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Fundamental concepts of artificial intelligence and its applications

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Abstract

Artificial intelligence is an imitation of human cognitive processes with the help of machines. In particular, the unique implementation of AI, including computer systems specialist systems, artificial language processing, voice recognition and artificial intelligence performed by Machine Vision Artificial Intelligence (AI) machines. This is in contrast to the natural intelligence found by people or animals, major AI textbooks define this field as education. "Intelligent Agent": Any system that recognizes the environment and takes steps to increase its chances of achieving goals. Some well-known accounts describe this term. "Artificial intelligence" is a machine that mimics functions. AI application with advanced search engine referral system (such as those used by YouTube, Amazon and Netflix), human speech comprehension (such as Siri or Alexa), self-driving cars (such as Tesla), and high-level competitive game systems such as chess and the machines became more efficient. Tasks that are considered "intelligent" are often referred to as AI effects from the definition of AI. For example, optical character recognition is often considered as AI, which has become a common technology. AI was established as an academic field in 1956 and has faced some optimism since then. This is followed by frustration and loss of funds (called "winter AI"), followed by new policies, success and new funding. Throughout his life, AI research has tried and ignored methods such as brain simulation. In the first decade of the twenty-first century, a huge database of human reasoning solutions and the simulation of animal behavior dominated the field of high practice of mathematical statistics. And this technology has proven to be extremely successful. AI can help us to solve many difficult and challenging problem in industry and academia. Different sub-fields of AI research focus on specific goals and specific tooling.

Keywords: Artificial intelligence, mathematical statistics, technology, machines

Introduction

AI research goals, including theoretical thinking Theoretical goals Knowledge representation, planning, learning, natural language processing, understanding, and the ability to move and manage objects general education (the ability to solve problems unilaterally) is one of the long-term goals of the field. To solve these problems, AI researchers use mathematical version search and optimization official logic Neural systems and statistics, methods, and probability-based economics are used in AI computer science, psychology, linguistics, philosophy, and many other fields. It was morally justified in creating philosophical debates about the mind and creating intellectual artificiality creatures with human minds. These topics have been explored since ancient times through fairy tales, fantasy and philosophy. Some people think that AI is dangerous to humans if used without help. Others see AI as the opposite of the previous technological revolution. This poses a widespread unemployment risk. Artificial intelligence is a way of thinking about the mind of a person who has a computer, a robot, or a product. AI is the way the human brain thinks, learns, defines, and functions as it tries to solve problems. As a result, this research yields results. Genius AI's goals are: to solve problems related to human understanding computer operations, such as thinking, learning, and problem solving.

Wisdom is an invisible thing.

- Argument
- Learning
- To solve the problem
- Identity
- Language intelligence

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The purpose of AI research is justified. It means science, planning, education, natural language processing. The ability to change and modify objects and the ability to think are common long-term goals of common intelligence units. Methods include statistical methods, intelligent calculations, and mathematical research and optimization between traditional thematic AI coding and AI research. Nervous system and statistical methods we use the ability to use computer tools, math, psychology, linguistics, philosophy and much more.

The short answer to artificial intelligence depends on who you are asking. The average person with a brief idea of technology is related to robots. They say that artificial intelligence is a terminal that can work and think on its own. If you ask an artificial intelligence researcher about artificial intelligence, he will answer that it is a set of algorithms that can give results without clear instructions.

Definition of artificial intelligence

- Man-made intelligent organizations.
- Ability to act intelligently without clear instructions.
- Ability to think and act rationally and manually.

History of AI

Thoughtful artificial animals have become a tool of storytelling in ancient times. Frankenstein's classic novels, such as R.U.R or Mary Yelly's Karel Sapek, solve many problems between these characters and their fate in the intelligence of artificial intelligence. The study of mechanical or "formal" thought began in ancient times with philosophers and mathematicians. The study of mathematical logic leads directly to Alan Turing's theory of calculation, which proposes machines with alternative symbols such as "0" and "1". Any action can be imitated. The mathematical concept of depression with this understanding, digital computers are like any formal thought process called the existence of a church. In addition to the discovery of neurobiology, researchers in information theory and cybernetics have considered the possibility of creating an electronic brain. Turing suggests changing the question of whether the device is smart. "Can a process show intelligent behavior?" The first work called AI was a touring "artificial neuron" of McCluff and Pitts, 1943. This is the official design of AI research. John McCarthy was created to differentiate the region from cybernetics and to avoid the influence of cyber security Norbert Weiner, the founder and leader of AI research. "Computer Testing Strategy" (1954) (and Play Better than Humans in 1959) solves algebraic terminology and proves theories (Logical First Run, 1956) and speaks in English. Research was extensive in the United States in the mid-twentieth century. Funded by the Ministry of Defense and set up laboratories around the world. In just 20 years, in one version, "Marvin Minsky agrees" they didn't know the rest of the troubles. Growth slowed and in 1974, the U.S. and British governments suspended AI Winter to finance more influential projects in response to criticism from Sir James Lethill and continued pressure from the U.S. Congress. In the early 1990s, AI research revived the commercial success of the professional system. And Fivaponi's fifth-generation computer program in imitation of analytical skills attracted the U.S. government. And UK-funded education research. The second long winter began in the late 1990s and early 21st century, when AI gradually gained prominence. Find solutions to specific problems, such as transportation and

data mining. Or Medical Diagnosis, AI solutions will be widely used behind the scenes until 2000. Narrow vision helps researchers create test results. Work in more mathematical ways and work in other fields (such as statistics, economics and math), improve machine learning and comprehension. Fast calculation and extensive data access algorithm. In 2012, in-depth data learning methods dominated the standard of accuracy. According to Bloomberg Jack Clark, 2015 was the year of the success of artificial intelligence. When Google increased the number of AI-powered software projects in 2012, Clark supported virtualization with more than 200,000 "distributed hardware". As a result, AI has improved since 2012, and computer errors have decreased. He is responsible for the development of cloud computing infrastructure and the development of the available nervous system for the development of research tools and databases. In a 2017 survey, one in five companies reported "integrating AI into specific distributions or activities".

