

“Learning More About Artificial Intelligence”

This article is from the “Edifying the Body” section of the Church of God Big Sandy’s website (churchofgodbigandy.com). It was posted for the weekend of May 27, 2023.

By Dave Havir

BIG SANDY, Texas—Only a few months ago, I began learning about artificial intelligence (A.I.). While I read various articles about the concept, I had not written about the idea.

While there are many of you who have educated yourself about the subject, I imagine that there is still a large audience who could learn more about artificial intelligence.

I have chosen to help you (my friends) by including two lengthy articles about the subject.

(After the two articles, I listed 30 headlines of articles that talked about ChatGPT. Although those articles were not included in this article, the headlines give the essence of the story.)

I hope this information will help you learn more about the subject of artificial intelligence.



An article by Ed Burns, Nicole Laskowski, George Lawton and Linda Tucci titled “Artificial Intelligence (A.I.)” was posted at techtargget.com in March 2023. Following are excerpts of the article.

What is artificial intelligence (A.I.)?

Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. Specific applications of A.I. include expert systems, natural language processing, speech recognition and machine vision.

How does A.I. work?

As the hype around A.I. has accelerated, vendors have been scrambling to promote how their products and services use it. Often, what they refer to as A.I. is simply a component of the technology, such as machine learning.

A.I. requires a foundation of specialized hardware and software for writing and training machine learning algorithms. No single programming language is synonymous with A.I., but Python, R, Java, C++ and Julia have features popular with A.I. developers.

In general, A.I. systems work by ingesting large amounts of labeled training data, analyzing the data for correlations and patterns, and using these patterns to make predictions about future states. In this way, a chatbot that is fed examples of text can learn to generate lifelike exchanges with people, or an image recognition tool can learn to identify and describe objects in images by reviewing millions of examples.

New, rapidly improving generative A.I. techniques can create realistic text, images, music and other media.

A.I. programming focuses on cognitive skills that include the following.

- Learning — This aspect of A.I. programming focuses on acquiring data and creating rules for how to turn it into actionable information. The rules, which are called algorithms, provide computing devices with step-by-step instructions for how to complete a specific task.
- Reasoning — This aspect of A.I. programming focuses on choosing the right algorithm to reach a desired outcome.
- Self-correction — This aspect of A.I. programming is designed to continually fine-tune algorithms and ensure they provide the most accurate results possible.
- Creativity — This aspect of A.I. uses neural networks, rules-based systems, statistical methods and other A.I. techniques to generate new images, new text, new music and new ideas.

Differences between A.I., machine learning and deep learning

A.I., machine learning and deep learning are common terms in enterprise IT and sometimes used interchangeably — especially by companies in their marketing materials. But there are distinctions.

The term A.I., coined in the 1950s, refers to the simulation of human intelligence by machines. It covers an ever-changing set of capabilities as new technologies are developed. Technologies that come under the umbrella of A.I. include machine learning and deep learning.

Machine learning enables software applications to become more accurate at predicting outcomes without being explicitly programmed to do so. Machine learning algorithms use historical data as input to predict new output values. This approach became vastly more effective with the rise of large data sets to train on.

Deep learning, a subset of machine learning, is based on our understanding of how the brain is structured. Deep learning's use of artificial neural networks structure is the underpinning of recent advances in A.I., including self-driving cars and ChatGPT.

Why is artificial intelligence important?

A.I. is important for its potential to change how we live, work and play. It has been effectively used in business to automate tasks done by humans, including customer service work, lead generation, fraud detection and quality control.

In a number of areas, A.I. can perform tasks much better than humans. Particularly when it comes to repetitive, detail-oriented tasks, such as analyzing large numbers of legal documents to ensure relevant fields are filled in properly, A.I. tools often complete jobs quickly and with relatively few errors.

Because of the massive data sets it can process, A.I. can also give enterprises insights into their operations they might not have been aware of. The rapidly expanding population of generative A.I. tools will be important in fields ranging from education and marketing to product design.

Indeed, advances in A.I. techniques have not only helped fuel an explosion in efficiency, but opened the door to entirely new business opportunities for some larger enterprises. Prior to the current wave of A.I., it would have been hard to imagine using computer software to connect riders to taxis — but Uber has become a Fortune 500 company by doing just that.

A.I. has become central to many of today's largest and most successful companies — including Alphabet, Apple, Microsoft and Meta, where A.I. technologies are used to improve operations and outpace competitors.

At Alphabet subsidiary Google, for example, A.I. is central to its search engine, Waymo's self-driving cars and Google Brain — which invented the transformer neural network architecture that underpins the recent breakthroughs in natural language processing.

