

# The most valuable AI use cases for business



Artificial intelligence

February 14, 2024 By [Jim Holdsworth](#) 10 min read

When thinking of [artificial intelligence \(AI\)](#) use cases, the question might be asked: What *won't* AI be able to do? The easy answer is mostly manual labor, although the day might come when much of what is now manual labor will be accomplished by robotic devices controlled by AI. But right now, pure AI can be programmed for many tasks that require thought and *intelligence*, as long as that intelligence can be gathered digitally and used to train an AI system. AI is not yet loading the dishwasher after supper—but can help create a legal brief, a new product design, or a letter to grandma.

We're all amazed by what AI can do. But the question for those of us in business is what are the best *business* uses? Assembling a version of the Mona Lisa in the style of Vincent van Gough is fun, but how often will that boost the bottom line? Here are 27 highly productive ways that AI use cases can help businesses improve their bottom line.

## Customer-facing AI use cases

### Deliver superior customer service

Customer interactions can now be assisted in real time with conversational AI. Voice-based queries use [natural language processing](#) (NLP) and sentiment analysis for speech recognition so their conversations can begin immediately. Using [machine learning algorithms](#), AI can understand what customers are saying as well as their tone—and can direct them to [customer service](#) agents when needed. With text to speech and NLP, AI can respond immediately to texted queries and instructions. There's no need to make customers wait for the answers to frequently asked questions (FAQs) or to take the next step to purchase. And digital customer service agents can boost customer satisfaction by offering advice and guidance to customer service agents.

### Personalize customer experiences

The use of AI is effective for creating [personalized experiences](#) at scale through [chatbots](#), [digital assistants](#) and [customer interfaces](#), delivering tailored experiences and targeted advertisements to customers and end-users. For example, Amazon reminds customers to reorder their most often-purchased products, and shows them related products or suggestions. McDonald's is building AI solutions for [customer care with IBM Watson AI technology](#) and NLP to accelerate the development of its automated order taking (AOT) technology. Not only will this help scale the AOT tech across markets, but it will also help tackle integrations including additional languages, dialects and menu variations. Over at Spotify, they'll suggest a new artist for the customer's listening pleasure. YouTube will deliver a curated feed of content suited to customer interests.

### Promote cross- and up-selling

Recommendation engines use consumer behavior data and AI algorithms to help discover [data trends](#) to be used in the development of more effective up-selling and cross-selling strategies, resulting in more useful add-on recommendations for customers during checkout for online retailers. Other uses include Netflix offering viewing recommendations powered by models that process data sets collected from viewing history; LinkedIn uses ML to filter items in a newsfeed, making employment

recommendations and suggestions on who to connect with; and Spotify uses ML models to generate its song recommendations.

## Smarten up smartphones

Facial recognition turns on smartphones and voice assistants, powered by machine learning, while Apple's Siri, Amazon's Alexa, Google Assistant and Microsoft's Copilot use NLP to recognize what we say and then respond appropriately. Companies also take advantage of ML in smartphone cameras to analyze and enhance photos using image classifiers, detect objects (or faces) in the images, and even use artificial neural networks to enhance or expand a photo by predicting what lies beyond its borders.

## Introduce personal assistants

Virtual assistants or voice assistants, such as Amazon's Alexa and Apple's Siri, are powered by AI. When someone asks a question via speech or text, ML searches for the answer or recalls similar questions the person has asked before. The same technology can power messaging bots, such as those used by Facebook Messenger and Slack—while Google Assistant, Cortana and [IBM watsonx Assistant](#) combine NLP to [understand questions and requests](#), take appropriate actions and compose responses.

## Humanize Human Resources

AI can attract, develop and retain a skills-first [workforce](#). A flood of applications can be screened, sorted and passed to HR team members with precision. [Manual promotion assessment](#) tasks can be automated, making it easier to gain important HR insights with a clearer view of, for example, employees up for promotion and assessing whether they've met [key benchmarks](#). Routine questions from staff can be quickly answered using AI.

## Creative AI use cases

### Create with generative AI

[Generative AI](#) tools such as ChatGPT, Bard and DeepAI rely on limited memory AI capabilities to predict the next word, phrase or visual element within the content it's generating. Generative AI can produce high-quality text, images and other content based on the data used for training.

IBM Research is working to help its customers use generative models to write high-quality [software code](#) faster, discover [new molecules](#), and train trustworthy [conversational chatbots](#) grounded on enterprise data. The IBM team is even using generative AI to create [synthetic data](#) to build more robust and trustworthy AI models and to stand in for real-world data protected by privacy and copyright laws.

### Deliver new insights

Expert systems can be trained on a corpus—metadata used to train a machine learning model—to emulate the human decision-making process and apply this expertise to solve complex problems. These systems can evaluate vast amounts of data to uncover trends and patterns, and to make decisions. They can also help businesses predict future events and understand why past events occurred.