Modern AI research began in the mid-1950s. Early AI researchers believed that artificial intelligence could emerge in a few decades. AI pioneer Herbert A. Simon said in 1965, "In the next 20 years, machines will do what humans can do." Their prediction was made by Stanley Kubrick and Arthur C. Inspired by the HAL 9000 characters from Clark, they convinced AI researchers they could. By 2001, predicting the concept of time, Caviar would have corrected "Artificial Intelligence" in 1967 "in one version. construction problems", although Minsky was quoted as saying.

However, in the early 1970s it became clear that researchers were underestimating the project's disadvantages. Finance companies have become skeptical about AGI and this is putting more pressure on researchers to create useful "applied AI". In the early 1980s, Japan's fifth-generation computer project revived interest in AGI, and AGI's goal was to "maintain casual communication" in response to this and the system's success. However, by the late 1980s, confidence in AI had dropped dramatically, and the goals of the fifth-generation computing project had never been achieved for the second time in 20 years. AI was fundamentally wrong in predicting the immediate success of AGI in the 1990s, AI researchers gained a reputation for making ridiculous promises. They are not ready to predict at all. And do not mention artificial intelligence for fear of being labeled "human level" "fantasy" Here is the twentieth century AI history:

Year Milestone / Innovation

Karel Sapek's 1923 play "Rosamus Universal Robots" opens in London, where the word "robot" first came into use in English.

1943 Laying the foundation for the neural network

In 1945 Isaac Asimov, an alumnus of Columbia University, coined the term robot.

In 1950 Alan introduced Turing Intelligence tests and computerized Turing tests and published intelligence. Claude Shannon has published a detailed analysis of chess as a search.

In 1956 John McCarthy coined the term intelligence. The first demonstration of the AI program at Carnegie Mellon University.

In 1958 John McCarthy developed the language of the LISP AI program.

In 1964 Danny Bobro's essay on MIT showed that computers can better understand the natural language to better solve algebraic words.

In 1965 Joseph Weizenbaum created *Elijah* at MIT, a communication story that continues to be discussed in English.

In 1969 scientists at the Stanford Research Institute developed *Shakey*, a robot that can move, understand, and solve problems.

Basic concepts of AI

The development of artificial intelligence has taken us all by surprise. Efforts to run AI concepts over the last few years have taken really amazing steps. Autonomous vehicles, big data and medical research are some of the natural applications that have emerged from the advancement of AI. Candidates interested in a career in artificial intelligence should say that it is safe to say that it may be more successful than we expected. Take the next step to get yourself closer to that career path. Many artificial intelligence training courses are available on the Internet. However, before you want to take an AI course, it is important to familiarize yourself with the basic concepts of artificial intelligence. In doing so, let's first understand what AI means: AI is a term used to describe the ability of a PC or machine to make and manage certain activities or decisions. Like humans, AI architects aim to mimic human interpretations like creativity. Virtual assistants for contemporary thinking and knowledge acquisition, chatbots and art within different structures at different levels. Shows how AI can calculate and automate tasks. In the past no one could do it without people. We now have a preliminary idea about artificial intelligence. Let's look at the basic concepts of artificial intelligence.

Categorization

AI needs a lot of information about the problem it will solve. Creating an effective AI framework requires creating a category or criteria for a specific field. These gauges or gauges are used by machines to identify problems and solve them. Whether users are trying to create a framework where *Jeopardy* can play, it can help professionals analyze medical procedures. Or help the IT director diagnose the wireless problem. The customer needs to define the measurement features that allow the problem to be broken down into smaller parts.

Classification

Clients' problems are divided into different categories. The next step involves a classification for all classes that leads the customer to a critical end. For example, when training the AI framework for playing *Jeopardy*, the client must play the questions difficult or in words. And then categorize them by time, subject, location, or person of wireless administration. Once the client has learned about the type of problem (such as before the association or post problem), the client must begin classifying the cause of the problem: authentication, DHCP (Dynamic Host Configuration Protocol) binding, or other wireless devices.

Machine learning

Machine learning is a branch of artificial intelligence (AI) and computer science that focuses on the use of data and algorithms to model how humans learn, gradually increasing

accuracy. IBM has a long history in learning. Machine Learning and Research Game (PDF, 481 KB) (External link to IBM) is played by self-proclaimed monitoring expert Robert Nile. In 1962, he played a game on an IBM 7094 computer and He lost his computer this achievement seems incomparable to what that can be done today. But in the case of artificial intelligence is a big step Technological advances in storage and computing in the next few decades will help us discover innovative products like Netflix recommendation systems or self-driving cars. There are many calculations and machine learning techniques. Machine learning (e.g. deep learning) monitored using neural networks has become a major method involved in artificial intelligence. It is then divided into three parts: Supervised Learning, Supervised learning and remedial learning Machine learning with artificial intelligence Machine learning allows jobs to "learn" from experience. Especially without programming for the task (in short, it can learn a machine automatically without human hands!) The process starts with quality data entry. Then train the machine by making various models by using various algorithms the selection of the algorithm depends on the type of work we want to automate. However, machine learning algorithms generally fall into three categories: supervised learning, unsupervised learning and Reinforcement learning.