Advantages and disadvantages of artificial intelligence

Artificial neural networks and deep learning A.I. technologies are quickly evolving, primarily because A.I. can process large amounts of data much faster and make predictions more accurately than humanly possible.

While the huge volume of data created on a daily basis would bury a human researcher, A.I. applications using machine learning can take that data and quickly turn it into actionable information.

As of this writing, a primary disadvantage of A.I. is that it is expensive to process the large amounts of data A.I. programming requires. As A.I. techniques are incorporated into more products and services, organizations must also be attuned to A.I.'s potential to create biased and discriminatory systems, intentionally or inadvertently.

Advantages of A.I.

The following are some advantages of A.I.

- Good at detail-oriented jobs — A.I. has proven to be as good or better than doctors at diagnosing certain cancers, including breast cancer and melanoma.
- Reduced time for data-heavy tasks — A.I. is widely used in data-heavy industries, including banking and securities, pharma and insurance, to reduce the time it takes to analyze big data sets. Financial services, for example, routinely use A.I. to process loan applications and detect fraud.
- Saves labor and increases productivity — An example here is the use of warehouse automation, which grew during the pandemic and is expected to increase with the integration of A.I. and machine learning.
- Delivers consistent results — The best A.I. translation tools deliver high levels of consistency, offering even small businesses the ability to reach customers in their native language.
- Can improve customer satisfaction through personalization — A.I. can personalize content, messaging, ads, recommendations and websites to individual customers.
- A.I.-powered virtual agents are always available — A.I. programs do not need to sleep or take breaks, providing 24/7 service.

Disadvantages of A.I.

The following are some disadvantages of A.I.

- Expensive
- Requires deep technical expertise
- Limited supply of qualified workers to build A.I. tools
- Reflects the biases of its training data, at scale
- Lack of ability to generalize from one task to another
- Eliminates human jobs, increasing unemployment rates

Strong A.I. vs. weak A.I.

- Weak A.I., also known as narrow A.I., is designed and trained to complete a specific task. Industrial robots and virtual personal assistants, such as Apple's Siri, use weak A.I.
- Strong A.I., also known as artificial general intelligence (AGI), describes programming that can replicate the cognitive abilities of the human brain. When presented with an unfamiliar task, a strong A.I. system can use fuzzy logic to apply knowledge from one domain to another and find a solution autonomously. In theory, a strong A.I. program should be able to pass both a Turing test and the Chinese Room argument.

What are the 4 types of artificial intelligence?

Arend Hintze, an assistant professor of integrative biology and computer science and engineering at Michigan State University, explained that A.I. can be categorized into four types, beginning with the task-specific intelligent sys-

tems in wide use today and progressing to sentient systems, which do not yet exist. The categories are as follows.

- Type 1: Reactive machines — These A.I. systems have no memory and are task-specific. An example is Deep Blue, the IBM chess program that beat Garry Kasparov in the 1990s. Deep Blue can identify pieces on a chessboard and make predictions, but because it has no memory, it cannot use past experiences to inform future ones.
- Type 2: Limited memory — These A.I. systems have memory, so they can use past experiences to inform future decisions. Some of the decision-making functions in self-driving cars are designed this way.
- Type 3: Theory of mind — Theory of mind is a psychology term. When applied to A.I., it means the system would have the social intelligence to understand emotions. This type of A.I. will be able to infer human intentions and predict behavior, a necessary skill for A.I. systems to become integral members of human teams.
- Type 4: Self-awareness — In this category, A.I. systems have a sense of self, which gives them consciousness. Machines with self-awareness understand their own current state. This type of A.I. does not yet exist.

Examples of A.I. technology and how it is used today

A.I. is incorporated into a variety of different types of technology. Here are seven examples.

- Automation — When paired with A.I. technologies, automation tools can expand the volume and types of tasks performed. An example is robotic process automation (RPA), a type of software that automates repetitive, rules-based data processing tasks traditionally done by humans. When combined with machine learning and emerging A.I. tools, RPA can automate bigger portions of enterprise jobs, enabling RPA's tactical bots to pass along intelligence from A.I. and respond to process changes.
- Machine learning — This is the science of getting a computer to act without programming. Deep learning is a subset of machine learning that, in very simple terms, can be thought of as the automation of predictive analytics. There are three types of machine learning algorithms.
 1. Supervised learning. Data sets are labeled so that patterns can be detected and used to label new data sets.
 2. Unsupervised learning. Data sets aren't labeled and are sorted according to similarities or differences.
 3. Reinforcement learning. Data sets aren't labeled but, after performing an action or several actions, the system is given feedback.
- Machine vision — This technology gives a machine the ability to see. Machine vision captures and analyzes visual information using a camera, analog-to-digital conversion and digital signal processing. It is often compared to

human eyesight, but machine vision isn't bound by biology and can be programmed to see through walls, for example. It is used in a range of applications from signature identification to medical image analysis. Computer vision, which is focused on machine-based image processing, is often conflated with machine vision.

