



## EXAMPLES

# 10 Real-World Examples of Machine Learning and AI [2018]

Check out these essential machine learning examples

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Smart machines and applications are steadily becoming a daily phenomenon, helping us make faster, more accurate decisions.

And with more than 75 percent of businesses investing in [Big Data](#), the role of AI and machine learning is set to increase dramatically over the next five years.

As of 2017, a quarter of organisations are spending [15 percent or more](#) of their IT budget on machine learning capabilities, and we expect the number of machine learning examples to rise in the near future.

So, why is this technology the next must-have for competitive businesses?

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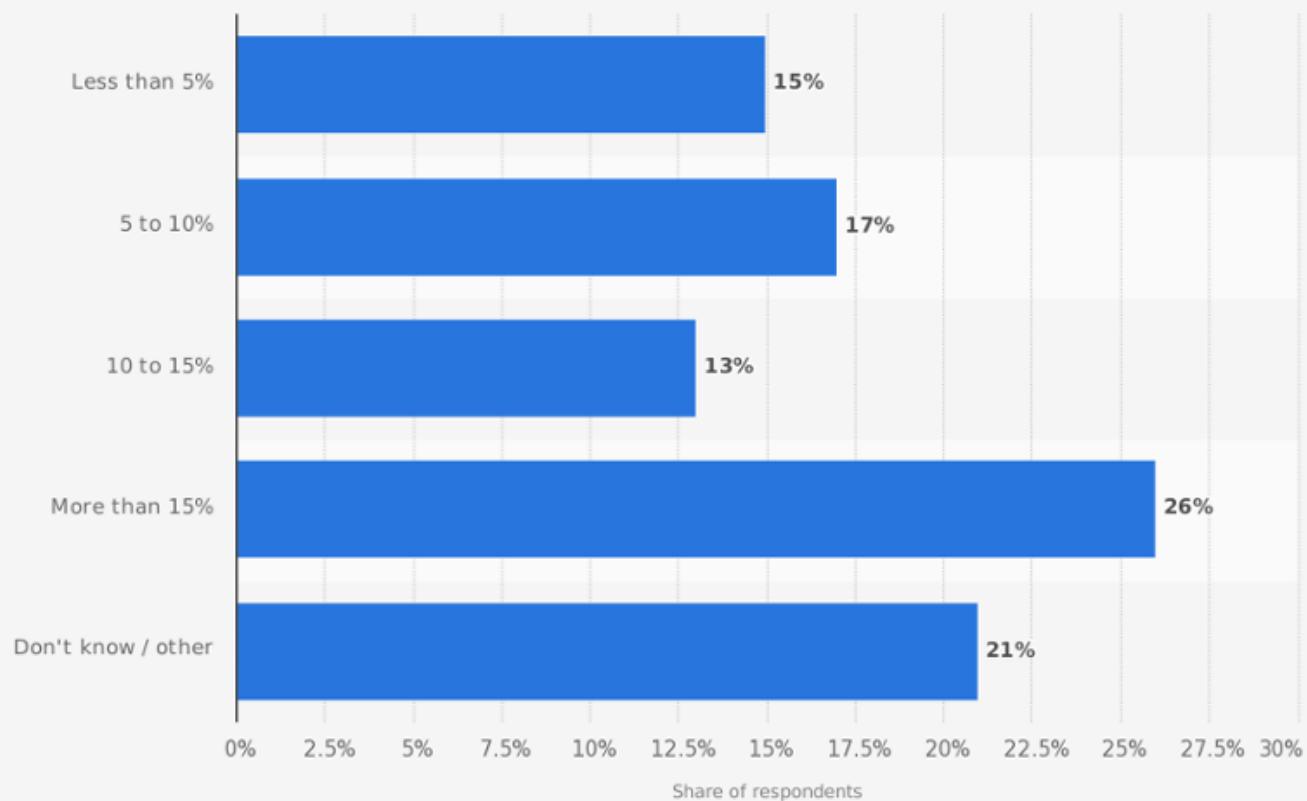
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## Why is Machine Learning taking over?