Deep Learning

Deep learning is a function of artificial intelligence (AI) that mimics the activity of the human brain to create patterns for information processing and decision making. Deep learning is a subset of machine learning in the field of artificial intelligence that can control learning from unstructured or networked data. Also known as deep neural learning or deep neural network, deep learning is a subset of machine learning. This allows you to process and predict data using neural networks. This brain network is connected to the human brain through a network-based structure / network. Deep learning, also known as deep neural networking or neural learning, is a type of artificial intelligence (AI) that tries to mimic the activity of the human brain. It is a machine learning function that works in a non-linear decision-making process. In-depth learning takes place when deciding on unstructured unattended data. Object recognition is part of what is done by learning and translating the voice. Hierarchical neural networks are used to analyze data as part of machine learning in in-depth analysis. Neural codes are interconnected in hierarchical neural networks. The classification structure of advanced learning is different from other traditional thematic programs of linear machines similar to the human brain. Processes data on a set of layers. Each level provides more information for the next level, using in-depth training to detect fraud. This system uses different signals, such as IP address, credit rating, retailer or sender, etc. in the first level of the neural network. Analyze the amount sent. In the second step, examples of information are created that include, for example, the IP address. Credit scores are added to existing data, etc. to make the final decision.

Reinforcement learning

Learning empowerment is a part of artificial intelligence where a machine learns something the way humans learn it. For example, suppose a machine is a student. Here,

conceptual students can learn from their mistakes through test time and error. This means that the algorithm learns behavior based on the current situation and will judge the next action by maximizing future income. A famous example of this is Google's Alpha Go computer program Reinforcement Learning, which defeated the world champion in the 2017 Go Games.

Robotics

Robotics is a branch that works to see machines and work like humans. Now, robots can act like humans in certain situations. But can they think like humans. This is where artificial intelligence comes in! AI helps robots to work smarter in certain situations. These robots can solve problems in confined spaces. Or even learning in a controlled environment. An example is a social interaction robot Kismet developed at MIT's Artificial Intelligence Lab. Robnet, built by NASA to work with astronauts in space, is another example.

Natural Language Processing (NLP)

Naturally, people can talk to each other using words. But now machines can do it! This is called natural language processing, where the machine understands and understands language and dialect while speaking. (It's back!) There are many subcommittees in the NLP language, such as speech recognition. Natural language structure Natural language translation, etc. NLP is now very popular for customer support applications. Chatbots Specifically, these chatbots use ML and NLP to communicate with users in a text format and to solve web browsing problems. So you communicate customer support without contacting customers directly. Examples of popular NLP applications are Alexa from Amazon and Siri from Apple.

Recommender Systems

When you use Netflix, do you get recommendations for movies and series based on your preferences or genres in the past? This is done by the referral system. This will give you advice on how to choose the next key from the many options available online. Curator systems can use content-based recommendations or even filter interactions. Content-based recommendations are achieved by analyzing the content of the overall show. For example, you can make a recommendation based on the show's description and your own basic profile. Past reading behavior. People like you then recommend books accordingly.

Computer Vision

The internet is full of pictures. Photography and sharing are always easy but this is the age of selfies. In fact, millions of pictures are uploaded and viewed on the Internet every day. Take advantage of this huge online photo. The computer must be able to see and understand the picture. When people think that it is not difficult without computer, it is not so easy. Here comes the computer focus. Computer Vision uses artificial intelligence to gather information from images. This information can identify the objects in the image. For example, group images with image content. Computer Vision Aids analyzes the surrounding images for automated vehicles such as Mars landings and the automation used by the Opportunity Rover.

Collaborative refinement

Most have a group filtering experience when they select a movie on Netflix or buy something from Amazon and get recommendations for other movies. Similar categories or what the user might like. In addition to the recommendations, collaborative filtering is also used to detect large datasets and manipulate AI. This is where all the classification and analysis of data is transformed into critical knowledge or activity. Collaborative filtering is a way to answer with a high degree of confidence whether used in game shows or by an expert or by the manager of the organization. AI continues to be a technology leader in emerging regions. However, its impact is significant and will be felt even more if it becomes "a smart way of working".

The Internet of Things

Creating a system of artificial intelligence that uses previous experience and can learn to simulate human work without manual intervention. Now all these LOT devices produce a lot of data that must be collected and excavated. This is where artificial intelligence comes in for effective results.. The Internet of Things is used to collect and use large amounts of information for the needs of artificial intelligence algorithms which can be used in many instruments.

Working process of AI

Many tasks of the organization are not automatic. But it requires some intelligence. Mindfulness, especially in the context of work, is not easy. Broadly defined is the ability of intelligence to acquire knowledge and apply it to produce results. Verbs with descriptions instead of remembering the situation. Working on machines in this way usually means artificial intelligence. But AI alone or by definition is not. This is stated in a comprehensive report published by the National Council for Science and Technology (NSTC). "Some have defined AI as a computer system that often behaves in a way that requires intelligence. Others have defined AI as a system that can logically solve complex problems or take appropriate action to achieve its goals. Every situation in the world," the NBTC report said. Also, what qualifies as a smart machine? The authors describe it as a continuous goal: the problem is considered an "ongoing goal" considering the need for quick AI. Revised "General Data Processing".

At the basic level, AI programming focuses on three learning skills: learning, reasoning, and self-correction:

- The learning aspect of AI programming focuses on data acquisition and the creation of rules for converting data into action. The rules, called algorithms, provide a computational method with step-by-step instructions on how to perform a specific task.
- The argument relates to the AI capability of selecting the most appropriate algorithm. To use in a specific context in a set of algorithms
- Self-correction focuses on AI's ability to improve and enhance results over time. Until the desired goal is achieved.

Despite the rapid growth of AI-related advertising, businesses are trying to promote how their products and services use AI. Often they have an element of AI like machine learning which is called AI. AI writing and training requires a specific hardware and software foundation.

Machine learning algorithms are not synonymous with any programming language AI, but there are some popular Python, R and Java.