- Natural language processing (NLP) — This is the processing of human language by a computer program. One of the older and best-known examples of NLP is spam detection, which looks at the subject line and text of an email and decides if it's junk. Current approaches to NLP are based on machine learning. NLP tasks include text translation, sentiment analysis and speech recognition.
- Robotics — This field of engineering focuses on the design and manufacturing of robots. Robots are often used to perform tasks that are difficult for humans to perform or perform consistently. For example, robots are used in car production assembly lines or by NASA to move large objects in space. Researchers also use machine learning to build robots that can interact in social settings.
- Self-driving cars — Autonomous vehicles use a combination of computer vision, image recognition and deep learning to build automated skills to pilot a vehicle while staying in a given lane and avoiding unexpected obstructions, such as pedestrians.
- Text, image and audio generation — Generative A.I. techniques, which create various types of media from text prompts, are being applied extensively across businesses to create a seemingly limitless range of content types from photorealistic art to email responses and screenplays.

What are the applications of A.I.?

Artificial intelligence has made its way into a wide variety of markets. Here are 11 examples.

- A.I. in healthcare — The biggest bets are on improving patient outcomes and reducing costs. Companies are applying machine learning to make better and faster medical diagnoses than humans. One of the best-known healthcare technologies is IBM Watson. It understands natural language and can respond to questions asked of it. The system mines patient data and other available data sources to form a hypothesis, which it then presents with a confidence scoring schema. Other A.I. applications include using online virtual health assistants and chatbots to help patients and healthcare customers find medical information, schedule appointments, understand the billing process and complete other administrative processes. An array of A.I. technologies is also being used to predict, fight and understand pandemics such as COVID-19.
- A.I. in business — Machine learning algorithms are being integrated into analytics and customer relationship management (CRM) platforms to uncover information on how to better serve customers. Chatbots have been incor-

porated into websites to provide immediate service to customers. The rapid advancement of generative A.I. technology such as ChatGPT is expected to have far-reaching consequences: eliminating jobs, revolutionizing product design and disrupting business models.

- A.I. in education — A.I. can automate grading, giving educators more time for other tasks. It can assess students and adapt to their needs, helping them work at their own pace. A.I. tutors can provide additional support to students, ensuring they stay on track. The technology could also change where and how students learn, perhaps even replacing some teachers. As demonstrated by ChatGPT, Bard and other large language models, generative A.I. can help educators craft course work and other teaching materials and engage students in new ways. The advent of these tools also forces educators to rethink student homework and testing and revise policies on plagiarism.
- A.I. in finance — A.I. in personal finance applications, such as Intuit Mint or TurboTax, is disrupting financial institutions. Applications such as these collect personal data and provide financial advice. Other programs, such as IBM Watson, have been applied to the process of buying a home. Today, artificial intelligence software performs much of the trading on Wall Street.
- A.I. in law — The discovery process — sifting through documents — in law is often overwhelming for humans. Using A.I. to help automate the legal industry's labor-intensive processes is saving time and improving client service. Law firms use machine learning to describe data and predict outcomes, computer vision to classify and extract information from documents, and NLP to interpret requests for information.
- A.I. in entertainment and media — The entertainment business uses A.I. techniques for targeted advertising, recommending content, distribution, detecting fraud, creating scripts and making movies. Automated journalism helps newsrooms streamline media workflows reducing time, costs and complexity. Newsrooms use A.I. to automate routine tasks, such as data entry and proofreading; and to research topics and assist with headlines. How journalism can reliably use ChatGPT and other generative A.I. to generate content is open to question.
- A.I. in software coding and IT processes — New generative A.I. tools can be used to produce application code based on natural language prompts, but it is early days for these tools and unlikely they will replace software engineers soon. A.I. is also being used to automate many IT processes, including data entry, fraud detection, customer service, and predictive maintenance and security.
- Security — A.I. and machine learning are at the top of the buzzword list security vendors use to market their products, so buyers should approach with caution. Still, A.I. techniques are being successfully applied to multiple aspects of cybersecurity, including anomaly detection, solving the false-positive problem and conducting behavioral threat analytics. Organizations use machine learning in security information and event management (SIEM) software and related areas to detect anomalies and identify suspicious activities

that indicate threats. By analyzing data and using logic to identify similarities to known malicious code, A.I. can provide alerts to new and emerging attacks much sooner than human employees and previous technology iterations.

