



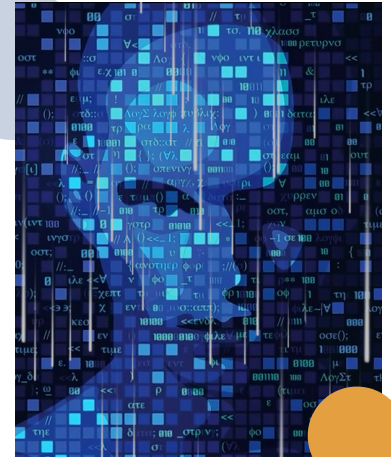
# 18 Cutting-Edge Artificial Intelligence Applications in 2024

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# 18 Cutting-Edge Artificial Intelligence Applications in 2024

The function and popularity of Artificial Intelligence are soaring by the day. Artificial Intelligence is the ability of a system or a program to think and learn from experience. AI applications have significantly evolved over the past few years and have found their applications in almost every business sector. This article will help you learn the top Artificial Intelligence applications in the real world.



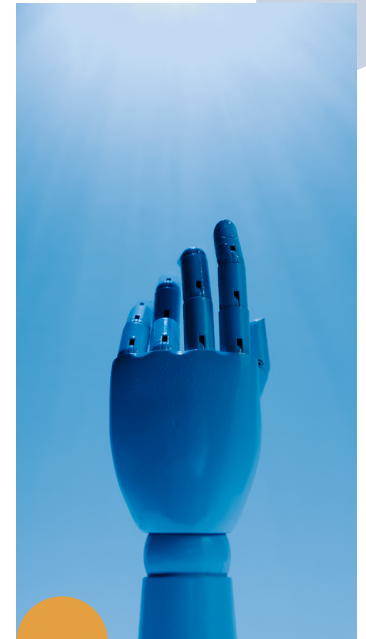
## What is Artificial Intelligence?

Artificial Intelligence (AI) is machine-displayed intelligence that simulates human behavior or thinking and can be trained to solve specific problems. AI is a combination of Machine Learning techniques and Deep Learning. Types of Artificial Intelligence models are trained using vast volumes of data and have the ability to make intelligent decisions.

## AI Facts and Figures

According to Statista, revenue from the Artificial Intelligence (AI) software market worldwide is expected to reach 126 billion dollars by 2025.

As per Gartner, 37% of organizations have implemented AI in some form. The percentage of enterprises employing AI grew 270% over the past four years. According to Servion Global Solutions, by 2025, 95% of customer interactions will be powered by AI.



A recent 2020 report from Statista reveals that the global AI software market is expected to grow approximately 54% year-on-year and is expected to reach a forecast size of USD \$22.6 billion.

Let's now take a look at how the application of AI is used in different domains.

## What are the Applications of Artificial Intelligence?

Here is the list of the top 18 applications of AI (Artificial Intelligence):



### 1. AI Application in E-Commerce

- **Personalized Shopping**

Artificial Intelligence technology is used to create recommendation engines through which you can engage better with your customers. These recommendations are made in accordance with their browsing history, preference, and interests. It helps in improving your relationship with your customers and their loyalty towards your brand.

- **AI-Powered Assistants**

Virtual shopping assistants and chatbots help improve the user experience while shopping online. Natural Language Processing is used to make the conversation sound as human and personal as possible. Moreover, these assistants can have real-time engagement with your customers. Did you know that on amazon.com, soon, customer service could be handled by chatbots?



- **Fraud Prevention**

Credit card frauds and fake reviews are two of the most significant issues that E-Commerce companies deal with. By considering the usage patterns, AI can help reduce the possibility of credit card fraud taking place. Many customers prefer to buy a product or service based on customer reviews. AI can help identify and handle fake reviews.



## 2. Applications Of Artificial Intelligence in Education

Although the education sector is the one most influenced by humans, Artificial Intelligence has slowly begun to seep its roots into the education sector as well. Even in the education sector, this slow transition of Artificial Intelligence has helped increase productivity among faculties and helped them concentrate more on students than office or administration work.

Some of these applications in this sector include:

- **Administrative Tasks Automated to Aid Educators**

Artificial Intelligence can help educators with non-educational tasks like task-related duties like facilitating and automating personalized messages to students, back-office tasks like grading paperwork, arranging and facilitating parent and guardian interactions, routine issue feedback facilitating, managing enrollment, courses, and HR-related topics.





