies will begin to level out and even flatten. True, the future has arrived, and the far-reaching distribution of AI is just around the corner.

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