Everyday Examples of Artificial Intelligence and Machine Learning

With all the excitement and hype about AI that's "just around the corner"—self-driving cars, instant machine translation, etc.—it can be difficult to see how AI is affecting the lives of regular people from moment to moment. What are examples of artificial intelligence that you're already using—right now?

At Emerj, the AI Research and Advisory Company, we work with ambitious enterprise leaders to develop powerful AI strategies and find high-ROI AI projects. While this often implies examining the AI initiatives of their peers, new AI use-cases and application ideas can come from consumer technologies as well – and that's the focus of this article.

In the process of navigating to these words on your screen, you almost certainly used AI. You've also likely used AI on your way to work, communicating online with friends, searching on the web, and making online purchases.

We distinguish between AI and machine learning (ML) throughout this article when appropriate. At Emerj, we've developed concrete definitions of both artificial intelligence andmachine learning based on a panel of expert feedback. To simplify the discussion, think of AI as the broader goal of autonomous machine intelligence, and machine learning as the specific scientific methods currently in vogue for building AI. All machine learning is AI, but not all AI is machine learning.

Our enumerated examples of AI are divided into Work & School and Home applications, though there's plenty of room for overlap. Each example is accompanied with a "glimpse into the future" that illustrates how AI will continue to transform our daily lives in the near future.

Examples of Artificial Intelligence: Work & School

Commuting

According to a 2015 report by the *Texas Transportation Institut*e at Texas A&M University, commute times in the US have been steadily climbing year-over-year, resulting in 42 hours of rush-hour traffic delay per commuter in 2014—more than a full work week per year, with an estimated $160 billion in lost productivity. Clearly, there's massive opportunity here for AI to create a tangible, visible impact in every person's life.

Reducing commute times is no simple problem to solve. A single trip may involve multiple modes of transportation (i.e. driving to a train station, riding the train to the optimal stop, and then walking or using a ride-share service from that stop to the final destination), not to mention the expected and the unexpected: construction; accidents; road or track maintenance; and weather conditions can constrict traffic flow with little to no notice. Furthermore, long-term trends may not match historical data, depending on the changes in population count and

demographics, local economics, and zoning policies. Here's how AI is already helping to tackle the complexities of transportation.

1 – Google's AI-Powered Predictions

Using anonymized location data from smartphones, Google Maps (Maps) can analyze the speed of movement of traffic at any given time. And, with its acquisition of crowdsourced traffic app Waze in 2013, Maps can more easily incorporate user-reported traffic incidents like construction and accidents. Access to vast amounts of data being fed to its proprietary algorithms means Maps can reduce commutes by suggesting the fastest routes to and from work.

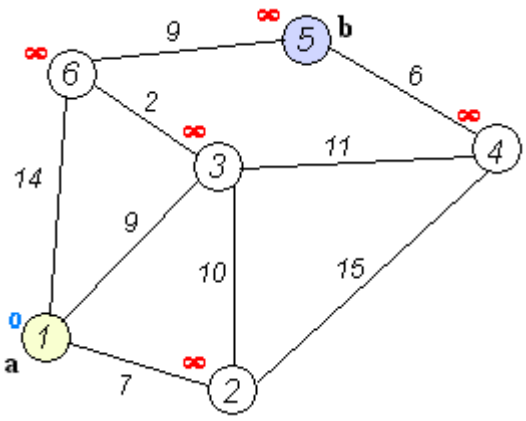


Image: Dijkstra's algorithm (Motherboard)

2 – Ridesharing Apps Like Uber and Lyft

How do they determine the price of your ride? How do they minimize the wait time once you hail a car? How do these services optimally match you with other passengers to minimize detours? The answer to all these questions is ML.

Engineering Lead for Uber ATC Jeff Schneider discussed in an NPR interview how the company uses ML to predict rider demand to ensure that "surge pricing"(short periods of sharp price increases to decrease rider demand and increase driver supply) will soon no longer be necessary. Uber's Head of Machine Learning Danny Lange confirmed Uber's use of machine learning for ETAs for rides, estimated meal delivery times on UberEATS, computing optimal pickup locations, as well as for fraud detection.

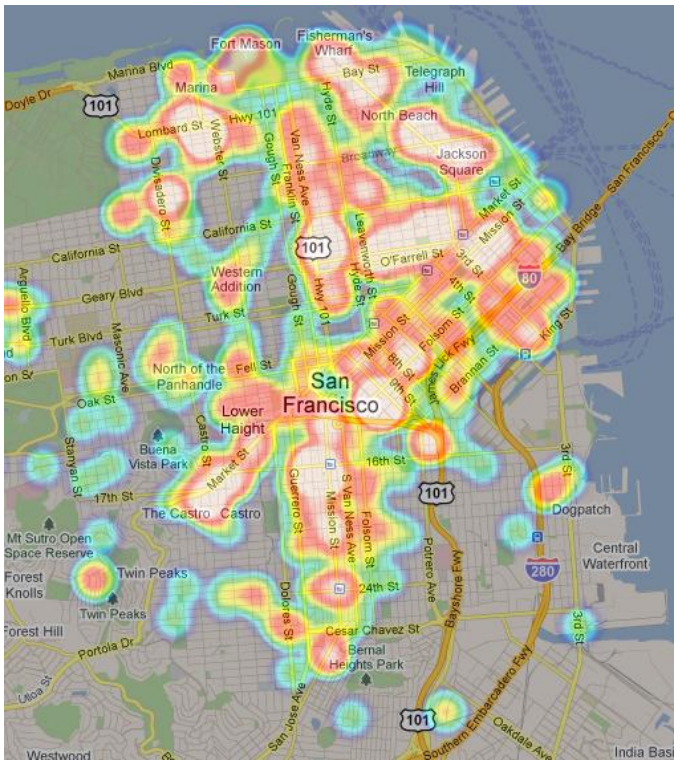


Image: Uber heat map (Wired)

3 — Commercial Flights Use an AI Autopilot

AI autopilots in commercial airlines is a surprisingly early use of AI technology that dates as far back as 1914, depending on how loosely you define autopilot. The *New York Times* reports that the average flight of a Boeing plane involves only seven minutes of human-steered flight, which is typically reserved only for takeoff and landing.