Machine learning is the latest approach to digital transformation, making our computing processes more efficient, cost-effective, and reliable. It is no longer the fancy of science fiction writers, but a bonafide, business-critical technology that will ultimately make decision-making a far more data-driven affair.

## What part of your IT budget for 2017 is earmarked for machine learning?



### Sources

Technology Review; Google  
© Statista 2017

### Additional Information:

Worldwide; Technology Review; Google; Late 2016; n = ~225;  
Current users of machine learning

statista

With [cloud computing](#) offering organisations an unprecedented level of scalability and power, we're finally at a point where machine learning can hit the mainstream and drive innovation in every sector.

## Examples of Machine Learning by Industry

Before we introduce you to 10 real-world applications of machine learning, let's take a look at some of the more transformative machine learning examples in a three key industries:

### Financial Services

The transformative potential of machine learning is the driving force behind its popularity in the financial services industry (see graph below) and is the reason

why the [insurance sector](#) is slowly moving into the digital age.

How significant do you expect these technology trends over the next 3 years?



Respondents rated each technology rated on a 1-9 scale where 1 = 'not significant at all' and 9 = 'extremely significant'. Mean scores shown (don't knows excluded)

Machine learning can help banks, insurers, and investors make smarter decisions in a number of different areas:

**Customer and client satisfaction.** Machine learning helps financial services firms track customer happiness. By [analysing user activity](#), smart machines can spot a potential account closure before it occurs. They can also track spending patterns and customer behaviour to offer tailored financial advice.

**Reacting to market trends.** Another application of machine learning is market analysis. Smart machines can be trained to track trading volatility or [manage wealth and assets](#) on behalf of an investor. These algorithms can identify trends more efficiently than humans and react in real-time (reducing the impact of major financial events such as Brexit).

**Calculating risk.** Smart machines can analyse a large number of disparate datasets (credit scores, spending patterns, financial data etc.) to accurately assess risk in both insurance underwriting and loan assessments, tailoring them to a specific customer profile.

**Remaining competitive.** This example of machine learning is perhaps the most relatable to management level execs, giving firms a clinical edge in a fierce industry, by helping them remain innovative. With the right machine learning algorithms, companies can act quickly on business intelligence, increasing productivity and opening up new streams of revenue.

## Healthcare

Examples of machine learning can also be found in the health and social care industry.

Here, organisations can capitalise on the intersection between [IoT \(Internet of Things\)](#) and [data analysis](#) to enable smarter healthcare solutions.

**Personalised health monitoring.** Smart watches and other wearable devices have made health telemetry a reality. But machine learning is taking things one step further, allowing doctors and relatives to monitor the health of elderly family members. The more personal data these algorithms are fed, the better they understand a user's profile, enabling healthcare professionals to spot potential anomalies earlier on.

For more on machine learning's potential in this sector, check out our work on the [WellWatch project](#).

## Retail

Machine learning algorithms are probably behind some of your favourite online retailers (as we'll discuss in more detail below). Companies such as Amazon use this technology to offer a highly-personalised service:

**Online recommendations.** Machine learning allows retailers to offer you personalised recommendations based on your previous purchases or activity.



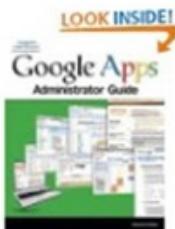
## Recommended for You

Amazon.com has new recommendations for you based on items you purchased or told us you own.



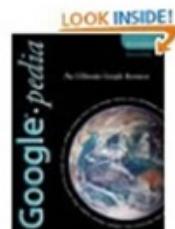
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**Better customer service and delivery systems.** In large companies where response time is limited by staff resources, machine learning can help ease some of the burden. Smart machines can decipher the intent and meaning behind emails and delivery notes to prioritise tasks and ensure sustained satisfaction.