- A.I. in manufacturing — Manufacturing has been at the forefront of incorporating robots into the workflow. For example, the industrial robots that were at one time programmed to perform single tasks and separated from human workers, increasingly function as cobots: Smaller, multitasking robots that collaborate with humans and take on responsibility for more parts of the job in warehouses, factory floors and other workspaces.
- A.I. in banking — Banks are successfully employing chatbots to make their customers aware of services and offerings and to handle transactions that don't require human intervention. A.I. virtual assistants are used to improve and cut the costs of compliance with banking regulations. Banking organizations use A.I. to improve their decision-making for loans, set credit limits and identify investment opportunities.
- A.I. in transportation — In addition to A.I.'s fundamental role in operating autonomous vehicles, A.I. technologies are used in transportation to manage traffic, predict flight delays, and make ocean shipping safer and more efficient. In supply chains, A.I. is replacing traditional methods of forecasting demand and predicting disruptions, a trend accelerated by COVID-19 when many companies were caught off guard by the effects of a global pandemic on the supply and demand of goods.

Augmented intelligence vs. artificial intelligence

Some industry experts have argued that the term artificial intelligence is too closely linked to popular culture, which has caused the general public to have improbable expectations about how A.I. will change the workplace and life in general.

They have suggested using the term augmented intelligence to differentiate between A.I. systems that act autonomously — popular culture examples include Hal 9000 and The Terminator — and A.I. tools that support humans.

- Augmented intelligence — Some researchers and marketers hope the label augmented intelligence, which has a more neutral connotation, will help people understand that most implementations of A.I. will be weak and simply improve products and services. Examples include automatically surfacing important information in business intelligence reports or highlighting important information in legal filings. The rapid adoption of ChatGPT and Bard across industry indicates a willingness to use A.I. to support human decision-making.
- Artificial intelligence — True A.I., or AGI, is closely associated with the concept of the technological singularity — a future ruled by an artificial superintelligence that far surpasses the human brain's ability to understand it or how it is shaping our reality. This remains within the realm of science fiction, though some developers are working on the problem. Many believe that tech-

nologies such as quantum computing could play an important role in making AGI a reality and that we should reserve the use of the term A.I. for this kind of general intelligence.

Ethical use of artificial intelligence

A.I.'s ethical challenges include the following.

- Bias, due to improperly trained algorithms and human bias.
- Misuse, due to deepfakes and phishing.
- Legal concerns, including A.I. libel and copyright issues.
- Elimination of jobs.
- Data privacy concerns — in the banking, healthcare and legal fields.

A.I. governance and regulations

Despite potential risks, there are currently few regulations governing the use of A.I. tools, and where laws do exist, they typically pertain to A.I. indirectly. For example, as previously mentioned, U.S. Fair Lending regulations require financial institutions to explain credit decisions to potential customers. This limits the extent to which lenders can use deep learning algorithms, which by their nature are opaque and lack explainability.

The European Union's General Data Protection Regulation (GDPR) is considering A.I. regulations. GDPR's strict limits on how enterprises can use consumer data already limits the training and functionality of many consumer-facing A.I. applications.

Policymakers in the U.S. have yet to issue A.I. legislation, but that could change soon.

A "Blueprint for an A.I. Bill of Rights" published in October 2022 by the White House Office of Science and Technology Policy (OSTP) guides businesses on how to implement ethical A.I. systems. The U.S. Chamber of Commerce also called for A.I. regulations in a report released in March 2023.

Crafting laws to regulate A.I. will not be easy — in part because A.I. comprises a variety of technologies that companies use for different ends, and partly because regulations can come at the cost of A.I. progress and development.

The rapid evolution of A.I. technologies is another obstacle to forming meaningful regulation of A.I., as are the challenges presented by A.I.'s lack of transparency that make it difficult to see how the algorithms reach their results.

Moreover, technology breakthroughs and novel applications such as ChatGPT and Dall-E can make existing laws instantly obsolete. And, of course, the laws that governments do manage to craft to regulate A.I. don't stop criminals from using the technology with malicious intent.

What is the history of A.I.?