Glimpse into the future

In the future, AI will shorten your commute even further via self-driving cars that result in up to 90% fewer accidents, more efficient ride sharing to reduce the number of cars on the road by up to 75%, and smart traffic lights that reduce wait times by 40% and overall travel time by 26% in a pilot study.

The timeline for some of these changes is unclear, as predictions vary about when self-driving cars will become a reality: *BI Intelligence* predicts fully-autonomous vehicles will debut in 2019; Uber CEO Travis Kalanick says the timeline for self-driving cars is "a years thing, not a decades thing"; Andrew Ng, Chief Scientist at Baidu and Stanford faculty member, predicted in early 2016 that self-driving cars will be mass produced by 2021. On the other hand, *The Wall Street Journa*l interviewed several experts who say fully autonomous vehicles are decades away. Emerjalso discussed the timeline for a self-driving car with Eran Shir, CEO of AI-powered dashcam app Nexar, who believes virtual chauffeurs are closer than we think.

Email

1 – Spam Filters

Your email inbox seems like an unlikely place for AI, but the technology is largely powering one of its most important features: the spam filter. Simple rules-based filters (i.e. "filter out messages with the words 'online pharmacy' and 'Nigerian prince' that come from unknown addresses") aren't effective against spam, because spammers can quickly update their messages to work around them. Instead, spam filters must continuously *learn* from a variety of signals, such as the words in the message, message metadata (where it's sent from, who sent it, etc.).

It must further personalize its results based on your own definition of what constitutes spam—perhaps that daily deals email that you consider spam is a welcome sight in the inboxes of others. Through the use of machine learning algorithms, Gmail successfully filters 99.9% of spam.

2 – Smart Email Categorization

Gmail uses a similar approach to categorize your emails into primary, social, and promotion inboxes, as well as labeling emails as important. In a research paper titled, "The Learning Behind Gmail Priority Inbox", Google outlines its machine learning approach and notes "a huge variation between user preferences for volume of important mail…Thus, we need some manual intervention from users to tune their threshold. When a user marks messages in a consistent direction, we perform a real-time increment to their threshold." Every time you mark an email as important, Gmail learns. The researchers tested the effectiveness of Priority Inbox on Google employees and found that those with Priority Inbox "spent 6% less time reading email overall, and 13% less time reading unimportant email."

Glimpse into the future

Can your inbox reply to emails for you? Google thinks so, which is why it introduced smart reply toInbox in 2015, a next-generation email interface. Smart reply uses machine learning to automatically suggest three different brief (but customized) responses to answer the email. As of early 2016, 10% of mobile Inbox users' emails were sent via smart reply. In the near future, smart reply will be able to provide increasingly complex responses. Google has already demonstrated its intentions in this area withAllo, a new instant messaging app which can use smart reply to provide both text and emoji responses.

Grading and Assessment

1 –Plagiarism Checkers

Many high school and college students are familiar with services like *Turnitin*, a popular tool used by instructors to analyze students' writing for plagiarism. While *Turnitin* doesn't reveal precisely how it detects plagiarism, research demonstrates how ML can be used to develop a plagiarism detector.

Historically, plagiarism detection for regular text (essays, books, etc.) relies on a having a massive database of reference materials to compare to the student text; however, ML can help

detect the plagiarizing of sources that are not located within the database, such as sources in foreign languages or older sources that have not been digitized. For instance, two researchers used ML to predict, with 87% accuracy, when source code had been plagiarized. They looked at a variety of stylistic factors that could be unique to each programmer, such as average length of line of code, how much each line was indented, how frequent code comments were, and so on.

The algorithmic key to plagiarism is the similarity function, which outputs a numeric estimate of how similar two documents are. An optimal similarity function not only is accurate in determining whether two documents are similar, but also efficient in doing so. A brute force search comparing every string of text to every other string of text in a document database will have a high accuracy, but be far too computationally expensive to use in practice. One MIT paper highlights the possibility of using machine learning to optimize this algorithm. The optimal approach will most likely involve a combination of man and machine. Instead of reviewing every single paper for plagiarism or blindly trusting an AI-powered plagiarism detector, an instructor can manually review any papers flagged by the algorithm while ignoring the rest.

2 –Robo-readers

Essay grading is very labor intensive, which has encouraged researchers and companies to build essay-grading AIs. While their adoption varies among classes and educational institutions, it's likely that you (or a student you know) has interacted with these "robo-readers' in some way. The Graduate Record Exam (GRE), the primary test used for graduate school, grades essays using one human reader and one robo-reader called *e-Rater*. If the scores differ substantially, a second human reader is brought in to settle the discrepancy. This addresses the primary concern with robo-readers: if students can deduce the heuristics *e-Rater's* use for determining their grade, they could easily exploit them to write nonsensical essays that would still score highly. This hybrid approach contrasts with how the ETS handles the SAT, where two human graders evaluate essays and a third is brought in if the scores differ substantially between the two humans. The synergistic approach in the former shows that by pairing human intelligence with artificial intelligence, the overall grading system costs less and accomplishes more.

Glimpse into the future

There are many promising avenues for AI to improve education in the future. One-size-fits-all classes may be replaced by personalized, adaptive learning that is tailored to each student's individual strength and weaknesses. ML may also be used to identify at-risk students early on so that schools can focus extra resources on those students and decrease dropout rates.

Banking/Personal Finance

One of Emerj's most popular guides is on machine learning in finance. While the guide discusses machine learning in an industry context, your regular, everyday financial transactions are also heavily reliant on machine learning.