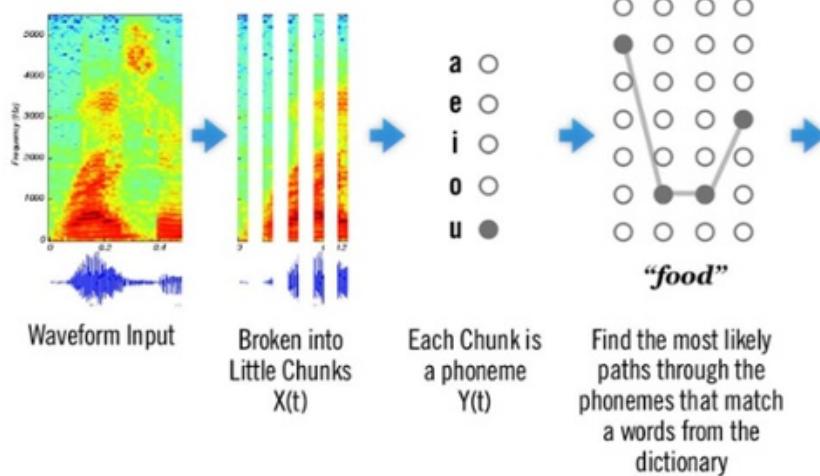
**Tracking price changes.** The price of retail items tends to fluctuate over a certain period of time. Machine learning is helping ecommerce companies track patterns in these fluctuations and set their prices according to demand.

# 10 Game-Changing Machine Learning Examples

Now you've got a taste of what it can do for your industry, here are 10 real-world examples of machine learning and AI you're probably using right now.

## 1. Siri and Cortana

## SIRI TEARDOWN



Voice recognition systems such as [Siri](#) and Cortana use machine learning and deep neural networks to imitate human interaction. As they progress, these apps will learn to 'understand' the nuances and semantics of our language.

For example, Siri can identify the trigger phrase 'Hey Siri' under almost any condition through the use of probability distributions. By selecting appropriate speech segments from a recorded database, the software can then choose responses that closely resemble real-life conversation.

# 10 Machine Learning Examples That Impact Your Daily Life

## AI & Machine Learning

Smart machines and applications are steadily becoming a daily phenomenon, helping us make faster, more accurate decisions.

Here are ten real-world examples of AI and machine learning you're probably using right now.



### Siri & Cortana



Voice recognition systems such as Siri and Cortana use machine learning and other technologies to imitate human interaction. As they progress, these apps will learn to 'understand' the nuances and semantics of our language.

# Facebook



Remember when Facebook used to prompt you to tag your friends? Nowadays, the social network's algorithms recognise familiar faces from your contact list, using some seriously impressive technology.

# Google Maps



Google Maps analyses the speed of traffic through anonymous location data from smartphones. This enables Google to reduce travel time by suggesting the fastest routes.

# Google Search

# Google

The world's biggest search engine offers recommendations and suggestions based on previous user searches. In 2012, Google introduced Knowledge Graph – an algorithm used to decipher the semantic content of a search query.

# Gmail



As you can tell, Google has a thing for AI. In 2015, they introduced a smart reply function allowing your inbox to respond to emails on your behalf. The machine learning tool automatically suggests three different responses.

# PayPal



The online payment platform uses machine learning algorithms to combat fraud. By implementing deep learning techniques, PayPal analyses vast quantities of customer data and evaluates risk accordingly.

# Netflix

NETFLIX

Machine learning is integral to Netflix's video recommendation engine. The company has valued the

NETFLIX

ROI of these algorithms at  
£1 billion a year due to their  
impact on customer  
retention.

## Uber

UBER

Machine learning is crucial to the Uber model. The tech giant uses machine learning algorithms to determine arrival times, pick-up locations and UberEATS' meal deliveries.

## Lyst

Lyst is an ecommerce



fashion site working with a new breed of model – the machine learning model. To match customer searches with relevant recommendations, Lyst uses meta-data tags to make visual comparisons between items of clothing.

## Spotify



You know that cheesy pop song you listened to that triggered numerous other cheesy pop recommendations? That's machine learning at work. Much like Netflix, Spotify uses machine learning to establish your likes and dislikes and provide you with a list of related tracks.

Transform Your Data



## 2. Facebook

Remember when Facebook used to prompt you to tag your friends? Nowadays, the social network's algorithms recognise familiar faces from your contact list, using some seriously impressive technology.