The concept of inanimate objects endowed with intelligence has been around since ancient times. The Greek god Hephaestus was depicted in myths as forging robot-like servants out of gold. Engineers in ancient Egypt built statues of gods animated by priests. Throughout the centuries, thinkers from Aristotle to the 13th century Spanish theologian Ramon Llull to René Descartes and Thomas Bayes used the tools and logic of their times to describe human thought processes as symbols, laying the foundation for A.I. concepts such as general knowledge representation. The late 19th and first half of the 20th centuries brought forth the foundational work that would give rise to the modern computer. In 1836, Cambridge University mathematician Charles Babbage and Augusta Ada King, Countess of Lovelace, invented the first design for a programmable machine.

- 1940s — Princeton mathematician John Von Neumann conceived the architecture for the stored-program computer — the idea that a computer's program and the data it processes can be kept in the computer's memory. And Warren McCulloch and Walter Pitts laid the foundation for neural networks.
- 1950s — With the advent of modern computers, scientists could test their ideas about machine intelligence. One method for determining whether a computer has intelligence was devised by the British mathematician and World War II code-breaker Alan Turing. The Turing test focused on a computer's ability to fool interrogators into believing its responses to their questions were made by a human being.
- 1956 — The modern field of artificial intelligence is widely cited as starting this year during a summer conference at Dartmouth College. Sponsored by the Defense Advanced Research Projects Agency (DARPA), the conference was attended by 10 luminaries in the field, including A.I. pioneers Marvin Minsky, Oliver Selfridge and John McCarthy, who is credited with coining the term artificial intelligence. Also in attendance were Allen Newell, a computer scientist, and Herbert A. Simon, an economist, political scientist and cognitive psychologist. The two presented their groundbreaking Logic Theorist, a computer program capable of proving certain mathematical theorems and referred to as the first A.I. program.
- 1950s and 1960s — In the wake of the Dartmouth College conference, leaders in the fledgling field of A.I. predicted that a man-made intelligence equivalent to the human brain was around the corner, attracting major government and industry support. Indeed, nearly 20 years of well-funded basic research generated significant advances in A.I. For example, in the late 1950s, Newell and Simon published the General Problem Solver (GPS) algorithm, which fell short of solving complex problems but laid the foundations for developing more sophisticated cognitive architectures; and McCarthy developed Lisp, a language for A.I. programming still used today. In the mid-1960s, MIT Professor Joseph Weizenbaum developed ELIZA, an early NLP program that laid the foundation for today's chatbots.

- 1970s and 1980s — The achievement of artificial general intelligence proved elusive, not imminent, hampered by limitations in computer processing and memory and by the complexity of the problem. Government and corporations backed away from their support of A.I. research — leading to a falloff period lasting from 1974 to 1980 known as the first “A.I. Winter.” In the 1980s, research on deep learning techniques and industry’s adoption of Edward Feigenbaum’s expert systems sparked a new wave of A.I. enthusiasm, only to be followed by another collapse of government funding and industry support. The second A.I. winter lasted until the mid-1990s.
- 1990s — Increases in computational power and an explosion of data sparked an A.I. renaissance in the late 1990s that set the stage for the remarkable advances in A.I. we see today. The combination of big data and increased computational power propelled breakthroughs in NLP, computer vision, robotics, machine learning and deep learning. In 1997, as advances in A.I. accelerated, IBM’s Deep Blue defeated Russian chess grandmaster Garry Kasparov, becoming the first computer program to beat a world chess champion.
- 2000s — Further advances in machine learning, deep learning, NLP, speech recognition and computer vision gave rise to products and services that have shaped the way we live today. These include the 2000 launch of Google’s search engine and the 2001 launch of Amazon’s recommendation engine. Netflix developed its recommendation system for movies, Facebook introduced its facial recognition system and Microsoft launched its speech recognition system for transcribing speech into text. IBM launched Watson and Google started its self-driving initiative, Waymo.
- 2010s — The decade between 2010 and 2020 saw a steady stream of A.I. developments. These include the launch of Apple’s Siri and Amazon’s Alexa voice assistants; IBM Watson’s victories on Jeopardy; self-driving cars; the development of the first generative adversarial network; the launch of TensorFlow, Google’s open source deep learning framework; the founding of research lab OpenAI, developers of the GPT-3 language model and Dall-E image generator; the defeat of world Go champion Lee Sedol by Google DeepMind’s AlphaGo; and the implementation of A.I.-based systems that detect cancers with a high degree of accuracy.
- 2020s — The current decade has seen the advent of generative A.I., a type of artificial intelligence technology that can produce new content. Generative A.I. starts with a prompt that could be in the form of a text, an image, a video, a design, musical notes or any input that the A.I. system can process. Various A.I. algorithms then return new content in response to the prompt. Content can include essays, solutions to problems, or realistic fakes created from pictures or audio of a person. The abilities of language models such as ChatGPT-3, Google’s Bard and Microsoft’s Megatron-Turing NLG have wowed the world, but the technology is still in early stages, as evidenced by its tendency to hallucinate or skew answers.