1 – Mobile Check Deposits

Most large banks offer the ability to deposit checks through a smartphone app, eliminating a need for customers to physically deliver a check to the bank. According to a 2014 SEC filing, the vast majority of major banks rely on technology developed by Mitek, which uses AI and ML to decipher and convert handwriting on checks into text via OCR.

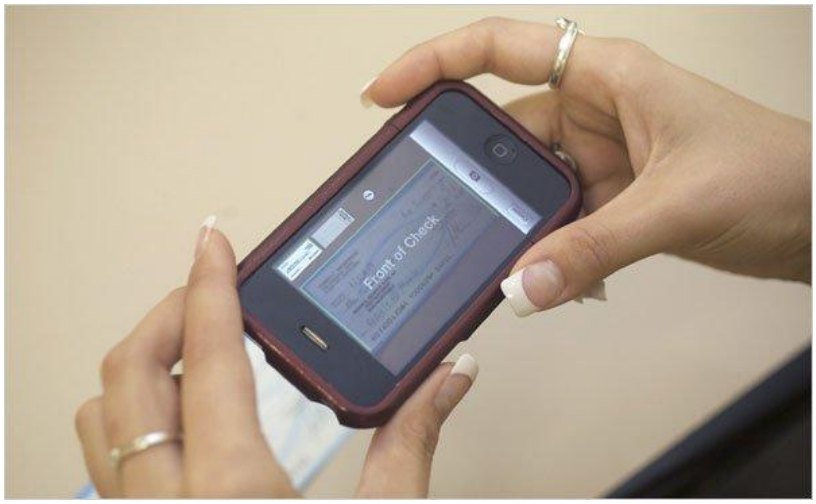


Image: Mobile deposit (The New York Times)

2 – Fraud Prevention

How can a financial institution determine if a transaction is fraudulent? In most cases, the daily transaction volume is far too high for humans to manually review each transaction. Instead, AI is used to create systems that learn what types of transactions are fraudulent. FICO, the company that creates the well-known credit ratings used to determine creditworthiness, uses neural networks to predict fraudulent transactions. Factors that may affect the neural network's final output include recent frequency of transactions, transaction size, and the kind of retailer involved.

3 – Credit Decisions

Whenever you apply for a loan or credit card, the financial institution must quickly determine whether to accept your application and if so, what specific terms (interest rate, credit line amount, etc.) to offer. FICO uses ML both in developing your FICO score, which most banks use to make credit decisions, and in determining the specific risk assessment for individual customers. MIT researchers found that machine learning could be used to reduce a bank's losses on delinquent customers by up to 25%.

Glimpse into the future

Can a robot give you sound investing advice? That's the premise behind upstarts like Wealthfront and Betterment, which attempt to automate the best practices of seasoned investors and offer them to customers at a much lower cost than traditional fund managers. In early 2016, Wealthfront announced it was taking an AI-first approach, promising "an advice

engine rooted in artificial intelligence and modern APIs, an engine that we believe will deliver more relevant and personalized advice than ever before." While there is no data on the long-term performance of robo-advisors (Betterment was founded in 2008, Wealthfront in 2011), they will become the norm for regular people looking to invest their savings. This is already happening with younger people—in the above announcement, Wealthfront notes that 60% of its customers are under the age of 35.

Examples of Artificial Intelligence: Home

Social Networking
1 – Facebook

When you upload photos to Facebook, the service automatically highlights faces and suggests friends To tag. How can it instantly identify which of your friends is in the photo? Facebook uses AI to recognize faces. In a short video highlighting their AI research (below), Facebook discusses the use of artificial neural networks—ML algorithms that mimic the structure of the human brain—to power facial recognition software. The company has invested heavily in this area not only within Facebook, but also through the acquisitions of facial-recognition startups like Face.com, which Facebook acquired in 2012 for a rumored $60M, Masquerade (2016, undisclosed sum), and Faciometrics (2016, undisclosed sum).

Image: Facebook's facial recognition (Huffington Post)

Facebook also uses AI to personalize your newsfeed and ensure you're seeing posts that interest you, as discussed in an Emerj interview with Facebook's Hussein Mehanna. And, of particular business interest to Facebook is showing ads that are relevant to your interests. Better targeted ads mean you're more likely to click them and buy something from the advertisers—and when you do, Facebook gets paid. In the first quarter of 2016, Facebook and Google secured a total of 85% of the online ad market—precisely because of deeply-targeted advertisements.

In June 2016, Facebook announced a new AI initiative: DeepText, a text understanding engine that, the company claims "can understand with near-human accuracy the textual content of several thousand posts per second, spanning more than 20 languages." DeepText is used in Facebook Messenger to detect intent—for instance, by allowing you to hail an Uber from within the app when you message "I need a ride" but not when you say, "I like to ride donkeys." DeepText is also used for automating the removal of spam, helping popular public figures sort through the millions of comments on their posts to see those most relevant, identify for sale posts

automatically and extract relevant information, and identify and surface content in which you might be interested.

2 – Pinterest

Pinterest uses computer vision, an application of AI where computers are taught to "see," in order to automatically identify objects in images (or "pins") and then recommend visually similar pins. Other applications of machine learning at Pinterest include spam prevention, search and discovery, ad performance and monetization, and email marketing.

3 – Instagram

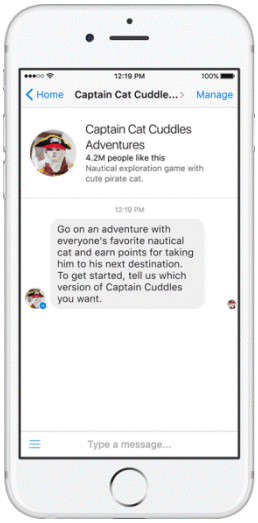
Instagram, which Facebook acquired in 2012, uses machine learning to identify the contextual meaning of emoji, which have been steadily replacing slang (for instance, a laughing emoji could replace "lol"). By algorithmically identifying the sentiments behind emojis, Instagram can create and auto-suggest emojis and emoji hashtags. This may seem like a trivial application of AI, but Instagram has seen a massive increase in emoji use among all demographics, and being able to interpret and analyze it at large scale via this emoji-to-text translation sets the basis for further analysis on how people use Instagram.

