

Artificial Intelligence and Machine Learning



Last updated on February 14, 2017 by [Gautam Narula](#)

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.

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 TechEmergence, we've developed concrete

definitions of both artificial intelligence and machine 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 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.

- 1) What is the difference between artificial intelligence and machine learning?
- 2) Give examples of artificial intelligence that you're already using right now?

Examples of Artificial Intelligence:

Commuting

According to a 2015 report by the *Texas Transportation Institute* 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**.

Definitions of the words and expressions in bold

3) Can you explain how AI is already helping to tackle the complexities of transportation?

Google Maps

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.

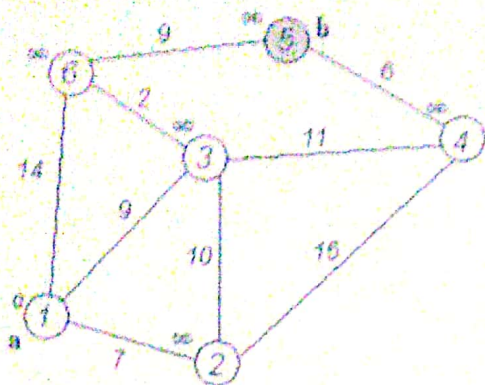


Image: Dijkstra's algorithm (Motherboard)

4)What are the main benefits of Google Maps?

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.

Definitions of the words and expressions in bold

How can you explain the success of Uber and Lift today?



Image: Uber heat map (Wired)

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%. 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 Journal* interviewed several experts who say fully autonomous vehicles are decades away. TechEmergence also discussed the timeline for a self-driving car with Eran Shir, CEO of AI-powered dashcam app Nexar,

Definition of the words and expressions in bold

Are you ready to use self-driving cars in the next future?

Do you believe that virtual chauffeurs are closer than we think?

Banking/Personal Finance

One of TechEmergence'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.



Image: Mobile deposit (The New York Times)

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*.

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%.

Fill the gaps with the following missing words:

robo-advisor, personalized, above, under, savings, no data, engine, deliver, rooted in, customers.

Can a robot give you sound investing advice?

In early 2016, Wealthfront announced it was taking an AI-first approach, promising "an advice engine----- artificial intelligence and modern APIs, an----- that we believe will ----- more relevant and ----- advice than ever before." While there is ----- on the long-term performance of ----- (Betterment was founded in 2008, Wealthfront in 2011), they will become the norm for regular people looking to invest their ----- . This is already happening with younger people—in the ----- announcement, Wealthfront notes that 60% of its ----- are----- the age of 35.