A.I. tools and services

A.I. tools and services are evolving at a rapid rate. Current innovations in A.I. tools and services can be traced to the 2012 AlexNet neural network that ushered in a new era of high-performance A.I. built on GPUs and large data sets. The key change was the ability to train neural networks on massive amounts of data across multiple GPU cores in parallel in a more scalable way. Over the last several years, the symbiotic relationship between A.I. discoveries at Google, Microsoft, and OpenAI, and the hardware innovations pioneered by Nvidia have enabled running ever-larger A.I. models on more connected GPUs, driving game-changing improvements in performance and scalability. The collaboration among these A.I. luminaries was crucial for the recent success of ChatGPT, not to mention dozens of other breakout A.I. services. Here is a rundown of important innovations in A.I. tools and services.

- **Transformers** — Google, for example, led the way in finding a more efficient process for provisioning A.I. training across a large cluster of commodity PCs with GPUs. This paved the way for the discovery of transformers that automate many aspects of training A.I. on unlabeled data.
- **Hardware optimization** — Just as important, hardware vendors like Nvidia are also optimizing the microcode for running across multiple GPU cores in parallel for the most popular algorithms. Nvidia claimed the combination of faster hardware, more efficient A.I. algorithms, fine-tuning GPU instructions and better data center integration is driving a million-fold improvement in A.I. performance. Nvidia is also working with all cloud center providers to make this capability more accessible as A.I.-as-a-Service through IaaS, SaaS and PaaS models.
- **Generative pre-trained transformers** — The A.I. stack has also evolved rapidly over the last few years. Previously enterprises would have to train their A.I. models from scratch. Increasingly vendors such as OpenAI, Nvidia, Microsoft, Google, and others provide generative pre-trained transformers (GPTs), which can be fine-tuned for a specific task at a dramatically reduced cost, expertise and time. Whereas some of the largest models are estimated to cost \$5 million to \$10 million per run, enterprises can fine-tune the resulting models for a few thousand dollars. This results in faster time to market and reduces risk.
- **A.I. cloud services** — Among the biggest roadblocks that prevent enterprises from effectively using A.I. in their businesses are the data engineering and data science tasks required to weave A.I. capabilities into new apps or to develop new ones. All the leading cloud providers are rolling out their own branded A.I. as service offerings to streamline data prep, model development and application deployment. Top examples include AWS A.I. Services, Google Cloud A.I., Microsoft Azure A.I. platform, IBM A.I. solutions and Oracle Cloud Infrastructure A.I. Services.
- **Cutting-edge A.I. models as a service** — Leading A.I. model developers also offer cutting-edge A.I. models on top of these cloud services. OpenAI

has dozens of large language models optimized for chat, NLP, image generation and code generation that are provisioned through Azure. Nvidia has pursued a more cloud-agnostic approach by selling A.I. infrastructure and foundational models optimized for text, images and medical data available across all cloud providers. Hundreds of other players are offering models customized for various industries and use cases as well.



An article by Mike Thomas titled “8 Risks and Dangers of Artificial Intelligence” was posted at builtin.com on Jan. 25, 2023. Following are excerpts of the article.

As A.I. grows more sophisticated and widespread, the voices warning against the potential dangers of artificial intelligence grow louder. “The development of artificial intelligence could spell the end of the human race,” according to Stephen Hawking. The renowned theoretical physicist isn’t alone with this thought.

“[A.I.] scares the hell out of me,” Tesla and SpaceX founder Elon Musk once said at the SXSW tech conference. “It’s capable of vastly more than almost anyone knows, and the rate of improvement is exponential.”

Whether it’s the increasing automation of certain jobs, gender and racially biased algorithms or autonomous weapons that operate without human oversight (to name just a few), unease abounds on a number of fronts. And we’re still in the very early stages of what A.I. is really capable of.

8 Dangers of A.I.

Questions about who’s developing A.I. and for what purposes make it all the more essential to understand its potential downsides.