4 – Snapchat

Snapchat introduced facial filters, called Lenses, in 2015. These filters track facial movements, allowing users to add animated effects or digital masks that adjust when their faces moved. This technology is powered by the 2015 acquisition of Looksery (for a rumored $150 million), a Ukranian company with patents on using machine learning to track movements in video.

Glimpse into the future

Facebook is betting that the future of messaging will involve conversing with AI chatbots. In early 2015, it acquired Wit.ai, an engine that allows developers to create bots that easily integrate natural language processing into their software. A few months later, it opened its messenger platform to developers, allowing anyone to build a chatbot and integrate Wit.ai's bot training capability to more easily create conversational bots. Slack, a social messaging tool typically used in the workplace, also allows third parties to incorporate AI-powered chatbots and has even invested in companies that make them. Soon, your shopping, errands, and day-to-day tasks may be completed within a conversation with an AI chatbot on your favorite social network.



GIF: Facebook-hosted chatbot (VentureBeat)

Online Shopping
1 –Search

Your Amazon searches ("ironing board", "pizza stone", "Android charger", etc.) quickly return a list of the most relevant products related to your search. Amazon doesn't reveal exactly how its doing this, but in a description of its product search technology, Amazon notes that its algorithms "automatically learn to combine multiple relevance features. Our catalog's structured data provides us with many such relevance features and we learn from past search patterns and adapt to what is important to our customers."

2 –Recommendations

You see recommendations for products you're interested in as "customers who viewed this item also viewed" and "customers who bought this item also bought", as well as via personalized recommendations on the home page, bottom of item pages, and through email. Amazon uses artificial neural networks to generate these product recommendations.

While Amazon doesn't reveal what proportion of its sales come from recommendations, research has shown that recommenders increase sales (in this linked study, by 5.9%, but in other studies recommenders have shown up to a 30% increase in sales) and that a product recommendation carries the same sales weight as a two-star increase in average rating (on a five-star scale).

3 – (More) Fraud Protection

Machine learning is used for fraud prevention in online credit card transactions. Fraud is the primary reason for online payment processing being more costly for merchants than in-person transactions. Square, a credit card processor popular among small businesses, charges 2.75% for card-present transactions, compared to 3.5% + 15 cents for card-absent transactions. AI is

deployed to not only prevent fraudulent transactions, but also minimize the number of legitimate transactions declined due to being falsely identified as fraudulent.

In a press release announcing the rollout of its AI technology, MasterCard noted that 13 times more revenue is lost to false declines than to fraud. By utilizing AI that can learn your purchasing habits, credit card processors minimize the probability of falsely declining your card while maximizing the probability of preventing somebody else from fraudulently charging it.

Glimpse into the future

The key to online shopping has been personalization; online retailers increase revenue by helping you find and buy the products you're interested in. We may soon see retailers take it one step further and design your entire experience individually for you. Google already does this with search, even with users who are logged out, so this is well within the realm of possibility for retailers. Startups likeLiftIgniter offer "personalization as a service" to online businesses. Others, like Optimizely, allow businesses to run extensive "A/B tests", where businesses can run multiple versions of their sites simultaneously to determine which results in the most engaged users.

Mobile Use
1 –Voice-to-Text

A standard feature on smartphones today is voice-to-text. By pressing a button or saying a particular phrase ("Ok Google", for example), you can start speaking and your phone converts the audio into text. Nowadays, this is a relatively routine task, but for many years, accurate automated transcription was beyond the abilities of even the most advanced computers. Google uses artificial neural networks to power voice search. Microsoft claims to have developed a speech-recognition system that can transcribe conversation slightly more accurately than humans.

2 – Smart Personal Assistants

Now that voice-to-text technology is accurate enough to rely on for basic conversation, it has become the control interface for a new generation of smart personal assistants. The first iteration were simpler phone assistants like Siri and Google Now (now succeeded by the more sophisticated Google Assistant), which could perform internet searches, set reminders, and integrate with your calendar.

Amazon expanded upon this model with the announcement of complimentary hardware and software components:

- Alexa, an AI-powered personal assistant that accepts voice commands to create to-do lists, order items online, set reminders, and answer questions (via internet searches)

- Echo (and later, Dot) smart speakers that allow you to integrate Alexa into your living room and use voice commands to ask natural language questions, play music, order pizza, hail an Uber, and integrate with smart home devices.

Microsoft has followed suit with Cortana, its own AI assistant that comes pre-loaded on Windows computers and Microsoft smartphones.

Glimpse into the future

Smart assistants will be the key to bridging the gap between humans and "smart" homes. In October 2016, Google announced Google Home—its competitor to Amazon Echo that features deep integration with other Google products, like YouTube, Google Play Music, Nest, and Google Assistant. Through voice commands, users can play music; ask natural language questions; receive sports, news, and finance updates; call an Uber; and make appointments and reminders. According to market research firm *Consumer Intelligence Research Partners*, Amazon has sold over 5 million Echo devices as of November 2016; however, a month later Amazon's press release boasted a 9x increase in Echo family sales over the previous year's holiday sales, suggesting that 5 million sold is a significant underestimate. AI-assistants, while still not used by the majority of Americans, are rapidly spilling over into the mainstream.

Facebook CEO Mark Zuckerberg showed what's currently possible by spending a year building Jarvis, an imitation of the super-intelligent AI assistant in Robert Downey Jr.'s *Iron Man* films. In a Facebook post, he outlines connecting the myriad of home devices to one network; teaching Jarvis his preferences so it could play music and recognize friends at the door and let them in; building a Facebook messenger bot for Jarvis to issue text commands; and creating an iOS speech recognition app to issue voice commands.