## • Creating Smart Content

Digitization of content like video lectures, conferences, and textbook guides can be made using Artificial Intelligence. We can apply different interfaces like animations and learning content through customization for students from different grades.

Artificial Intelligence helps create a rich learning experience by generating and providing audio and video summaries and integral lesson plans.



## • Voice Assistants

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## • Personalized Learning

Using top AI technologies, hyper-personalization techniques can be used to monitor students' data thoroughly, and habits, lesson plans, reminders, study guides, flash notes, frequency or revision, etc., can be easily generated.

### 3. Applications of Artificial Intelligence in Lifestyle

Artificial Intelligence has a lot of influence on our lifestyle. Let us discuss a few of them.



- **Autonomous Vehicles**

Automobile manufacturing companies like Toyota, Audi, Volvo, and Tesla use machine learning to train computers to think and evolve like humans when it comes to driving in any environment and object detection to avoid accidents.

- **Spam Filters**

The email that we use in our day-to-day lives has AI that filters out spam emails sending them to spam or trash folders, letting us see the filtered content only. The popular email provider, Gmail, has managed to reach a filtration capacity of approximately 99.9%.

- **Facial Recognition**

Our favorite devices like our phones, laptops, and PCs use facial recognition techniques by using face filters to detect and identify in order to provide secure access. Apart from personal usage, facial recognition is a widely used Artificial Intelligence application even in high security-related areas in several industries.



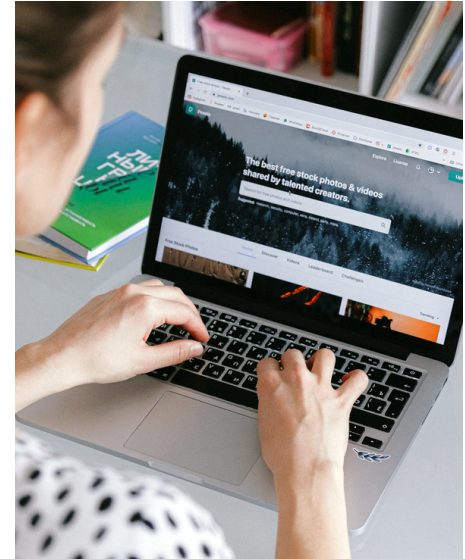
- **Recommendation System**

Various platforms that we use in our daily lives like e-commerce, entertainment websites, social media, video sharing platforms, like youtube, etc., all use the recommendation system to get user data and provide customized recommendations to users to increase engagement. This is a very widely used Artificial Intelligence application in almost all industries.



## 4. Applications of Artificial Intelligence in Navigation

Based on research from MIT, GPS technology can provide users with accurate, timely, and detailed information to improve safety. The technology uses a combination of Convolutional Neural Networks and Graph Neural Networks, which makes lives easier for users by automatically detecting the number of lanes and road types behind obstructions on the roads. AI is heavily used by Uber and many logistics companies to improve operational efficiency, analyze road traffic, and optimize routes.



## 5. Applications of Artificial Intelligence in Robotics

Robotics is another field where Artificial Intelligence applications are commonly used. Robots powered by AI use real-time updates to sense obstacles in its path and pre-plan its journey instantly.

It can be used for:



Carrying goods in hospitals, factories, and warehouses



Cleaning offices and large equipment



Inventory management



## 6. Applications of Artificial Intelligence in human resource

Did you know that companies use intelligent software to ease the hiring process?

Artificial Intelligence helps with blind hiring. Using machine learning software, you can examine applications based on specific parameters. AI drive systems can scan job candidates' profiles, and resumes to provide recruiters an understanding of the talent pool they must choose from.



## 7. Applications of Artificial Intelligence in Healthcare



Artificial Intelligence finds diverse applications in the healthcare sector. AI applications are used in healthcare to build sophisticated machines that can detect diseases and identify cancer cells. Artificial Intelligence can help analyze chronic conditions with lab and other medical data to ensure early diagnosis. AI uses the combination of historical data and medical intelligence for the discovery of new drugs.