Typically, AI systems work by receiving large amounts of labeled training data. Analyze data for relationships and patterns. And use these models to make predictions about future status. Or the Image Recognition tool can learn to identify and describe objects in an image by examining millions of patterns. AI programming focuses on three learning skills: learning, reasoning, and self-correction. Learning Methods this aspect of AI programming focuses on formulating rules for data acquisition and converting data into action. The rules, called algorithms, provide computing tools with step-by-step instructions on how to perform certain tasks. The use of artificial intelligence in organizations is dramatically changing the way businesses operate. Create optimized insights and create new markets. Provides AI-based enterprise applications to improve customer service, increase sales and improve cyber security. Release supply chain optimization workers from normal work. AI is a simulation of the human-machine process, it is difficult to think of an area in an organization that can improve existing products and pave the way for new products. Computer systems are not particularly affected corporate leaders are committed to using AI to improve their business and ensure return on investment. However, they face several major challenges:

- The scope of artificial intelligence is rapidly changing due to the huge amount of AI research.
- AI has many uses for AI: AI can be applied to any problem. The company, or humanity, that must deal with the spread of Kovid-1 will play a key role in global efforts to prevent the spread of AI. Identify hotspots Improve patient care, identify treatments and create vaccines. Investments in AI-enabled hardware and software robots that emerge from the epidemic while doing business are expected to grow rapidly. Companies try to build resilience against other disasters.
- To reduce the value of AI in an organization, business leaders need to understand how AI works and how AI technology can be used appropriately in their business and where it is not possible. The rapid evolution of AI and its diverse uses make it intimidating.

This comprehensive guide to artificial intelligence in the enterprise is a key element in becoming a successful business user of AI technology. This is the history of AI, how AI works and its main types. And the effects of AI continue. Covered. It will follow information on the following key topics of interest to Enterprise AI users:

- Key advantages and disadvantages of AI
- In case of current and potential AI usage.
- Creating a successful AI strategy.
- The steps required to implement AI tools in an organization; And
- Technological advances are taking this field forward.

In this guide, we've included hyperlinks to tech target articles that provide more detail and insight into the topics covered.

Origins of AI

The modern field of artificial intelligence dates back to 1956 when the term artificial intelligence was used in a proposal for an academic conference at Dartmouth College that same year, but the idea that the human brain can be controlled by a machine is deeply ingrained.

For example, myths and legends are full of living idols. Many ancient cultures created rational and emotional automata similar to humans. During the first millennium BC, philosophers around the world developed methods of formal thinking. These are efforts made by collaborators, including theologians, over the next 2000 years. Mathematicians, engineers, economists, psychologists, mathematicians and neuroscientists.

There are several stages behind this long and elusive quest to repair the human brain. The Tech Target chart (below) depicts Alan Turing, a British mathematician and programmer who pioneered modern artificial intelligence in World War II. To revolutionize natural language processing until a new transformer invents a neural network:

- Famous people of the first day. This is the foundation of the concept of AI as a general cognitive representation that seeks to describe the human mind as a symbol. With the Greek philosopher Aristotle, the Persian mathematician Mohammed bin Musa al-Harizmi, the 13th century Spanish priest Raman Loul, the 17th century French philosopher and mathematician René Descartes, and the 18th century priest and mathematician Thomas Bess.
- The heyday of the modern computer usually took place in 1836, when Charles Babbage and Augusta Ada Byron invented the first project of a programmable machine, Countess Dislike. A century later, in the 1940s, Princeton mathematician John von Neumann created the Stord software architecture for computers: computer programs and processed data could be stored in one device.
- The first mathematical model of a neural network. This may be the main reason for the greatest advances in AI in the "logical computation of concepts in neural activity" by computer neuroscientists Warren McCulloch and Walter Pitts in 1943.
- The famous Turing test. He believes that computer researchers are deceived, that the answers to their questions are invented by humans. It was created by Alan Turing in 1950.
- 1956 Summer Conference in Dartmouth. It was supported by the Defense Advanced Research Projects Agency (DARPA), artificial intelligence pioneers Marvin Minsky, Oliver Selfridge and John McCarthy coined the term "artificial intelligence". Allen Newell, computer scientist; And Simon, the economist for Herbert. The cognitive psychologist, logic theorist, political scientist who presented computer programs that could prove some mathematical theory was known as the first AI program.
- After the Dartmouth meeting, leaders appreciated the development of thinking machines that can learn and understand like humans. He received the support of major governments and industries. Well-funded upstream research has made significant progress in AI over nearly 20 years. Examples include the General Problem Solving (GPS) algorithm, published in the late 1950s, which laid the foundation for its development. A more complex architecture based on science, Lisp, the

AI programming language, is still in use today, and Eliza, one of the first natural language processors (NLP), laid the foundation for today's chatbots.

- When the possibility of creating such an artificial intelligence system for the human brain is unclear. Governments and agencies have dropped support for AI research. In the 1990s, Edward Feigenbaum's research and his application of expert methods to deep learning inspired AI. After the new wave of AI, funding and support led to another collapse.
- AI's second winter lasted until the mid-1990s, when pioneering work in neural networks and the emergence of big data led to the current resurgence of AI.

Various types of AI

Describing the four main types of artificial intelligence, author David Peterson explains that modern artificial intelligence has evolved from AI systems into systems capable of simple classification and pattern recognition that can predict actions using historical data. Thanks to the revolution in deep learning, artificial intelligence learns from information. Artificial intelligence is rapidly evolving in the twenty-first century, providing our self-driving cars and disruptive products like virtual assistants Alexa and Siri. The types of AI that exist today, including driving or defeating world champions in the Go Games, are called narrow or weak AI. This type of AI is as efficient as scientists in some tasks. But there is no common sense. This type of AI that demonstrates intelligence and human-level consciousness is still evolving.

Here are four types of AI that are described in Peterson's article and outline their features:

Responsive AI The algorithm used in this first generation of AI is memory-free and responsive, i.e. when a certain input is received. The output is always the same. This type of AI-powered machine learning model is effective for easy

classification and pattern recognition work. They can view huge amounts of data and produce results that seem reasonable. But cannot analyze situations where information requires incomplete or historical understanding.

Limited memory the algorithms behind memory-limited machines depend on our understanding of how the human brain works. And it is designed to mimic the connections of our neurons. This type of machine can address the complex classification problems of deep learning. And use historical data to make predictions. It can also do complex things like autonomous driving. (Learn the key differences between AI and machine learning. And in-depth learning)

Theory of mind Although their performance is much higher than that of ordinary people in certain tasks. But machines with limited memory are classified as narrow intelligence. Because they lag behind human intelligence in other respects. They need a lot of training data to learn the problems that people can learn with some examples. And there is a risk of abnormal or adverse specimens.