The primary limitation for Zuckerberg, a billionaire with daily access to the world's best engineers, was not technology, but rather having devices that could easily communicate with each other and Jarvis in a central, unified system. This suggests that if Google or Amazon is successful in integrating their smart speakers with many other home devices (or proprietary versions), that Jarvis-like home AI would be available to anyone in the next five years.

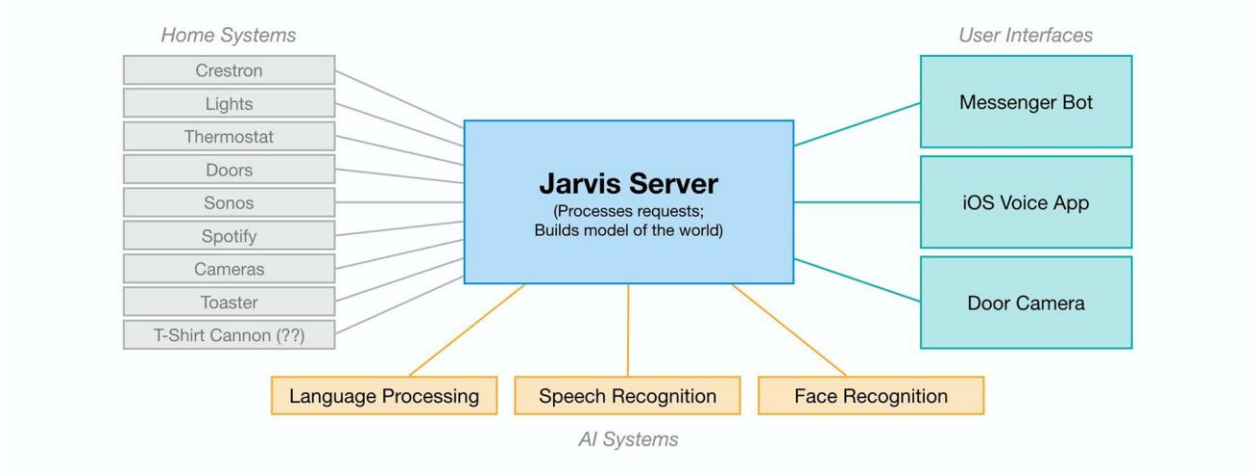


Image: Mark Zuckerberg's Jarvis

Wrap Up

We've only scratched the surface of examples of AI and ML in day-to-day life. Specific industries and hobbies have habitual interaction with AI far beyond what's explored in this article. For example, casual chess players regularly use AI powered chess engines to analyze their games and practice tactics, and bloggers often use mailing-list services that use ML to optimize reader engagement and open-rates.

How will AI affect daily life on a grand scale in the near future? Futurist and *Wired* magazine co-founder Kevin Kelly predicts that, as AI becomes more deeply integrated in our lives, it will become the new infrastructure powering a second industrial revolution.

Emerj for Enterprise Leaders

Many of the AI capabilities listed in this article have strong use-cases in business. At Emerj, we help business leaders discover where AI fits at their companies through our AI Opportunity Landscapes. Clients use AI Opportunity Landscapes to pick high ROI AI projects that allow them to keep up with their competitors and win market share. Contact us to find out where your company can take advantage of AI capabilities like machine vision, chatbots, and predictive analytics.

Applications of AI – Real Life Use Cases in Different Sectors

AI Applications – Artificial Intelligence in real world!

You must be aware of how AI is revolutionizing the way we live and get things done. It learns, reasons and does self-correction. Since it has become a master with its applications, we, in this article will understand that how it is advancing dramatically.

Starting with the identifying pattern, it has made data more efficient. In today's time, to gain more insight out of the data, businesses have changed a lot in the course of time. Humongous data is getting analyzed to map poverty and climate change. The automation in agricultural practices and irrigation is happening at a fast pace. How can I forget the healthcare sector and predictions of consumption patterns, streamline energy-usage and waste-management?

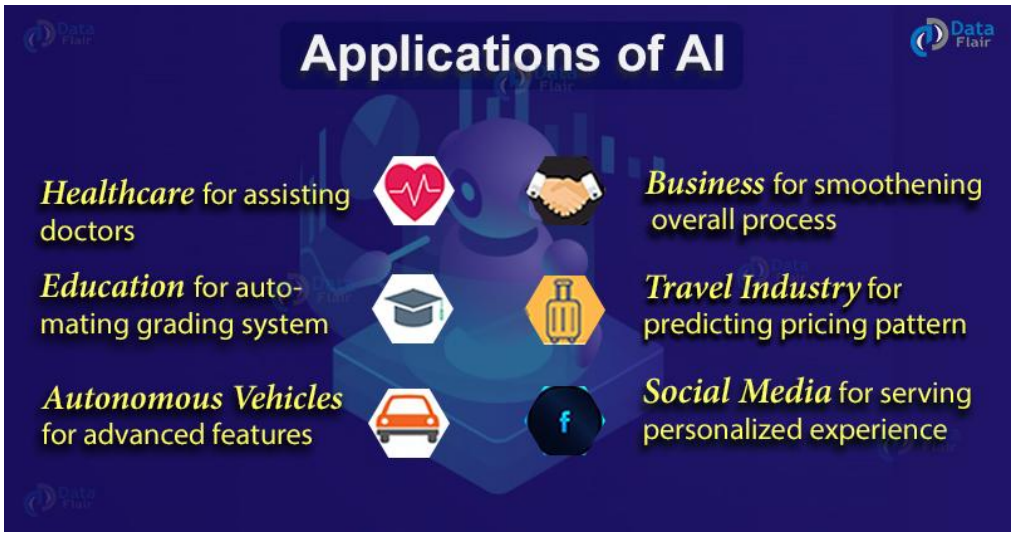
It all started with knowledge reasoning:

- Planning
- Machine Learning
- Natural Language Processing
- Computer Vision
- Robotics
- Artificial General Intelligence

Following the reasoning process, humans were able to land themselves into something artificial. This intelligence is the simulation of human intelligence processes which is done by machines, especially computer systems. These processes include learning, reasoning, and self-correction. Its applications consist of expert systems, speech recognition, and machine vision. Artificial Intelligence is advancing dramatically. It is already transforming our world socially, economically and politically.