### Clarify computer vision

AI-powered computer vision enables [image segmentation](#), which has a wide variety of use cases, including aiding diagnosis in

medical imaging, automating locomotion for robotics and self-driving cars, identifying objects of interest in satellite images and photo tagging in social media. Running on [neural networks](#), computer vision enables systems to extract meaningful information from digital images, videos and other visual inputs.

## Technical AI use cases

### Speed operations with AIOps

There are many benefits to using [artificial intelligence for IT operations \(AIOps\)](#). By infusing AI into [IT operations](#), companies can harness the considerable power of NLP, big data, and ML models to automate and streamline operational workflows, and monitor event correlation and causality determination.

[AIOps](#) is one of the fastest ways to boost ROI from digital transformation investments. Process automation is often centered on efforts to optimize spend, achieve greater operational efficiency and incorporate new and innovative technologies, which often translate into a better customer experience. More benefits from AI include building a more sustainable IT system and improving the continuous integration/continuous (CI/CD) delivery pipelines.

### Automate coding and app modernization

Leading companies are now using generative AI for application modernization and enterprise IT operations, including automating coding, deploying and scaling. For coding, developers can input a coding command as a straightforward English sentence through a natural-language interface and get automatically generated [code](#). Using generative AI with code generation capabilities can also enable hybrid cloud developers of all experience levels to migrate and modernize legacy application code at scale, to new target platforms with code consistency, fewer errors, and speed.

### Boost application performance

Ensuring that apps perform consistently and constantly—without overprovisioning and overspending—is a critical [AI operations \(AIOps\)](#) use case. Automation is key to optimizing cloud costs, and IT teams, no matter how skilled they are, don't always have the capacity to continuously determine the exact compute, storage and database configurations needed to deliver performance at the lowest cost. AI software can identify when and how resources are used, and match actual demand in real time.

### Strengthen end-to-end system resilience

To help ensure uninterrupted service availability, leading organizations use real-time [root cause analysis](#) capabilities powered by AI and intelligent automation. AIOps can enable ITOps teams to swiftly identify the underlying causes of incidents and take immediate action to reduce both [mean time between failures \(MTBF\)](#) and mean time to repair (MTTR) incidents.

AIOps platform solutions also consolidate data from multiple sources and correlate events into incidents, granting clear visibility into the entire IT environment through dynamic infrastructure visualizations, integrated AI capabilities and suggested remediation actions.

Using predictive IT management, IT teams can use AI to automate IT and network operations to resolve incidents swiftly and efficiently—and proactively prevent issues before they occur, enhance user experiences and cut the cost of and administrative tasks. To help eliminate tool sprawl, an enterprise-grade AIOps platform can provide a holistic view of IT operations on a central pane of glass for monitoring and management.

### Lock in cybersecurity

There are many ways AI can use ML to deliver improved cybersecurity, including: facial recognition for authentication, fraud detection, antivirus programs to detect and block malware, reinforcement learning to train models that identify and respond to cyberattacks and detect intrusions and classification algorithms that label events as anomalies or phishing attacks.

## Gear up robotics

AI is not just about asking for a haiku written by a cat. Robots handle and move physical objects. In industrial settings [narrow AI](#) can perform routine, repetitive tasks involving materials handling, assembly and quality inspections. AI can assist surgeons by monitoring vitals and detecting potential issues during procedures. Agricultural machines can engage in autonomous pruning, moving, thinning, seeding and spraying. Smart home devices such as the iRobot Roomba can navigate a home's interior using computer vision and use data stored in memory to understand its progress. And if AI can guide a Roomba, it can also direct self-driving cars on the highway and [robots](#) moving merchandise in a distribution center or on patrol for security and safety protocols.

## Clean up with predictive maintenance

AI can be used for [predictive maintenance](#) by analyzing data directly from machinery to identify problems and flag required maintenance. AI has also been used to improve mechanical efficiency and reduce carbon emissions in engines. Maintenance schedules can use AI-powered predictive analytics to create greater efficiencies.

## See what's ahead

AI can assist with [forecasting](#). For example, a supply-chain function can use algorithms to predict future needs and the time products need to be shipped for timely arrival. This can help create new efficiencies, reduce overstocks and help make up for reordering oversights.

## Industry AI use cases

AI can power tasks and tools for almost any industry to boost efficiency and productivity. AI can deliver [intelligent automation](#) to streamline business processes that were manual tasks or run on legacy systems—which can be resource-intensive, costly and prone to human error. Here are some of the industries that are benefiting now from the added power of AI.

### Automotive

With applications of AI, [automotive](#) manufacturers are able to more effectively predict and adjust production to respond to changes in supply and demand. They can streamline workflows to increase efficiency and reduce time-consuming tasks and the risk of error in production, support, procurement and other areas. Robots help reduce the need for manual labor and improve defect discovery, providing higher quality vehicles to customers at a lower cost to the business.