'We closely approach human performance,' says [Yaniv Taigman](#), one of the masterminds behind DeepFace, Facebook's machine learning facial recognition software.

[DeepFace](#) can recognise the differences in human faces with a 97.25% degree of accuracy – only 0.28% less than an actual human being. Having studied a facial dataset of 4 million Facebook users, DeepFace has become adept at recognising the nuances in human countenance across 4000 separate identities.

## 3. Google Maps

Google introduced machine learning to [Google Maps](#) in 2017, improving the usability of the service. These deep learning algorithms help the app extract street names and house numbers from photos taken by Street View cars and increase the accuracy of search results.

With over 80 billion hi-res photos collected by Street view cars, analysing these images by hand would have been impossibly time-consuming. Machine learning frees up more time for Google engineers, automatically extracting information from

geo-located images and achieving an accuracy rate of 84.2 percent for some of France's most convoluted street signs.

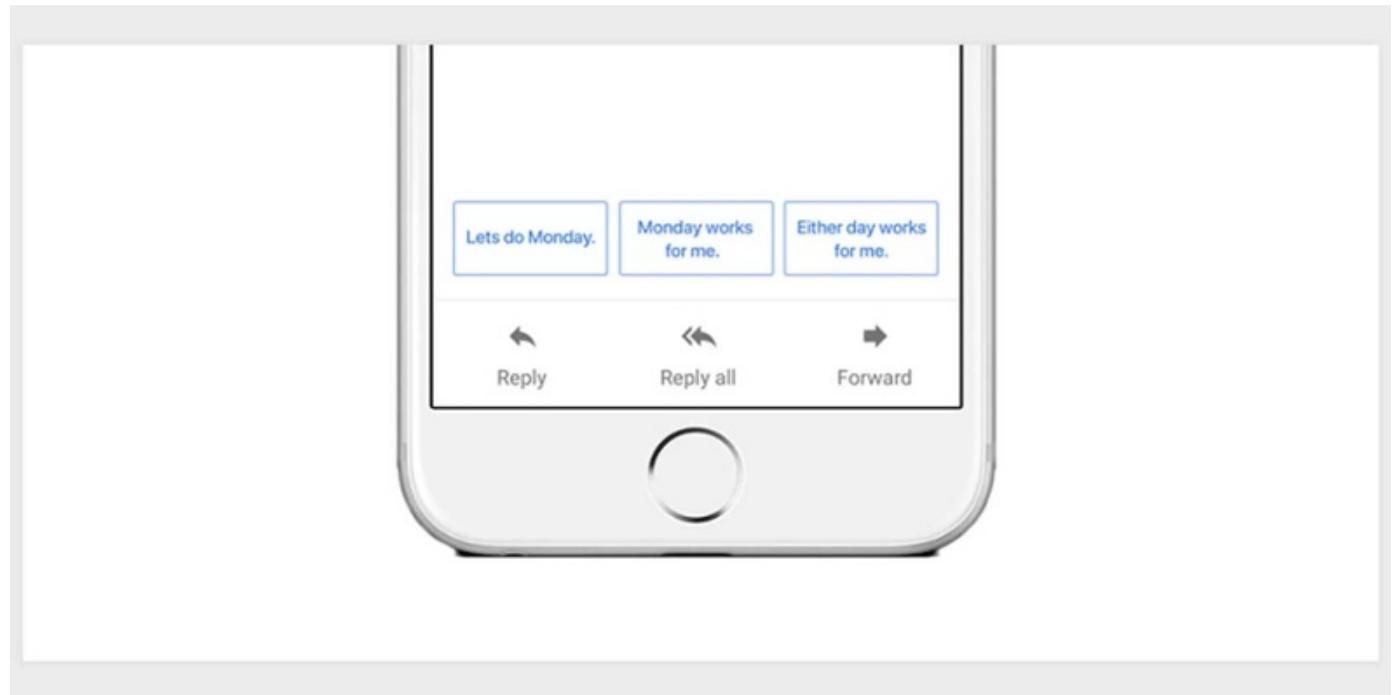
## 4. Google Search

Sticking with Google, the world's biggest search engine now offers recommendations and suggestions based on previous user searches. In 2015, Google introduced [RankBrain](#) – a machine learning algorithm used to decipher the semantic content of a search query.

