

Agentic AI vs. generative AI

[Artificial intelligence \(AI\)](#) has been a popular topic for the past decade, but more recently terms such as [generative AI \(gen AI\)](#) and agentic AI have emerged. While traditional AI offered users an exciting new way to recognize patterns and analyze data, gen AI can create new patterns and content like text, images, video, audio or software code.

Furthermore, agentic AI takes [autonomous capabilities](#) to the next level by using a digital ecosystem of [large language models \(LLMs\)](#), [machine learning \(ML\)](#), and [natural language processing \(NLP\)](#) to perform autonomous tasks on behalf of the user or another system. A gen AI model that has garnered much attention is [ChatGPT](#). While this product offers similar creative abilities to agentic AI, it isn't the same.

Agentic AI is focused on decisions as opposed to creating the actual new content, and doesn't solely rely on human prompts nor require human oversight. Early-stage agentic AI examples include things like autonomous vehicles, [virtual assistants](#), and copilots with task-oriented goals. Gen AI and agentic AI tools are offering enormous productivity benefits to individuals and organizations. It's important to differentiate the two terms and how each works to drive innovation and decision-making.

Think Newsletter

Join over 100,000 subscribers who read the latest news in tech

Stay up to date on the most important—and intriguing—industry trends on AI, automation, data and beyond with the Think newsletter. See the [IBM Privacy Statement](#).

We use your email to validate you are who you say you are, to create your IBMid, and to contact you for account related matters.

Business email

Your subscription will be delivered in English. You will find an unsubscribe link in every newsletter. You can manage your subscriptions or unsubscribe [here](#). Refer to our [IBM Privacy Statement](#) for more information.

Your subscription will be delivered in English. You will find an unsubscribe link in every newsletter. You can manage your subscriptions or unsubscribe [here](#). Refer to our [IBM Privacy Statement](#) for more information.

<https://www.ibm.com/us-en/privacy>

What are the key differences between agentic AI and generative AI?

Diving into the differences between agentic AI and generative AI means first defining both.

Generative AI is [artificial intelligence](#) that can create original content—such as text, images, video, audio or software code—in response to a user's prompt or request. Gen AI relies on using machine learning models called [deep learning](#) models—algorithms that simulate the learning and decision-making processes of the human brain—and other technologies like [robotic process automation \(RPA\)](#).

These models work by identifying and encoding the patterns and relationships in huge amounts of data, and then using that information to understand users' natural language requests or questions. These models can then generate high-quality text, images, and other content based on the data they were trained on in real-time.

Agentic AI describes AI systems that are designed to autonomously make decisions and act, with the ability to pursue complex goals with limited supervision. It brings together the flexible characteristics of large language models (LLMs) with the accuracy of traditional programming. This type of AI acts autonomously to achieve a goal by using technologies like natural language processing (NLPs), machine learning, reinforcement learning and knowledge representation. It's a proactive AI-powered approach, whereas gen AI is reactive to the users input. Agentic AI can adapt to different or changing situations and has "agency" to make decisions based on context. It is used in various applications that can benefit from independent operation, such as robotics, complex analysis, and virtual assistants.

Features of agentic AI and generative AI

Agentic AI and generative AI have objectives and distinct attributes that make them unique from one another.

Key features of generative AI

- **Content creation:** Where gen AI excels is in content generation. The AI models can create coherent context like essays and answers to complex problems. AI applications, like OpenAI's ChatGPT can generate answers, write lists, and give advice when prompted by user input. Using gen AI solutions to produce code can streamline software development and make it easier for developers of varying skill levels to write code.
- **Data analysis:** Generative AI can analyze vast amounts of data and use that analysis to discover patterns and trends. The gen AI models can streamline complex workflows, especially when it comes to the supply chain and drive a better customer experience.
- **Adaptability:** Gen AI can adapt its outputs based on the input it receives from the user. If the user is providing specific feedback to the model the outcome shifts to align more to what the user is seeking and in turn refine the output.
- **Personalization:** Gen AI technology can make personalized recommendations and experiences based on the inputs from the user. The retail industry has, for example, taken to highly personalized experiences for their customers thanks to gen AI technology that is helping them understand every detail of their customer preferences.

Key features of agentic AI

- **Decision-making:** Because of the pre-defined plans and objectives these AI systems can assess situations and determine the path forward without or with minimal human input.
- **Problem-solving:** Agentic AI uses a four-step approach for solving issues; perceive, reason, act, and learn. These four steps start by having AI agents gather and process data. The LLM then acts as an orchestrator that analyzes perceived data to understand the situation. And is then integrated with external tools that are continuously improving and learning through feedback.

- **Autonomy:** Autonomous behavior defines agentic AI. It's unique ability to learn and operate on its own make it a promising technology for organizations seeking to streamline workflows and have machines perform complex tasks with minimal human intervention.
- **Interactivity:** Due to its proactive nature, agentic AI can interact with the outside environment and gather data to adjust in real-time. One example is self-driving vehicles, which must constantly analyze its surroundings and make safe, accurate driving decisions.
- **Planning:** Agentic AI models can handle complex scenarios and execute multi-step strategies to achieve specific goals.

Agentic AI and AI agents

It's important to differentiate between [agentic AI](#) and [AI agents](#). Essentially, agentic AI is the framework; AI agents are the building blocks within the framework.

Agentic AI is the broader concept of solving issues with limited supervision, whereas an AI agent is a specific component within that system that is designed to handle tasks and processes with a degree of autonomy. This model is changing the way humans interact with AI. The agentic AI system is able to understand the goal or vision of the user and uses the information that is provided to solve a problem.