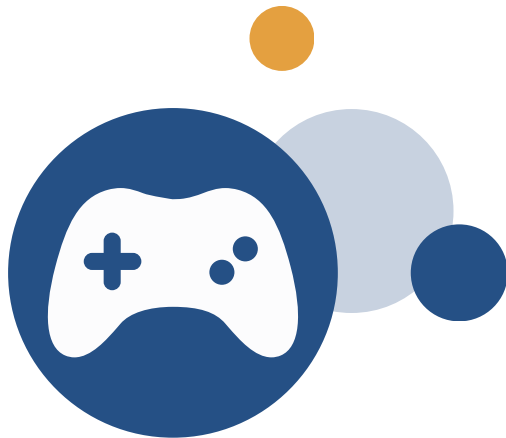
## 8. Applications of Artificial Intelligence in Agriculture

Artificial Intelligence is used to identify defects and nutrient deficiencies in the soil. This is done using computer vision, robotics, and machine learning applications, AI can analyze where weeds are growing. AI bots can help to harvest crops at a higher volume and faster pace than human laborers.





## 9. Applications of Artificial Intelligence in Gaming



Another sector where Artificial Intelligence applications have found prominence is the gaming sector. AI can be used to create smart, human-like NPCs to interact with the players.

It can also be used to predict human behavior using which game design and testing can be improved. The Alien Isolation game released in 2014 uses AI to stalk the player throughout the game. The game uses two Artificial Intelligence systems - 'Director AI' that frequently knows your location and the 'Alien AI,' driven by sensors and behaviors that continuously hunt the player.

## 10. Applications of Artificial Intelligence in Automobiles

Artificial Intelligence is used to build self-driving vehicles. AI can be used along with the vehicle's camera, radar, cloud services, GPS, and control signals to operate the vehicle. AI can improve the in-vehicle experience and provide additional systems like emergency braking, blind-spot monitoring, and driver-assist steering.



## 11. Applications of Artificial Intelligence in Social Media



- **Instagram**

On Instagram, AI considers your likes and the accounts you follow to determine what posts you are shown on your explore tab.



### • Facebook

Artificial Intelligence is also used along with a tool called DeepText. With this tool, Facebook can understand conversations better. It can be used to translate posts from different languages automatically.



### • Twitter

AI is used by Twitter for fraud detection, for removing propaganda, and hateful content. Twitter also uses AI to recommend tweets that users might enjoy, based on what type of tweets they engage with.

## 12. Applications of Artificial Intelligence in Marketing

Artificial Intelligence (AI) applications are popular in the marketing domain as well.

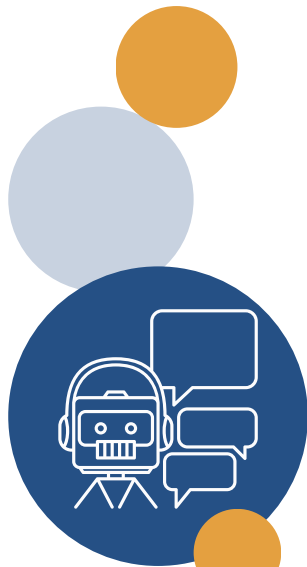
Using AI, marketers can deliver highly targeted and personalized ads with the help of behavioral analysis, and pattern recognition in ML, etc. It also helps with retargeting audiences at the right time to ensure better results and reduced feelings of distrust and annoyance.



AI can help with content marketing in a way that matches the brand's style and voice. It can be used to handle routine tasks like performance, campaign reports, and much more. Chatbots powered by AI, Natural Language Processing, Natural Language Generation, and Natural Language Understanding can analyze the user's language and respond in the ways humans do. AI can provide users with real-time personalizations based on their behavior and can be used to edit and optimize marketing campaigns to fit a local market's needs.



## 13. Applications of Artificial Intelligence in Chatbots



AI chatbots can comprehend natural language and respond to people online who use the "live chat" feature that many organizations provide for customer service. AI chatbots are effective with the use of machine learning and can be integrated in an array of websites and applications. AI chatbots can eventually build a database of answers, in addition to pulling information from an established selection of integrated answers.

As AI continues to improve, these chatbots can effectively resolve customer issues, respond to simple inquiries, improve customer service, and provide 24/7 support. All in all, these AI chatbots can help to improve customer satisfaction.

## 14. Applications of Artificial Intelligence in Finance

It has been reported that 80% of banks recognize the benefits that AI can provide. Whether it's personal finance, corporate finance, or consumer finance, the highly evolved technology that is offered through AI can help to significantly improve a wide range of financial services. For example, customers looking for help regarding wealth management solutions can easily get the information they need through SMS text messaging or online chat, all AI-powered.