Applications of AI

Here are the applications of AI in various sectors:



1. Artificial Intelligence in Healthcare

This is the most important thing that humans need in today's generation. Health is wealth, and the rate at which humans are compromising on it is really shocking.

With AI, natural language is a boon. It helps to respond to the questions that are asked for. It enables workflow assistants which help the doctors to free up their schedules and also reduce the time and cost by streamlining processes. They also open new avenues for the industry. With that, AI-powered technology helps pathologists in analyzing samples of tissue and help the diagnosis to be more accurate.

1. It helps to support decision making and research.
2. Help to integrate activities in medical, software and cognitive sciences.
3. Help to offer a content-rich discipline for the future scientific medical communities.

2. Artificial Intelligence in Business

A business heavily relies on real-time reporting, accuracy, and processing of large volumes of quantitative data to make crucial decisions. With this efficiency and effectiveness of a business, it is quickly able to implement machine learning. The adaptive intelligence, chatbots, automation helps to smoothen out the business process.

Let's take an example of the Help Desk. AI there is used in online help centers. If you've visited a website, you must have seen that the chat window pops up. You can then ask questions there directly and they revert to your problem or query in no time.

This happens with the help of robotic process automation. This thus reduces the repetitive tasks that are normally performed by humans. The algorithms are integrated into analytics and CRM (Customer relationship management) platforms, that uncover information on how to better serve the customers.

3. Artificial Intelligence in Education

Checking made easy:
It must be very tedious for a teacher to grade homework and tests for large lecture courses. A significant amount of time is consumed to interact with students, to prepare for class, or work on professional development. But, this will not be the case anymore.

Though it can never replace human work, it is pretty close to it. So, with the automated grading system checking multiple-choice questions, fill-in-the-blank testing and automated grading of students can be done in a jiffy.

It can tell the areas, where there is a need for improvement –

A lot of times, it happens that the teachers may not be aware of the gaps that a student might face in the lectures and educational materials. This can leave students confused about certain concepts. With AI, the system alerts the teacher and tell what is wrong. It gives students a customized message which offers hints to the correct answer.

This thus helps to fill in the gaps in explanation that might occur in courses. It also ensures that students are building the same conceptual foundation.

4. Artificial Intelligence in Autonomous Vehicles

Long-range radar, cameras, and LIDAR, a lot of advancement has been made in the autonomous vehicle segment. These technologies are used in different capacities and each of them collects different pieces of information. The information is of no use unless it is processed and any form of insights can't be derived.

This is where artificial intelligence is used and where it can be compared to the human brain. Some of its usage in autonomous vehicles are:

- Directing the car to the gas station or recharge station when it is running low on fuel.
- Adjust the trip's directions based on known traffic conditions to find the quickest route.
- Incorporate speech recognition for advanced communication with passengers.
- Natural language interfaces and virtual assistance technologies.

5. Artificial Intelligence in Social Media

Instagram, Snapchat, Facebook, Twitter, the world today is changing and everyone is using these social media apps to stay connected with the virtual world. But, are you aware of the fact that a majority of your decisions are being influenced by artificial intelligence.
Starting from notifications, to upgradations, everything is curated by AI. It considers all the past web searches, behaviors, interactions, and much more. So, while you visit these websites, your data is being stored and analyzed and thus you are served with a personalized experience.

6. Artificial Intelligence for a Better World

Many people say that technology is snatching away their jobs and with the machine, there is no need for humans. But, do you know that it is these machines that are making the world a better place to live in.

It is this AI, that is helping us to prevent future damage. It understands the needs and addresses developmental needs while focusing on sustainability.

Do you know that companies like Microsoft are using AI to study land-use patterns with terrain maps? By understanding these patterns in-depth, better decisions related to land are taken. This is helping in implementing proper preservation techniques. Scientists are using the information obtained to preserve biodiversity and the ecosystem.

7. Artificial Intelligence in Tourism

Travel around with AI. Right time! Right Price!

Competition in the travel and tourism industry is very high. You must have seen that prices keep on fluctuating and change often.

You might have also booked a flight ticket in advance or have waited just before the departure date to find cheaper tickets. Everyone does that, but the struggle is minimized with AI.

With predictive analytics driven by artificial intelligence, the price can be predicted. The application is able to predict price patterns and alert travelers when to buy the tickets. So, the cheapest rate can be known before you book the flights to your destination.

The price trend is analyzed on the basis of the recorded data on each route. So, you get notifications of when to book your flight. Book it at the right time and at the right price and say thanks to artificial intelligence.

Types of Artificial Intelligence

Now, in the applications of AI article, we will discuss the types of artificial intelligence. This vast is classified in several ways and will help you to get better clarity.

1. Weak AI

Weak AI is also known as narrow AI. It is an AI system that is designed and trained for a specific type of task. **For example** – Siri and Alexa are weak AI. This categorization happens with the help of unsupervised programming.
It is because they already have programmed responses and therefore they classify things accordingly. So, observe carefully when you ask Alexa to play a song. The algorithm will respond by playing a song, but it is only responding to its programming.

2. Strong AI

Strong AI is more like the human brain and is also known as **artificial general intelligence**. It has cognitive abilities that help to perform unfamiliar tasks and commands. It can find the solution to a problem and works beyond a preprogrammed algorithm.
Visual perception, speech recognition, decision making, and translations between languages, are all examples of strong AI.