Self-aware Psychological theory. Such unrealistic AI is destined to understand human motivation and reasoning. Therefore, it creates personalized results based on people's motivations and needs. Also known as artificial general intelligence (AGI), AI theory of artificial intelligence can learn from fewer samples than memory-limited machines. He is relevant and can infer a wide range of information and project knowledge. Artificial intelligence - or the ability to recognize human emotions and be empathetic to people - is under development. But the current system does not reflect the theory of the mind and is far from self-awareness, which is the next step in the evolution of AI.

Nervous AI, also known as artificial intelligence. Nervous AI or Artificial Intelligence (ISI) is defined as a device that is as intelligent as the common man's intelligence and much more advanced in principle than human comprehension.

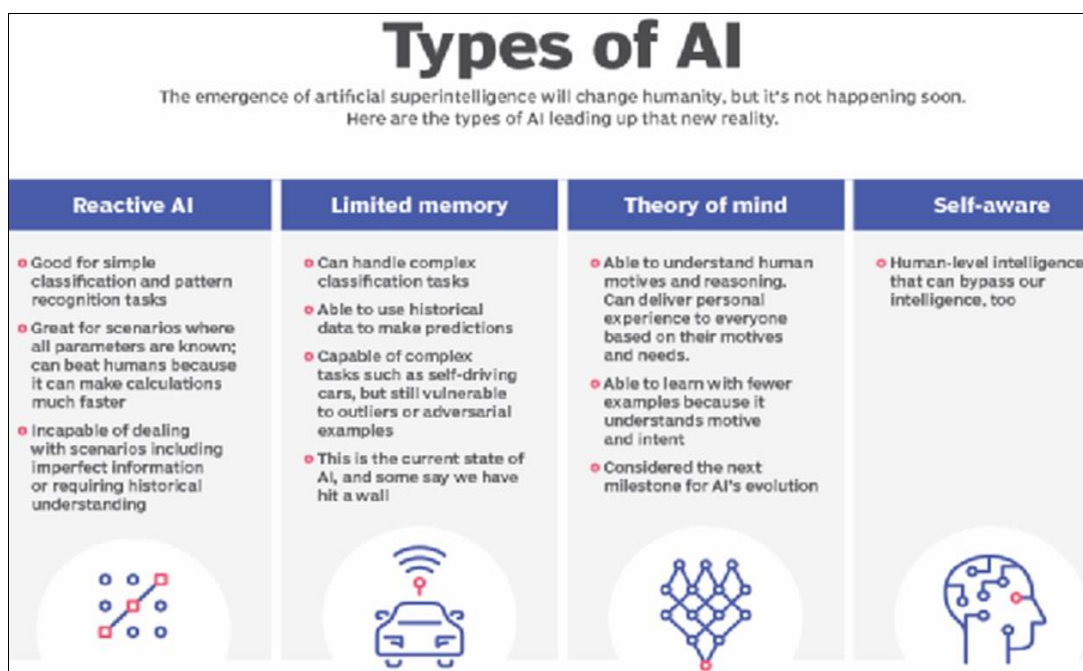


Fig 1: Types of AI

Significance of AI

Global data generation will reach 175 zetabytes (175 billion terabytes) by 2025, an increase of 430% from 33 zetabytes,

according to research firm IDC. Produced in 2018. For companies that want to make informed decisions, it would be helpful to have more information. The Big Data set is the

raw material for providing business intelligence that enhances existing business activities and leads to new lines of business. Without AI, companies would not be able to take advantage of this big data warehouse. Kathleen, an analyst at Cognilytica, explains that artificial intelligence and big data are critical to business success in the 21st century: deep learning. Reveals confidential patterns and relationships in big data. The company has a competitive

edge. Meanwhile, AI's ability to make meaningful predictions is to reach the truth. Instead of imitating human prejudice. This requires more than just storing large amounts of data. But a high-quality cloud computing environment enables AI applications to provide the computing power needed to process and manage big data in a scalable and flexible architecture but also covers a wider range of users in the organization.



Fig 2: Executive's step-by-step guide to building a viable AI strategy

The effect of AI on the organization

The business value of AI in the 21st century is compared to the strategic value of electricity in the early 20th century as electrification transforms industries such as innovation such as manufacturing and mass communications. "Artificial intelligence is strategic because the scale, scale, complexity and dynamics of today's business are so great that people can no longer use it without artificial intelligence," said Chris Bram, partner and director at Bain & Company.

The biggest impact AI will have on the business in the near future will be related to automation and the ability of people to complement today's tasks. The increase in AI workforce is expected to expand and surpass the profits generated by today's workplace automation tools. By analyzing huge amounts of data, AI doesn't just automate workload. But as the situation changes it also creates the most effective way to get things done and adjust the workflow on the fly.

Artificial intelligence has already expanded human activity in many cases. From helping physicians diagnose call center agents to more efficiently answer customer questions and complaints. In terms of security, AI is used to automatically respond to cyber security threats and prioritize human attention. Banks are using AI to accelerate and support loan processing and regulatory compliance.

But AI will eliminate a lot of people's work today. This is a big concern for operators. The advantages and risks of AI are described in the following sections.

Learn about conferences and events related to artificial intelligence.

Advantages of AI in organization

At this stage most companies want to take advantage of AI to improve their existing activities. This is one of the most

frequent benefits of adopting AI in companies that gain productivity and efficiency rather than completely changing the business model.