- Job losses due to A.I. automation
- Social manipulation through A.I. algorithms
- Social surveillance with A.I. technology
- Biases due to Artificial Intelligence
- Widening socioeconomic inequality as a result of A.I.
- Weakening ethics and goodwill because of A.I.
- Autonomous weapons powered by Artificial Intelligence
- Financial crises brought about by A.I. algorithms

Mitigating the Risks of A.I.

1. Develop national and international regulations.
2. Create organizational standards for applying A.I.
3. Make A.I. a part of company culture and discussions.
4. Inform tech with humanities perspectives.

"I am not normally an advocate of regulation and oversight — I think one should generally err on the side of minimizing those things — but this is a case where you have a very serious danger to the public," Musk said during his 2018 SXSW talk. "It needs to be a public body that has insight and then oversight to confirm that everyone is developing A.I. safely. This is extremely important."

A.I. regulation has been a main focus for dozens of countries, and now the U.S. and European Union are creating more clear-cut measures to manage the spread of artificial intelligence. Although this means certain A.I. technologies could be banned, it doesn't prevent societies from exploring the field. Preserving a spirit of experimentation is vital for Ford, who believes A.I. is essential for countries looking to innovate and keep up with the rest of the world.

"You regulate the way A.I. is used, but you don't hold back progress in basic technology. I think that would be wrong-headed and potentially dangerous," Ford said. "We decide where we want A.I. and where we don't; where it's acceptable and where it's not. And different countries are going to make different choices."

The key then is deciding how to apply A.I. in an ethical manner. On a company level, there are many steps businesses can take when integrating A.I. into their operations. Organizations can develop processes for monitoring algorithms, compiling high-quality data and explaining the findings of A.I. algorithms. Leaders could even make A.I. a part of their company culture, establishing standards to determine acceptable A.I. technologies.

But when it comes to society as a whole, there should be a greater push for tech to embrace the diverse perspectives of the humanities. Stanford University A.I. researchers Fei-Fei Li and John Etchemendy make this argument in a 2019 blog post that calls for national and global leadership in regulating artificial intelligence.

They wrote: "The creators of A.I. must seek the insights, experiences and concerns of people across ethnicities, genders, cultures and socio-economic groups, as well as those from other fields, such as economics, law, medicine, philosophy, history, sociology, communications, human-computer-interaction, psychology, and Science and Technology Studies (STS)."

Balancing high-tech innovation with human-centered thinking is an ideal method for producing responsible technology and ensuring the future of A.I. remains hopeful for the next generation. The dangers of artificial intelligence should always be a topic of discussion, so leaders can figure out ways to wield the technology for noble purposes.

"I think we can talk about all these risks, and they're very real," Ford said. "But A.I. is also going to be the most important tool in our toolbox for solving the biggest challenges we face."



Comments about A.I.

- Looking back to March 2023, an article by Prarthana Prakash titled "Elon Musk Says That A.I. 'Humanoid Robots' Will Eventually Outnumber People: 'It's Not Even Clear What an Economy Means at That Point'" was posted at fortune.com on March 2, 2023.

What is ChatGPT?

- Looking back to April 2023, an article by Sabrina Ortiz titled "What Is ChatGPT?" was posted at zdnet.com on April 18, 2023. ("ChatGPT is a natural language processing tool driven by A.I. technology that allows you to have human-like conversations and much more with the chatbot.")

Who made ChatGPT?

- Looking back to April 2023, an article by Sabrina Ortiz titled "Who Made ChatGPT?" was posted at zdnet.com on April 18, 2023. (ChatGPT was created by OpenAI — an A.I. and Research Company. The company launched ChatGPT on November 30, 2022.)

Positive reports — about ChatGPT

- Looking back to December 2022, an article by Josep Ferrer titled "6 ChatGPT Mind-Blowing Extensions to Use It Anywhere" was posted at medium.com on Dec. 23, 2022.
- Looking back to February 2023, an article titled "ChatGPT Fastest-Growing App in History; [Swiss Bank] UBS" was posted at reuters.com on Feb. 2, 2023.
- An article titled "ChatGPT & Generative A.I. in Healthcare; Revolutionizing the Future" was posted at medium.com on May 1, 2023.
- An article by Sarah Perez titled "OpenAI Launches an Official ChatGPT App for iOS" was posted at techcrunch.com on May 18, 2023.
- An article by Fionna Agomuoh and Luke Larsen titled "ChatGPT: How to Use the A.I. Chatbot That's Changing Everything" was posted at digitaltrends.com on May 19, 2023.
- An article by Brian Heater titled "Sanctuary A.I.'s New Humanoid Robot Stands 5'7" and Lifts 55 lbs." was posted at techcrunch.com on May 16, 2023.
- An article by Rob Waugh and Luke Andrews titled "ChatGPT-Funded Robot Powered by A.I. Is Already Working as a Security Guard in the U.S. and Europe" as posted at dailymail.co.uk on May 21, 2023.
- An article by Jack Ohman titled "I Was Terrified of A.I., but My ChatGPT App Seems Too Sweet and Dumb to Destroy Me" was posted at sacbee.com on May 21, 2023.