Further, Artificial Intelligence is categorized into **four types based on functionality**, and these are as follows:

1. Reactive Machines

Reactive machines use past experiences to determine future actions. They don't refer to past experiences, and cannot improve with practice. Reactive machines simply perceive the world and react to it. They have no memory and cannot use past experiences to inform future ones.

2. Limited Memory

Limited memory machines retain data for a short period of time and use data for a specific period of time. They cannot add it to a library of their experiences. Their decision-making functions are generally used in autonomous vehicles. Like a lot of self-driving cars use **Limited Memory technology** and store data such as the *recent speed of nearby cars, the distance of such cars, the speed limit,* and *other information that can help them navigate roads*.

3. Theory of Mind

Theory of mind is all about imitating the mental models, that is, the human brain. It forms representations about the world, starting from thoughts, emotions, memories. This kind of artificial intelligence is the future and doesn't exist as of now.

4. Self-awareness

Self-awareness in machines is when they understand the current state and can use the information to infer what others are feeling. This type of AI does not yet exist but will be there in the near future.

Summary

This was all in the applications of AI article. There is no second thought in saying that in the future, predictive analytics and artificial intelligence will play an even more fundamental role in content creation and also in the software fields. With the open-source information and artificial intelligence, opportunities across the globe are present. The global technological parity and the technology of artificial can become the future in all the domains of health, environment, public safety, and security.

Pros and Cons of Artificial Intelligence – A Threat or a Blessing?

Artificial Intelligence Pros and Cons

Everything in excess is dangerous and so is the case with Artificial Intelligence. It is the science and engineering of making intelligent machines, that makes it significant. With the simulation of human intelligence, processes by machines that are especially computer systems include learning the acquisition of information and rules for using it. The reasoning uses rules to reach approximate or definite conclusions and self-correction.

Email Filters to Smart Replies

LinkedIn, Pinterest, Chatbots to Facebook Proactive Detection

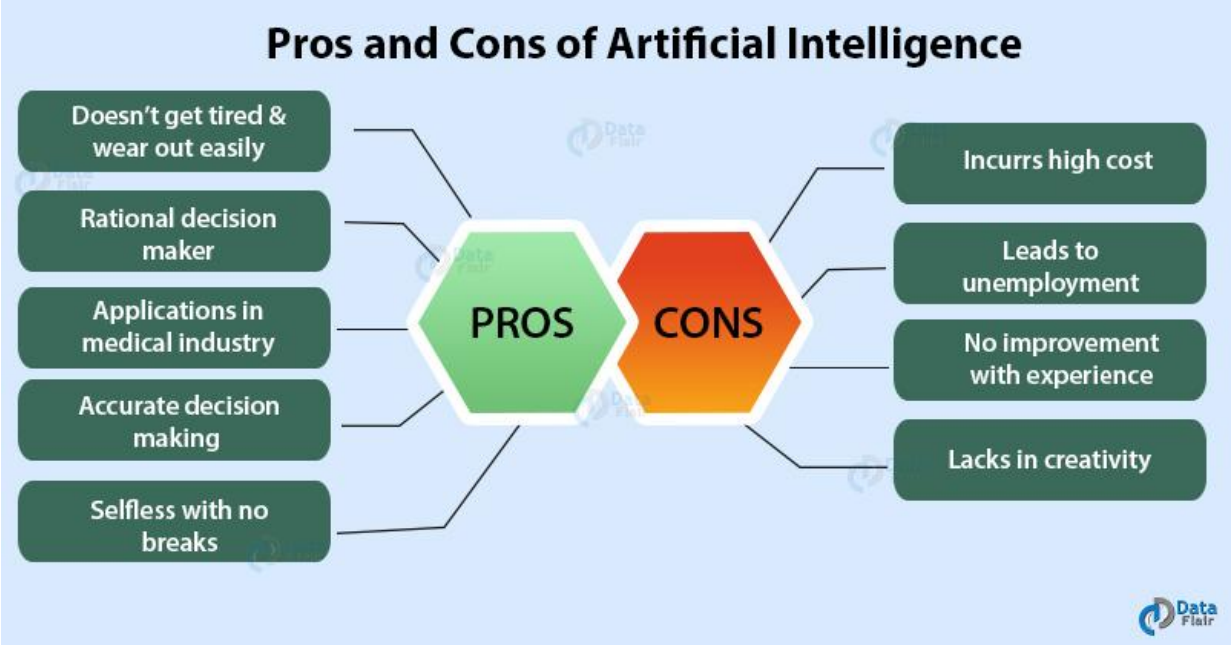
Google Predictive Searches to Google's Algorithm

Product Recommendations, Music Recommendations to Maps and Directions

Mobile Banking, Ride-sharing Apps to Financial Institutions Fraud Prevention everything is functioning smoothly because of AI.

There is no doubt in saying that technology is an essential part of the development and growth of humans. A thin line or mistake leads to disruption or destruction.

Artificial Intelligence Pros and Cons



Below are the advantages and disadvantages of artificial intelligence in detail:

Advantages of Artificial Intelligence

1. To 'err' is human, so why not use AI?

Machine take decision based on previous data records. With algorithms, the chances of errors are reduced. This is an achievement, as solving complex problems require difficult calculation that can be done without any error. Business organizations use digital assistants to interact with their users, this helps them to save an ample amount of time. The demand for user's businesses is fulfilled and thus they don't have to wait. They are programmed to give the best possible assistance to a user.

For example – Heard of Mars Orbiter Mission, or the movie Mission Mangal, which is based on it? How are they reaching to such great heights? The first reason being the human brain and the second being artificial intelligence. There is no room for error with artificial intelligence. The robots are fed with information that is sent to explore space. Metal bodies have more resistant and a great ability to endure the space and hostile atmosphere. They are created and used in such a way that they cannot be modified or get disfigured or breakdown in a hostile environment.