AI's six additional business benefits

- Improve customer service AI's ability to accelerate and optimize customer service is one of the main expected benefits of AI and was ranked 2nd among AI objects in a 2019 study by MIT Sloan Management and Boston Consulting.
- Improve the application The ability of AI to process data in real time means that these companies can monitor them almost instantly. For example, manufacturing plants use image recognition software and machine learning models in their quality control processes to identify and Identify production problems.
- Products Develop products quickly Artificial intelligence can shorten the development cycle and shorten the time between design and commercial for a faster return on investment in development.
- Optimal standards Organizations using AI for tasks performed manually or performed by traditional thematic automation tools such as extraction, conversion, and reconciliation expect less errors and more stringent compliance standards.
- Advanced talent management company Talent uses enterprise AI software to streamline the hiring process. Eliminate corporate communication biases and increase productivity by selecting top -level candidates. Advances in speech recognition and other NLP tools allow chatbots to provide personalized services to job seekers and employees.

- Business Innovation and Business Model Development Digital people like Amazon, Airbnb, Uber and others use AI to create new business models. Do it for merchants to change their business models with AI. He made a six -step plan to get started with AI at a company with traditional trade.

Risks of AI

One of the biggest risks in using AI effectively in an organization is employee distrust. Many employees fear and distrust AI, or are unsure about the value of AI in the workplace. Concerns about smoking cessation are unfounded. In several studies, the Brookings Institution reports Automation and Artificial Intelligence: The Impact of Home Machinery on People and Locations Expecting 36 Million Jobs "Facing Automation" in the next decade in offices, manufacturing, transportation and food preparation. But by 2030, almost every profession will be affected by AI-based automation. Positively, by 2020, it will create more than 500,000 jobs. By 2025, consultants predict that AI will create 2 million new jobs.

The benefits of AI would not be realized without employee confidence, the managing director of AI at Deloitte Consulting LLP told TechTagart in an article on the top risks faced by AI companies when using unmanaged technology.

"I have seen cases where the algorithm has worked perfectly. But the workers are not trained and are not interested in using it,"said Ammanat. Consider an example of an artificial intelligence method in a factory that determines when a production machine should be shut down for service.

"You can create a good AI solution - probably 99.998% accurate - and probably ask factory workers to stop. But if the end user does not trust the machine, which is not unusual, then AI fails,"said Ammanat.

As AI models become more sophisticated, the ability to explain - to understand how AI has reached its conclusion - will become increasingly difficult for front-line employees who want to trust AI to make decisions.

The company should put the user first. According to the experts interviewed in this explanatory report on artificial

intelligence techniques. Data processors should focus on providing relevant information to professionals. Instead of going deeper into how the model works. For example, for machine learning models that predict hospitalization risk, physicians may need an explanation for the underlying medical reasons. Where reseller planners may want to know re-application trends.

Here is a list of the three other serious AI risks discussed in the following articles:

- **AI Error:** AI can eliminate human error Problematic AI data errors can be caused by poor training data or algorithm errors. And these errors can be a dangerous combination due to the large number of transactions that AI systems usually process, says Brain of Bine & Company, a ship that processes millions of transactions a day but makes errors fatal every day.
- **Unethical and unintentional actions:** Companies must defend against unethical AI. Company executives are often aware of the racist reports included in AI-based risk prediction tools that some judges use to convict and free hostages. Companies need to be aware of the unintended consequences of using AI in their business decisions. An example would be a grocery chain that uses AI to set competitive prices for other grocery stores. It is wise to offer to charge more for food in poor areas where competition is low or absent. But it is also a strategy to remember about the grocery chain.
- **Violation of critical skills:** This is a neglected but trivial risk for AI after two planes crashed with a Boeing 737 Max. Some experts have expressed concern that the pilots have lost initial flight skills. Or at least the ability to use them. Since the aircraft relies on artificial intelligence in its cockpit, this is an extreme case but it increases as these activities can raise questions about the core competencies that a business wants to retain among its employees. According to Bram, as AI applications expand.

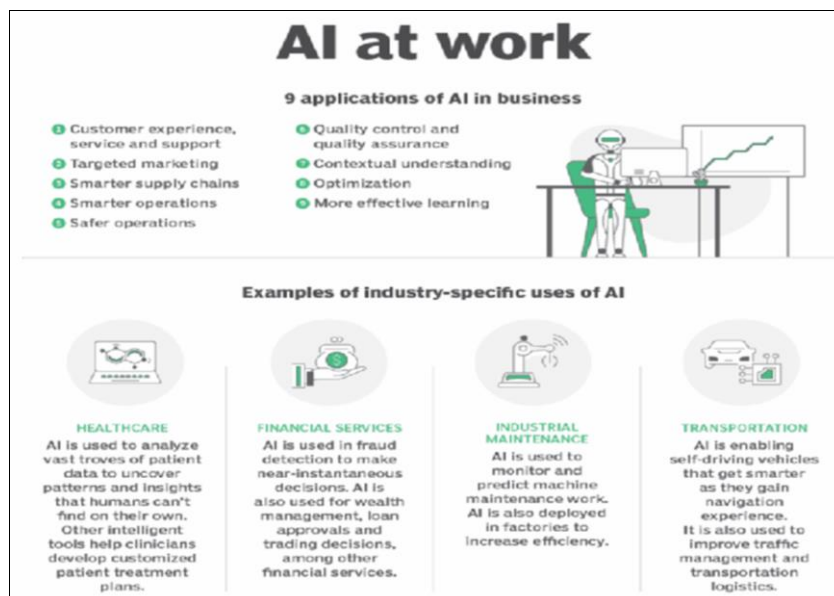


Fig 3: AI at work

Here are the best nine artificial intelligence apps in the business. With industrial examples of the use of AI

Application

Current business application in the field of AI

A Google search for "using AI" yields millions of results. This indicates a large number of enterprise AI applications. Indeed, the AI-based industry is expanding from financial services - the primary recipient - to healthcare, education, marketing, and retail. Artificial Intelligence enters all sectors of business from marketing, finance and human resources. It also includes a number of artificial intelligence applications, including: natural language generation tools used in customer service; Deep learning platform used in autonomous driving and oral recognition tools used by law enforcement agencies.