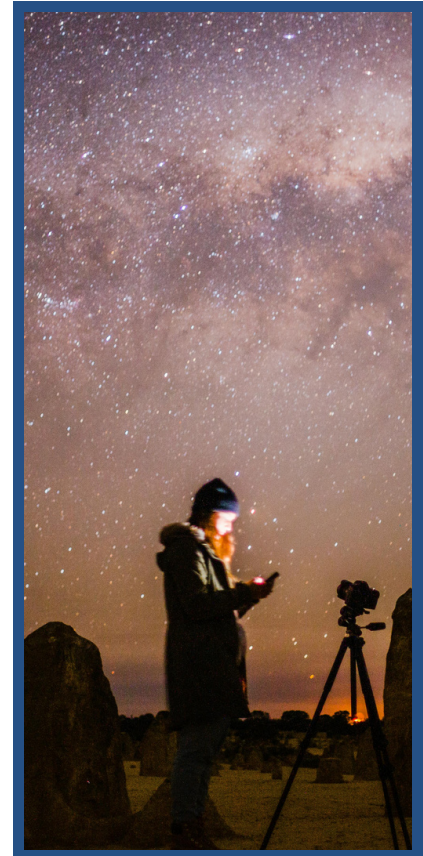


Artificial Intelligence can also detect changes in transaction patterns and other potential red flags that can signify fraud, which humans can easily miss, and thus saving businesses and individuals from significant loss. Aside from fraud detection and task automation, AI can also better predict and assess loan risks.

## 15. AI in Astronomy

If there's one concept that has caught everyone by storm in this beautiful world of technology, it has to be - AI (Artificial Intelligence), without a question. AI or Artificial Intelligence has seen a wide range of applications throughout the years, including healthcare, robotics, eCommerce, and even finance.

Astronomy, on the other hand, is a largely unexplored topic that is just as intriguing and thrilling as the rest. When it comes to astronomy, one of the most difficult problems is analyzing the data. As a result, astronomers are turning to machine learning and Artificial Intelligence (AI) to create new tools. Having said that, consider how Artificial Intelligence has altered astronomy and is meeting the demands of astronomers.



Recently, a group of scientists used Artificial Intelligence in a galaxy merger investigation to establish that galaxy mergers were the primary force underlying starbursts. Given the size of the collection, the researchers created a deep learning system that trained itself to locate merging galaxies. According to one of the astronomers, the advantage of Artificial Intelligence is that it improves the study's repeatability. The reason for this is that the algorithm's definitions of a merger are consistent.

The changing sky has captured everyone's attention as one of the most astounding projects of all time. This project seeks to survey the whole night sky every night, gathering over 80 terabytes of data in one go to study how stars and galaxies in the cosmos change over time.

One of the most important duties for an astronomer is to find a p. The theory is that whenever an exoplanet passes in front of its parent star, part of the light is blocked, which humans can see. Astronomers use this location to study an exoplanet's orbit and develop a picture of the light dips. They then identify the planet's many parameters, such as its mass, size, and distance from its star, to mention a few. However, AI proves to be more than a savior in this case. Using AI's time-series analysis capabilities, it is feasible to analyze data as a sequential sequence and identify planetary signals with up to 96% accuracy.



Finding the signals of the universe's most catastrophic events is critical for astronomers. When exoplanets collide with each other, they cause ripples in space-time. These can be identified further by monitoring feeble signals on Earth. Collaborations on gravitational-wave detectors - Ligo and Virgo have performed admirably in this regard. Both of them were effective in recognizing signals using machine learning. Astronomers now get notifications, allowing them to point their telescopes in the appropriate direction.

## 16. AI in Data Security

Many people believe that Artificial Intelligence (AI) is the present and future of the technology sector. Many industry leaders employ AI for a variety of purposes, including providing valued services and preparing their companies for the future.





Data security, which is one of the most important assets of any tech-oriented firm, is one of the most prevalent and critical applications of AI. With confidential data ranging from consumer data (such as credit card information) to organizational secrets kept online, data security is vital for any institution to satisfy both legal and operational duties. This work is now as difficult as it is vital, and many businesses deploy AI-based security solutions to keep their data out of the wrong hands.

Because the world is smarter and more connected than ever before, the function of Artificial Intelligence in business is critical today. According to several estimates, cyberattacks will get more tenacious over time, and security teams will need to rely on AI solutions to keep systems and data under control.