2. AI doesn't get tired and wear out easily

Artificial Intelligence and the science of robotics is used in mining and other fuel exploration processes. These complex machines help to explore the ocean floor and overcome human limitations. Due to the programming of the robots, they can perform a more laborious task with extra hard work and with greater responsibility. Moreover, they do not wear out easily.

3. Digital assistance helps in day to day chores

Siri listens to us and performs the task in one tap. GPS helps you to travel the world. How can I forget the basic necessity? Food, clothing, shelter, and smartphone. They are the ones that predict what we are going to type, in short, they know us better than anyone. The best is the autocorrect feature, it understands what you are trying to say and present you the sentence in the best way possible. Have you observed that while you post a picture on social media, you tag people, but the machine automatically detects the person's face and tags that individuals? Same is when you work on Google Photos. Automatically, a folder is created of the people with the help of their faces. Artificial Intelligence is widely employed by financial institutions and banking institutions because it helps to organize and manage data. Also, detection of fraud uses artificial intelligence in a smart card-based system.

4. Rational decision maker

Logic above all! Highly advanced organizations have digital assistants which help them to interact with the users and save the need for human resources.

Right program decisions can be taken if they are worked upon rationally. But, with humans, emotions come along. When artificial thinkers, there is no distraction at all. They don't have an emotional side, and that makes robots think logically. Emotions are not associated with them and therefore the mood doesn't hamper the efficiency. Thus they are always productive.

5. Repetitive jobs

The same old task, a task that doesn't add value is of no use. Also, repetitive jobs are monotonous in nature and can be carried out with the help of machine intelligence. Machines think faster than humans and can perform various functions at the same time. It can be employed to carry out dangerous tasks and its parameters are adjusted. This is not possible with humans as their speed and time can't be calculated on the basis of parameters.

6. Medical applications

This is the best thing that artificial intelligence has done to humans. It's said that time and tide waits for none but, with medical applications of artificial intelligence, a wide scope application is present. Doctors assess patients and their health risks with the help of artificial machine intelligence. The applications help to educate the machine about the side effects of various medicines. Nowadays, medical professionals are trained with artificial surgery simulators. It uses application which helps in detecting and monitoring neurological disorders and stimulate the brain functions. This also helps in the radiosurgery. Radiosurgery is used in operating tumors and help in the operation without damaging the surrounding tissues.

7. Tireless, selfless and with no breaks

A machine doesn't require breaks like the way humans do. They are programmed for long hours and can continuously perform without getting bored or distracted. The machine does not get tired, even if it has to work for consecutive hours. This is a major benefit over humans, who need a rest from time to time to be efficient. However, in the case of machines, their efficiency is not affected by any external factor and it does not get in the way of continuous work.

8. Right decision making

The complete absence of emotions from a machine makes it more efficient as they are able to make the right decisions in a short span of time. The best example of this is its usage in healthcare. The integration of AI tools in the healthcare sector has improved the efficiency of treatments by minimizing the risk of false diagnosis.

9. Implementing AI in risky situations

Human safety is taken care of by machines. Safety is vulnerable and with machines that are fitted with predefined algorithms, this can be used. Scientists use complex machines to study the ocean floor where human survival becomes difficult. This is the level of AI. It reaches the place where humans can't reach. Thus, helps to solve issues in a jiffy.

Disadvantages of Artificial Intelligence

As it is always said, every coin has two sides and so does AI.

1. High cost

It's true that AI comes with a high cost, but there is no such thing as a free lunch too. It requires huge costs as it is a complex machine. Apart from the installation cost, its repair and maintenance also require huge costs. The software programs need frequent upgradation and cater to the needs of the changing environment.

Also, if there is a breakdown, the cost of procurement is very high. With that, recovery requires huge time too.

2. No human replication

No matter how smart a machine becomes, it can never replicate a human. Machines are rational but, very inhuman as they don't possess emotions and moral values. They don't know what is ethical and what's legal and because of this, don't have their own judgment making skills. They do what they are told to do and therefore the judgment of right or wrong is nil for them. If they encounter a situation that is unfamiliar to them then they perform incorrectly or else break down in such situations.

3. No improvement with Experience

Artificial intelligence cannot be improved with experience, they can perform the same function again if no different command is given to them. With time, it can lead to wear and tear. It stores a lot of data but the way it can be accessed and used is very different from human intelligence.

Also, they can't cope up with the dynamic environment and so they are unable to alter their responses to changing environments. We are constantly bombarded by the question of whether it is really exciting to replace humans with machines.

Artificial intelligence doesn't have feelings and because of which there is nothing like working with a whole heart or with full passion for them. There is no sense of belonging or togetherness or a human touch. They fail to distinguish between a hardworking individual and an inefficient individual.

4. Creativity is not the key for AI

Machines can't be creative. They can only do what they are being taught or commanded. Though they help in designing and creating, they can't match the power of a human brain.

Humans are sensitive and intellectuals and they are very creative too. They can generate ideas, can think out of the box. They see, hear, think and feel which machine can't. Their thoughts are guided by the feelings which completely lacks in machines. No matter how much a machine outgrows, it can't inherent intuitive abilities of the human brain and can't replicate it.

5. Unemployment

This one is the riskiest and can have severe effects. With capital intensive technologies, human-intensive requirements have decreased in some industries. If in the future, human beings don't add to their skills, then in no time, we can see that they will be replaced with machines. The major issue of the GDP being stagnant or not growing at the expected rate is unemployment. People don't possess the required skills that are in demand. There is a huge demand and supply gap because of this.

Summary

All being said, the pros and cons of artificial intelligence being evaluated, it is up to the reader, user, and their perspective. AI and robotics will improve the way we think, the way we explore

new horizons, whether space or the ocean. As the age-old saying goes, necessity is the mother of all innovations, so is the case with AI. Human beings know what they need and are getting increasingly better in defining their wants and quickly transforming this into reality. In the near future, things will happen so rapidly that we will see major changes and innovation. Hold your breath Mega disruptions have begun!