Referring to the Tech Target articles that describe each industry in detail, here is an example of the use of artificial intelligence in many industries and business sectors.



Fig 4: AI in banking use cases

Financial services are changing the way AI banks work and the way they serve customers. Find out how Chase Bank, JPMorgan Chase, Bank of America, Wells Fargo and other banking companies are using AI to improve their back office. Automate customer service and create new opportunities.

Manufacturing: Collaborative robots, also known as cobots, work with humans in production lines and warehouses. The factory, which serves as a useful toolkit, uses AI to forecast service demand. Machine learning algorithms determine purchasing behavior to predict product demand for production planning. Read about this AI app and the possible new AI apps in Productivity 10 mode.

Agriculture: The \$5 trillion agribusiness uses artificial intelligence to grow healthy crops, relieve pressure, and control data. Read an article by Cognilitica analyst Kathleen Walch on the use of AI in agriculture.

Rules: The document-driven legal industry uses artificial intelligence to save time and improve customer service. Law firms study engineering to collect data and predict outcomes to describe data-related problems. They use computer vision to classify and separate documents and data. NLP Vince Dimashio also talks about how the immigration law firm's large legal team uses artificial intelligence and robotic processes. Where he works as CIO and CTO

Education: In addition to automating the tedious assessment process, it uses AI to assess students and tailor courses to suit their needs. Listen to this podcast with Ken Keding, professor of computer interaction and psychology at the Department of Computer Science at Carnegie Mellon

University to understand how machine learning can teach people and open the door to personal reading.

IT service: Users of IT management companies use natural language processing to automatically process their IT service requests. They apply machine learning to ITSM data to understand infrastructures and processes. To explore 10 uses of AI in ITSM, find out how companies are using AI to optimize their IT services.

Evolve of AI

The scope for using Enterprise AI is not just expanding. But it has also evolved in the face of today's market uncertainty. While the company is still battling the effects of the coronavirus epidemic, AI will help the company understand how to stay relevant and profitable, says Arijit Sengupta, CEO of AI platform provider Aibel. "The most important uses are focused on scenario planning. Proposal testing and hypothesis testing," Sengupta told Tech Target. But modeling needs to be more flexible and repetitive to get the most out of AI applications. For example, forecast models may hire salespeople who will also become key players in feeding the model. Real-time empirical data for continuous analysis "It is important to seek feedback from end-users at an indefinite time for any use. This is because end-user data is aware of what is still being discovered," Sengupta said.

Want to see how the use of AI has evolved. Check out this informative article by journalist George Lawton on the use of eight new AIs in organizations. The list includes the use of digital twin technology in business. Increasing investment in AI and machine learning in real estate management as well as supply chain management such as heavy machinery.

Implementation of AI in organizations

Recent research on the adoption of artificial intelligence in companies shows that the number of AI applications is increasing. For example, by 2022, Gartner predicts that the average number of AI projects per company will increase from 35, which is 10 times higher than the average. In 2020, the projects will reach 250%

But the question remains as to whether the growth of AI adoption will be as strong as expected or as successful as expected. Significantly lower than the company's expected growth of 21 basis points.

IBM's "Global AI Adoption Index 2021", conducted by Morning Consult on behalf of IBM, shows that while most AI adoption remained unchanged between 2020 and 2021, a "significant investment plan" study found that about three-quarters of companies AI (31%) Or exploring the possibility (43%). Percentage says their companies are accelerating AI adoption as a result of COVID-19. Other results highlighted in the report are:

- Businesses Strong and intelligent AI is important for business 91% of AI users say that it is important to be able to explain how AI makes decisions.
- The ability to access information from anywhere is the key to extending AI adoption About 90% of IT professionals say that AI projects can be launched wherever the key to technology adoption.
- Recent natural language processing is at the forefront of recent adoption. Today about half of businesses use NLP-based applications, and 25% of businesses plan to start using NLP technology within the next 12 months.

In the best use of customer service for NLP.

- Development of three major barriers to AI implementation (28%).

Indeed, companies still face many challenges when setting up AI.

AI companies are acknowledging that figuring out how to use AI is not the same as using AI to make money, according to Lawton in a detailed report on delivery. As the last mile of AI, it is more difficult for enterprises to integrate AI technology into existing business processes that promise to optimize these processes rather than create or purchase sophisticated AI models, according to Ian Xiao, manager of Deloitte Omnia AI. Most companies use machine learning, 10% to 40%. Challenges to prevent companies from using AI in their business processes include:

- Late lack of late stage infrastructure such as robotic process automation. An integration platform as a service and a low code platform are needed to connect AIK to the business.
- Subject lacks content experts who can evaluate for AI. In particular, finding out which components of decision-making in the AI process can be automated. And how to rebuild the process; And
- Lack of comments about the machine learning model. Which needs to be updated to reflect new information.

However, industry best practices for AI deployments are emerging. As described in the Tech Target article on the criteria for success in artificial intelligence, which is responsible for the recommendations of Shell and Uber practitioners, as well as large-scale AI projects, the most important thing all data scientists need to mention On top of that they emphasize that it provides context and subtlety that is difficult to understand for deep learning tools.

Implementing AI in organizations requires a thoughtful approach to people, processes and technology.

Steps to implement AI in an organization

AI comes in many forms: machine learning, in-depth learning, predictive analysis, NLP, computer vision and automation. As detailed in our in-depth tips for bringing AI to your business. To benefit from the multitude of AI technologies, companies need to address issues related to people, processes and technology.

Like new technology, codes of conduct are still being written. AI industry leaders insist that experimental ideas will yield better results. The Big Bang approach begins with guesswork. This is followed by rigorous testing and measuring results, and repetition. Here is a list of the 10 steps described in the article above:

- Ensure fluency of information
- Identify key business incentives for AI.
- Determine the scope of opportunity.
- Evaluate your internal abilities.
- Identify suitable candidates.
- Artificial Intelligence Pilot Project.
- Build a basic understanding
- Periodic scale
- General AI power to bring maturity.
- Continuously improve AI model and process.