- **Identifies Unknown Threats**

A human may not be able to recognize all of the hazards that a business confronts. Every year, hackers launch hundreds of millions of assaults for a variety of reasons. Unknown threats can cause severe network damage. Worse, they can have an impact before you recognize, identify, and prevent them.

As attackers test different tactics ranging from malware assaults to sophisticated malware assaults, contemporary solutions should be used to avoid them. Artificial Intelligence has shown to be one of the most effective security solutions for mapping and preventing unexpected threats from wreaking havoc on a corporation.



## • Flaw Identification

AI assists in detecting data overflow in a buffer. When programs consume more data than usual, this is referred to as buffer overflow. Aside from the fault caused by human triggers breaking crucial data. These blunders are also observable by AI, and they are detected in real-time, preventing future dangers.

AI can precisely discover cybersecurity weaknesses, faults, and other problems using Machine Learning. Machine Learning also assists AI in identifying questionable data provided by any application. Malware or virus used by hackers to gain access to systems as well as steal data is carried out via programming language flaws.



## • Threat Prevention

Artificial Intelligence technology is constantly being developed by cyber security vendors. In its advanced version, AI is designed to detect flaws in the system or even the update. It'd instantly exclude anybody attempting to exploit those issues. AI would be an outstanding tool for preventing any threat from occurring. It may install additional firewalls as well as rectify code faults that lead to dangers.



## • Responding to Threats



It's something that happens after the threat has entered the system. As previously explained, AI is used to detect unusual behavior and create an outline of viruses or malware. AI is currently taking appropriate action against viruses or malware. The reaction consists mostly of removing the infection, repairing the fault, and administering the harm done. Finally, AI guarantees that such an incident does not happen again and takes proper preventative actions.

## • Recognize Uncharacterised Action

AI allows us to detect unusual behavior in a system. It is capable of detecting unusual or unusual behavior by continually scanning a system and gathering an appropriate amount of data. In addition, AI identifies illegal access. When unusual behavior is identified, Artificial Intelligence employs particular elements to determine whether it represents a genuine threat or a fabricated warning. Machine Learning is used to help AI determine what is and is not aberrant behavior. Machine Learning is also improving with time, which will allow Artificial Intelligence to detect even minor anomalies. As a result, AI would point to anything wrong with the system.

## 17. AI in Travel and Transport

Intelligent technology has become a part of our daily lives in recent years. And, as technology advances across society, new uses of AI, notably in transportation, are becoming mainstream. This has created a new market for firms and entrepreneurs to develop innovative solutions for making public transportation more comfortable, accessible, and safe.





Intelligent transportation systems have the potential to become one of the most effective methods to improve the quality of life for people all around the world. There are multiple instances of similar systems in use in various sectors.

- **Heavy Goods Transportation**

Truck platooning, which networks HGV (heavy goods vehicles), for example, might be extremely valuable for vehicle transport businesses or for moving other large items.

The lead vehicle in a truck platoon is steered by a human driver, however, the human drivers in any other trucks drive passively, just taking the wheel in exceptionally dangerous or difficult situations.

Because all of the trucks in the platoon are linked via a network, they travel in formation and activate the actions done by the human driver in the lead vehicle at the same time. So, if the lead driver comes to a complete stop, all of the vehicles following him do as well.

- **Traffic Management**



Clogged city streets are a key impediment to urban transportation all around the world. Cities throughout the world have enlarged highways, erected bridges, and established other modes of transportation such as train travel, yet the traffic problem persists. However, AI advancements in traffic management provide a genuine promise of changing the situation.

Intelligent traffic management may be used to enforce traffic regulations and promote road safety. For example, Alibaba's City Brain initiative in China uses AI technologies such as predictive analysis, big data analysis, and a visual search engine in order to track road networks in real-time and reduce congestion.

Building a city requires an efficient transformation system, and AI-based traffic management technologies are powering next-generation smart cities.



## • Ride-Sharing

Platforms like Uber and OLA leverage AI to improve user experiences by connecting riders and drivers, improving user communication and messaging, and optimizing decision-making. For example, Uber has its own proprietary ML-as-a-service platform called Michelangelo that can anticipate supply and demand, identify trip abnormalities like wrecks, and estimate arrival timings.

## • Route Planning

AI-enabled route planning using predictive analytics may help both businesses and people. Ride-sharing services already achieve this by analyzing numerous real-world parameters to optimize route planning.