Through the use of an intuitive neural network, RankBrain identifies the intent behind a user's search and offers them tailored information on that particular topic.

RankBrain now handles around 15 percent of Google's daily queries, working out the intent behind never before seen searches much faster than the previous old rules-based system.

## 5. Gmail



You might have guessed by now that Google has a thing for machine learning and artificial intelligence. In 2015, they introduced a [smart reply function](#) to Gmail to

help users tackle their inbox, with 10 percent of mobile users' emails sent using this tool the following year.

The smart reply function is based on two recurrent neural networks: one used to encode incoming mail, the other used to predict possible responses.

These networks work in tandem to decipher the meaning behind the incoming message and to automatically suggest three different responses for each.

## 6. PayPal

[PayPal](#) uses machine learning algorithms to detect and combat fraud. By implementing deep learning techniques, PayPal can analyse vast quantities of customer data and evaluate risk in a far more efficient manner.

Traditionally, fraud detection algorithms have dealt with very linear results: fraud either has or hasn't occurred. But with machine learning and neural networks, PayPal is able to draw upon financial, machine, and network information to provide a deeper understanding of a customer's activity and motives.

## 7. Netflix

More than 80 percent of TV shows on Netflix are found through its [recommendation engine](#). Machine learning is integral to this process, as the platform caters to more than 100 million subscribers

While the finer details of Netflix's machine learning algorithms are kept behind closed doors, Tod Yellin, the company's VP of product innovation states there are two things that feed the neural network: user behaviour and programme content. Together, these datasets create multiple 'taste groups', which tell the recommendation engine which programmes to serve up.

Due to its impact on customer retention, Netflix has valued the ROI of these [algorithms](#) at £1 billion a year.

## 8. Uber



Machine learning is a fundamental part of the [Uber model](#). The tech giant uses these algorithms to determine arrival times, pick-up locations, and UberEATS' delivery estimations.

When you book a car, Uber's aim is to estimate its arrival time as accurately as possible. Machine learning enables it to do this by analysing data from millions of previous trips and applying it to your specific situation.

The same goes for [UberEATS](#), which takes things such as food preparation time into account to give you the best possible prediction of delivery time. The real-time analysis of these datasets has improved Uber's estimations by 26 percent and increased customer satisfaction in the process.

## 9. Lyst

[Lyst](#) is an ecommerce fashion site working with a new breed of model – the machine learning model. To match customer searches with relevant recommendations, Lyst uses meta-data tags to make visual comparisons between items of clothing. Their algorithms read these tags and decide on the best matches.

To do this the machine learning model must handle three distinct requirements:

**Representation** – this allows the models to quickly search for similar vectors without having to process the images from scratch.

**Multi-image** - Lyst's products tend to have multiple images associated with them, so the machine learning algorithms need to map these to one representation.

**Multi-task** – multiple product labels (e.g. colour, gender, size) need to be digested by the visual models to produce an optimal representation.

## 10. Spotify

You know that one cheesy pop song you listened to that triggered numerous other cheesy pop recommendations?