To put this in an example, think of a smart home where agentic AI manages and runs the overall energy consumption system. This is done by using real-time data and user preferences to coordinate individual AI agents like the smart thermostat, the lighting or even appliances. The agents have individual goals and assignments, and work together within the agentic AI framework to achieve the homeowner's energy goals.

Use cases for agentic AI and generative AI

There are many use cases for generative AI, however many applications of agentic AI are still in the experimental phase. Potential agentic AI uses cases are emerging in functions like customer service, healthcare security, workflow management and financial risk management.

Generative AI use cases

Content creation for SEO

Businesses are using gen AI to produce large volumes of SEO-optimized content, such as blogs and landing pages that help drive organic traffic. For instance, a digital marketing agency might use gen AI tools to create high-quality, keyword-optimized blog posts or web pages for their clients to rank higher on search engines.

Marketing and sales

Human sales teams oftentimes are bogged down with administrative tasks when their main goal is to find and develop sales leads. Sales teams have been a generative AI use case for a while now through [chatbots](#) and virtual assistants. The AI technology can do specific tasks and drive optimization on a sales team, along with lead generation outreach.

Product design and development

The gen AI capabilities available can help organizations in creating new product concepts or designs based on market research, trends, and user preference. Which might in turn speed up the product development cycle. An example is a fashion company by using gen AI to design a new clothing line and generating designs based on consumer input and market data analysis.

Customer support automation

Gen AI can help companies automatically generate responses for customer service inquiries. The tools can craft answers for common questions and troubleshoot issues in real-time. Take an ecommerce business for instance. It can use gen AI in chatbots to handle many tasks, such as order status inquiries, refund requests, and shipping questions.

Agentic AI use cases

Customer service

The traditional models for customer chatbots had limitations due to the pre-programmed nature of the technology and would require human intervention at times. Whereas with autonomous agents, the model can quickly understand what a customer's intent and emotion is and take steps to resolve the issue.

These [autonomous systems](#) can therefore predictively assess a situation and help ensure a smoother customer interaction with a business. The customer experience is exceedingly important in the world today as businesses seek out higher retention and enhanced loyalty. Specifically, agentic AI can automate tedious tasks by gathering, cleaning, and formatting an organization's data. These systems can take the weight off of human employees and free them up to do more high-impact projects and tasks.

Healthcare

AI technology has been used in the healthcare field already, including in diagnostics, patient care, and streamlining administrative tasks. Cybersecurity is one of the most vital features of any AI tool that is used in the healthcare space due to patient data and privacy concerns. This concern carries over into emerging agentic AI tools as well.

A potential use case example comes from Propeller Health, which is integrating agentic AI into its smart inhaler technology. The smart device is collecting real-time data from the patient on medication usage and outside factors like [air quality](#). The device alerts healthcare providers when necessary and tracks patient patterns.

Automated workflow management

Agentic AI can manage business processes autonomously and handle complex tasks like reordering supplies and optimizing supply chain operations. It can automate internal workflows to make it easier on human employees without the need for their physical intervention.

For example, a logistics company might use an agentic AI system to automatically adjust delivery

routes and schedules based on real-time traffic conditions and shipment priorities. The scalability and increased capacity of agentic AI also makes it a good use case for the logistics industry specifically.

Financial risk management

Agentic AI can help industries meet client goals and optimize the results in real-time by analyzing market trends and financial data to make autonomous decisions about investments and credit risks. Financial institutions are looking to protect their clients' investments while also making smart and strategic decisions that result in higher returns.

Agentic AI can improve those practices by acting autonomously and adjusting strategies based on real-time economic, social and political events. An example is a fintech firm that uses agentic AI to monitor market fluctuations and automatically adjust portfolio allocations.

Agentic AI and generative AI trends

Generative AI trends

- **Gen AI augmented applications:** There is [a shift toward gen AI](#) augmented applications being integrated into various software and platforms. This integration is helping make the user experience even more personal and provide intelligent functions.
- **Synthetic data for model training:** Synthetic data that is generated by AI will be used to train models where real-world data is not readily available or expensive. The use of synthetic data can improve AI training across industries like robotics, autonomous driving, and finance.
- **Deepfake technology:** While mildly entertaining, gen AI has invented a hyper-realistic image or video by using AI that appears real. It has and is raising ethical concerns surrounding misinformation.
- **Content personalization:** A popular trend is personalization when it come to retail. Marketing teams are adapting content and campaigns to individual preferences based on gen AI data analytics.

Agentic AI trends

- **Financial services industry:** Agentic AI has the potential [to revolutionize](#) trading strategies by analyzing market data and expediting executing trades. The extended reach of agentic AI is a significant benefit as agentic AI can be designed to search the web extensively. Agents are able to retrieve updates and obtain real-time information.
- **Robotics:** Places like Amazon warehouses have started to employ robots in fulfillment centers to streamline warehouse automation and manufacturing processes. Agentic AI can handle complex tasks and operate independently to perform specific tasks.
- **City planning:** Agentic AI systems in urban planning can analyze all types of datasets to help planners make informed decisions, such as real-time traffic data and camera sensors.

The intuitive nature of agentic AI has the potential to alleviate teams of hours of work to create presentation slides or tables.

- **Human resources:** Agentic AI used for human resources can help organizations go beyond gen AI capabilities and instead provide autonomous decision-making and dynamic employee support. AI agents can automate routine work and provide personalized responses to employees, giving HR professionals time to deal with more strategic priorities.