Table of new achievements in the field of artificial intelligence.

- **Games:** it's important for machines to think about a

large number of possible positions to think about a large number of possible positions to think about a large number of possible positions such as chess, river Crossings, N-Queen problems, etc.

- **Natural Language Processing:** Interact with a computer that understands.
- **Expert Systems:** Provides explanations to machine or software users.
- **Computer Vision System:** The system understands, interprets and describes the visual input to the computer input on the computer.
- **Intelligent Robot:** The robot can follow the instructions given by humans.

Major Goals

- Knowledge based feedback
- Planing
- Machine learning
- Processing of natural language.
- Computer scan
- IBM Watson Robotics



Fig 5: IBM

Watson is an IBM supercomputer that combines artificial intelligence (AI) and complex programming to act as a fully responsive tool. The supercomputer is named in honor of IBM founder Thomas SJ Watson. IBM Watson was at the beginning of a new computing era when IBM Watson was created. Find and Create Find and Evaluate Theory Check and Combine and Predict Rank. "Recently, Watson's limitations have been increased and the way Watson works has moved to a new, distorted delivery model (IBM Cloud Watson) and encouraged a new delivery model (IBM Cloud Watson) with machine learning capabilities and updated hardware for updated hardware." agency. It is no longer a question that responds to organized search engines outside of participating in questions and answers, but now it is "see", "hear", "read", "speak", "try", "translate", "learn" "... I know" and "I am certified".



Fig 6: Join the community



Fig 7: Subscribe



Fig 8: Apply to be a writer

AI Trends: Giant Chips, Iconic Neuroscience AI, Avocado Chair

It is difficult to estimate how many vendors, governments and research institutes are working to create artificial intelligence. And how quickly it has changed

Startups in hardware are developing new approaches. In the organization of memory, computing and networking, which could change the design of leading organizations and the method of deploying AI algorithms. At least one vendor has begun testing a single iPad-sized chip that can transfer data faster than existing AI chips, as detailed in this report.

Conventional wisdom, such as the superiority of GPUs over processors in handling AI workloads, is also being questioned by artificial intelligence researchers. Slide (deep learning engine) promises processors for algorithms. Of course, processors are common hardware: they are everywhere and cheaper than GPUs, that can change the game," Rice Anshumali, associate professor of computer science, told Srivastava Tektarate.

Educators and industry scientists in software are pushing the boundaries of today's AI applications. Intense efforts to create a sensitive machine that competes with the common intelligence of man. Even traditional thieving AI are burying the hatchet.

Symbolic AI Proponents This is a method based on problem presentation, logic and high level symbolic search. The goal of joining forces with proponents of data-intensive neural networks is to develop an AI that better captures the structure, structure, and causes of the face of symbolic AI. It can recognize images created by deep neural networks and process natural language. This neural symbolic mechanism will enable machines to reason with what they see. Which presents a milestone in the development of AI.

"Modeling of neural symbols is now one of the most exciting areas of artificial intelligence," Brendan Lake, an assistant professor of psychology and data science at New York University, told Tektaret.

At the same time, AI developments that seemed daunting a few years ago are becoming institutional sellers who combine these advances with commercial products. Open source communities and tech giants such as Google and

Facebook. Our 2021 AI Trends Review outlines some important new ideas and improvements. Here are some trends on the list:

- Automated ML Automated machine learning improves data identification and automated optimization of neural network architectures.
- Multi-learning AI now supports formats such as text, vision, speech, and IoT sensor data in a more integrated machine format.
- The Mini ML is a model of artificial intelligence and machine learning that runs on limited hardware devices such as microcontrollers that control machines, refrigerators, and service meters.
- Concept-driven artificial intelligence design AIK is trained to take on special roles in fashion, architecture, design and other creative skills New artificial intelligence models, such as DALL · E, can generate a design concept for new things. All this is possible with simple descriptions, such as "avocado armchair".
- Quantum ML But with the creation of Quantum Computing Resources and Simulators through Microsoft, Amazon and IBM Cloud, the promises are becoming more realistic.

Conclusion

As a human beings, we have always been fascinated by technological and fictional changes, and we are now experiencing some of the greatest advances in our history. Artificial intelligence has become the next big challenge in technology. Companies around the world are pushing for innovation in machine learning. Artificial Intelligence Influences not only the future of every industry, every person. It also serves as a major driver for emerging technologies such as big data, robots and the Internet of Things. The company will continue to be a technology innovator in the future. As a result, well-trained and certified professionals have many opportunities for successful careers. As these technologies continue to evolve, this will have a greater impact on the social environment and quality of life. With advances in AI face recognition, healthcare, chatbots and more, it's time to build a successful career in creative intelligence. Virtual assistants have entered everyday life. This saves time and effort. Self-driving cars from tech giants show us the first steps in the future where AI can help mitigate and predict the risks of climate change. So we can make some changes before it is too late. And this whole breakthrough is just beginning. There is still a lot. By 2022, artificial intelligence will create 13 million AI jobs. One of the features that sets us apart from millions of years of history on Earth is our reliance on tools and our commitment to improving the tools we invent. Once we understand how AI works, AI tools will inevitably become more intelligent. It has to do with the future of everything we do. Indeed, the strangeness of AI in the workplace is nothing more than a hammer or a plow. However, the quality of artificial intelligence tools differs from all other tools in the past. We can talk to them, they will talk. They quickly enter our space. answer our questions solving our problems and really for our work more. The big difference between human intelligence and artificial intelligence tends to disappear. This uncertainty between humans and artificial intelligence comes from other technological trends. Which inadvertently shuffles the AI. It contains a machine interface that avoids verbal

communication. Robots for human and machine action. And perhaps the most thrilling insights into the physical foundation of human intelligence with the means to solve it. Finally, in our future, smart growth can be two-way which makes our machines and us smarter.

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