AI-enabled route planning is a terrific approach for businesses, particularly logistics and shipping industries, to construct a more efficient supply network by anticipating road conditions and optimizing vehicle routes. Predictive analytics in route planning is the intelligent evaluation by a machine of a number of road usage parameters such as congestion level, road restrictions, traffic patterns, consumer preferences, and so on.

Cargo logistics companies, such as vehicle transport services or other general logistics firms, may use this technology to reduce delivery costs, accelerate delivery times, and better manage assets and operations.



## 18. AI in Automotive Industry

A century ago, the idea of machines being able to comprehend, do complex computations, and devise efficient answers to pressing issues was more of a science fiction writer's vision than a predictive reality. Still, as we enter the third decade of the twenty-first century, we can't fathom our lives without stock trading and marketing bots, manufacturing robots, smart assistance, virtual travel agents, and other innovations made possible by advances in Artificial Intelligence and machine learning. The importance of Artificial Intelligence and machine learning in the automotive sector cannot be overstated.

With Artificial Intelligence driving more applications to the automotive sector, more businesses are deciding to implement Artificial Intelligence and machine learning models in production.





## • Manufacturing

Infusing AI into the production experience allows automakers to benefit from smarter factories, boosting productivity and lowering costs. AI may be utilized in automobile assembly, supply chain optimization, employing robots on the manufacturing floor, improving performance using sensors, designing cars, and in post-production activities.



## • Supply Chain

The automobile sector has been beset by supply chain interruptions and challenges in 2021 and 2022. AI can also assist in this regard. AI helps firms identify the hurdles they will face in the future by forecasting and replenishing supply chains as needed. AI may also assist with routing difficulties, volume forecasts, and other concerns.

## • Passenger and Driver Experience

We all wish to have a pleasant journey in our vehicles. Artificial Intelligence can also help with this. When driving, Artificial Intelligence (AI) may assist drivers in remaining focused by decreasing distractions, analyzing driving behaviors, and enhancing the entire customer experience. Passengers can benefit from customized accessibility as well as in-car delivery services thanks to AI.

## • Inspections

The procedure of inspecting an automobile by a rental agency, insurance provider, or even a garage is very subjective and manual. With AI, car inspection may go digital, with modern technology being able to analyze a vehicle, identify where the flaws are, and produce a thorough status report.



- **Quality Control**

Everyone desires a premium vehicle and experience. Wouldn't you prefer to know if something is wrong with your automobile before it breaks down? In this application, AI enables extremely accurate predictive monitoring, fracture detection, and other functions.

## Is Artificial Intelligence Limiting Human Application?



Humans may appear to be swiftly overtaken in industries where AI is becoming more extensively incorporated. However, humans are still capable of doing a variety of complicated activities better than AI. For the time being, tasks that demand creativity are beyond the capabilities of AI computers.

For instance, a writer utilized AI to generate fresh screenplays for episodes of the TV sitcom 'Friends', all of which proved hard to read. While some authors are turning to AI writing tools for inspiration for their poetry and fiction, AI cannot handle all of the jobs for them.



Furthermore, while natural language processing has advanced significantly, AI is still not very adept at truly understanding the words that it reads. While language is frequently predictable enough that AI can participate in trustworthy communication in specific settings, unexpected phrases, irony, or subtlety might confound it. Similarly, AI cannot yet demonstrate empathy or critical reasoning. In comparison to AI, humans continue to excel in tasks that demand these talents.

AI has advanced swiftly and has become an essential component of our daily life. However, the day when AI will do everything for us and we will be able to spend our days resting or learning for pleasure is still a long way off. Artificial Intelligence still has to advance in areas such as language processing, creativity, problem-solving, and subtlety comprehension. If you're concerned that robots will take your job, build these qualities in yourself to ensure that you'll be employable in the future.

## Why Is AI Used?

People leverage the strength of Artificial Intelligence because the work they need to carry out is rising on a daily basis. So automating everyday tasks is a smart idea. This saves the organization's staff while also increasing output. Furthermore, the organization may obtain competent individuals for the company's development through the use of Artificial Intelligence.



Also, businesses nowadays believe that they wish to automate all regular and ordinary tasks. And they believe they can automate such routine tasks using a simple application. Because automation is becoming more widespread as data science advances. This AI is most commonly used in online chat portals. You've undoubtedly seen the welcome message when you visit the websites. After that, the genuine talk generally begins.