Negative report — is ChatGPT a security risk?

- An article by Michael Long titled “Is ChatGPT a Security Risk? [Apple Seems to Think So]” was posted at medium.com on May 20, 2023.
- An article by Aaron Tilley and Miles Kruppa titled “Apple Restricts Employee Use of ChatGPT, Joining Companies [Already] Wary of Leaks” was posted at wsj.com on May 18, 2023.

Negative report — is ChatGPT already obsolete?

- An article by Matteo Wong titled “ChatGPT Is Already Obsolete” was posted at theatlantic.com on May 19, 2023.

Companies — announcing ChatGPT-similar technology

- An article by Tim Marcin titled “Gmail’s New A.I. Feature Will Soon Write Entire Emails for You; Google Announces” was posted at mashable.com on May 10, 2023.
- A press release titled “Scribe Launches Scribe A.I.: It Is a Revolutionary Way to Automate Business Documentation” was posted at scribe.com on May 10, 2023.
- An article by Aisha Malik titled “WhatsApp Now Lets You Lock and Hide Individual Chats” was posted at techcrunch.com on May 15, 2023.
- An article by Sabrina Ortiz titled “These 4 Popular Microsoft Apps Are Getting a Big A.I. Boost” was posted at zdnet.com on May 16, 2023.
- A press release titled “ActiveCampaign Introduces Content Generation Powered by A.I.” was posted at activecampaign.com on May 16, 2023.
- An article by Sean Buckley titled “The IRS Reportedly Has a Free Turbo Tax Alternative in the Works” was posted at engadget.com on May 15, 2023.
- An article by Alex Wilhelm titled “[Chinese Technology Giant] Alibaba’s Cloud Spinoff May Serve as a Good Yardstick to Value Other Major Players” was posted at techcrunch.com on May 18, 2023.

What kind of test questions can ChatGPT handle?

- An article by Hazel Shearing and Shiona McCallum titled “ChatGPT: Can Students Pass Using A.I. Tools at University?” was posted at bbc.com on May 9, 2023. (The University of Bath in England reported that ChatGPT can handle multiple-choice questions very well.)
- An article by Alex Blake titled “ChatGPT Tried to Pass a College Exam and It Didn’t Go Well” was posted at digitaltrends.com on May 9, 2023. (It repeated parts of the question word-for-word, created vague statements and wrote in oversimplified language without being specific.)

Can ChatGPT pass tests?

- Looking back to January 2023, an article by J.D. Capelouto titled "Here Are All the Academic Exams ChatGPT Has Passed (and Failed)" was posted at semafor.com on Jan. 30, 2023.
- Looking back to February 2023, an article by Aditi Bharade titled "ChatGPT Failed Miserably in Singapore's 6th-Grade Tests (Averaging 16% for Math and 21% for Science); Days Later, It Was Getting Answers Right" was posted at businessinsider.com on Feb. 20, 2023.
- Looking back to March 2023, an article by Lakshmi Varanasi titled "A.I. Models Like ChatGPT and GPT-4 Are Acing Everything From the Bar Exam to AP Biology; Here's a List of Difficult Exams Both A.I. Versions Have Passed" was posted at businessinsider.com on March 21, 2023.
- Looking back to April 2023, an article by Stephen Hughes titled "ChatGPT Can Replace Journalists, but It Can't Pass a Doctor's Final Exam in Medical School" was posted at science20.com on April 27, 2023.
- An article by Mack Wilowski titled "ChatGPT Passes CPA Exam on Second Attempt; Is It Coming for Accounting Jobs?" was posted at investopedia.com on May 23, 2023.

Professor accuses college students of using ChatGPT

- An article by Frank Heinz titled "Texas A&M University—Commerce Instructor Accuses Class of Using ChatGPT [to Cheat] on Final Assignments" was posted at nbcdfw.com on May 19, 2023.

Companies banning ChatGPT at work

- An article by Paige McGlaufflin titled "Apple, Goldman Sachs and Samsung Among Growing List of Companies Banning Employees From Using ChatGPT at Work" was posted at fortune.com on May 19, 2023.