### Education

In [education and training](#), AI can tailor educational materials to each individual student's needs. Teachers and trainers can use AI analytics to see where students might need extra help and attention. For students tempted to plagiarize their papers or homework, AI can help spot the copied content. AI-driven language translation tools and real-time transcription services can help non-native speakers understand the lessons.

### Energy

Companies in the [energy](#) sector can increase their cost competitiveness by harnessing AI and data analytics for demand forecasting, energy conservation, optimization of renewables and smart grid management. By introducing AI into energy generation, transmission and distribution processes, AI can also improve customer support, freeing up resources for innovation. And for customers using supplier-based AI, they can better understand their energy consumption and take steps to reduce their power draw during peak demand periods.

## Financial services

AI-powered [FinOps](#) (Finance + DevOps) helps [financial institutions](#) operationalize data-driven cloud spend decisions to safely balance cost and performance in order to minimize alert fatigue and wasted budget. AI platforms can use machine learning and [deep learning](#) to spot suspicious or anomalous transactions. Banks and other lenders can use ML classification algorithms and predictive models to suggest loan decisions.

Many stock market transactions use ML with decades of stock market data to forecast trends and ultimately suggest whether and when to buy or sell. ML can also conduct algorithmic trading without human intervention. ML algorithms can predict patterns, improve accuracy, lower costs and reduce the risk of human error.

## Healthcare

The [healthcare](#) industry is using intelligent automation with NLP to provide a consistent approach to data analysis, diagnosis and treatment. The use of chatbots in remote healthcare appointments requires less human intervention and often a shorter time to diagnosis.

On-site, ML can be used in radiology imaging, with AI-enabled computer vision often used to analyze mammograms and for early lung cancer screening. ML can also be trained to create treatment plans, classify tumors, find bone fractures and detect neurological disorders.

In genetic research, gene modification and genome sequencing, ML is used to identify how genes impact health. ML can identify genetic markers and genes that will or will not respond to a specific treatment or drug and may cause significant side effects in certain people.

## Insurance

With AI, [insurance](#) providers can virtually eliminate the need for manual rate calculations or payments and can simplify processing claims and appraisals. Intelligent automation also helps insurance companies adhere to compliance regulations more easily by ensuring that requirements are met. This way, they are also able to calculate the risk of an individual or entity and calculate the appropriate insurance rate.

## Manufacturing

Advanced AI with analytics can help [manufacturers](#) create predictive insights on market trends. Generative AI can speed and optimize product design by helping companies create multiple design options. AI can also assist with suggestions for boosting production efficiency. Using historical data of production, generative AI can predict or locate equipment failures in real time—and then suggest equipment adjustments, repair options or needed spare parts.

## Pharmaceuticals

For the [life sciences](#) industry, drug discovery and production require an immense amount of data collection, collation, processing and analysis. A manual approach to development and testing could lead to calculation errors and require a huge volume of

resources. By contrast, the production of Covid-19 vaccines in record time is an example of how intelligent automation enables processes that improve production speed and quality.

## Retail

AI is becoming the secret weapon for [retailers](#) to better understand and cater to increasing consumer demands. With highly personalized online shopping, direct-to-consumer models and delivery services competing with retail, generative AI can help retailers and e-commerce firms improve customer care, plan marketing campaigns, and transform the capabilities of their talent and their applications. AI can even help optimize inventory management.

Generative AI excels at handling diverse data sources such as emails, images, videos, audio files and social media content. This unstructured data forms the backbone for creating models and the ongoing training of generative AI, so it can remain useful over time. Leveraging this unstructured data can extend benefits to various aspects of retail operations, including enhancing customer service through chatbots and facilitating more effective email routing. In practice, this could mean guiding users to the appropriate resources, whether that's connecting them with the right agent or directing them to user guides and FAQs.

## Transportation

AI informs many [transportation](#) systems these days. For instance, Google Maps uses ML algorithms to check current traffic conditions, determine the fastest route, suggest places to “explore nearby” and estimate arrival times.

Ride-sharing applications such as Uber and Lyft use ML to match riders and drivers, set prices, examine traffic and, like Google Maps, analyze real-time traffic conditions to optimize driving routes and estimate arrival times.

Computer vision guides self-driving cars. An unsupervised ML algorithm enables self-driving cars to gather data from cameras and sensors to understand what's happening around them, and enables real-time decision-making.

## Delivering the promise of AI

Much of what AI can do seems miraculous, but much of what gets reported in the general media is frivolous fun or just plain scary. What is now available to business is a remarkably powerful tool that can help many industries and functions make great strides. The companies that do not explore and adopt the most beneficial AI use cases will soon be at a severe competitive disadvantage. Keeping an eye out for the most useful AI tools, such as IBM® watsonx.ai™, and mastering them now will pay great dividends.

Explore IBM® watsonx.ai™ 

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