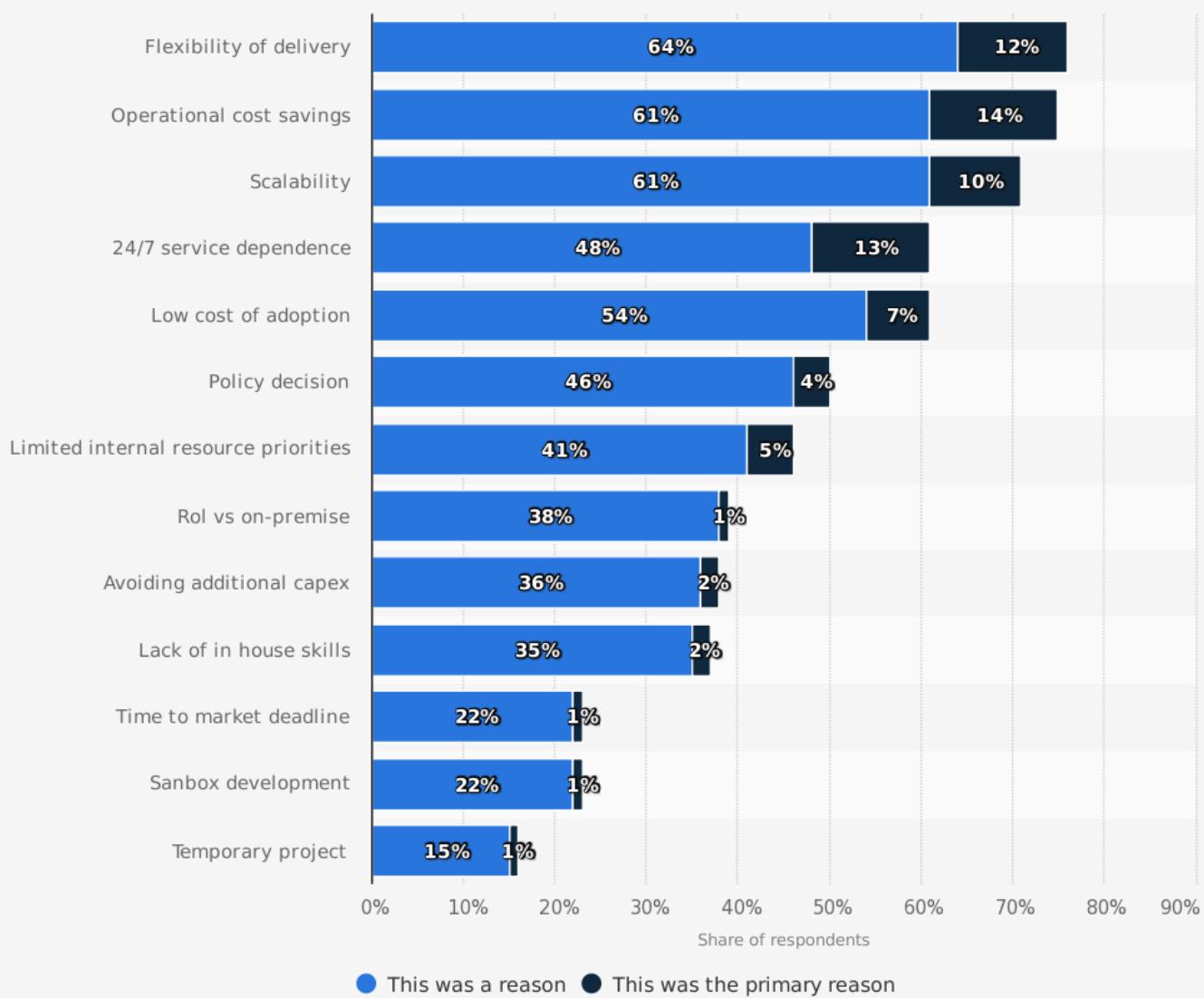
That's machine learning at work. Much like Netflix, [Spotify](#) uses machine learning to figure out your likes and dislikes and provides you with a list of related tracks.

In its Discover Weekly promotion, Spotify rounds up 30 tracks it thinks you should listen to and delivers them in one easy-to-navigate playlist. These songs are all 'hand-picked' by machine learning algorithms, which analyse user activity and match your tastes to music with similar meta-tags.

## Accelerating machine learning in the cloud

More than 60 percent of organisations are [adopting the cloud](#) for its unrivalled scalability. It's this economy of scale that's driving bigger, bolder approaches to machine learning and providing companies with the resources to create their own models.

## Leading reasons for adopting hosted or cloud-based services in UK companies in 2017



### Sources

Vanson Bourne; Cloud Industry Forum  
© Statista 2017

### Additional Information:

United Kingdom; Cloud Industry Forum; February 2017; 250 respondents; senior IT and business decision-makers from different companies in the private and the public sector

statista

However, it's important that companies set the right foundations for [machine learning in the cloud](#) to truly prosper. Building a team of skilled developers or outsourcing to a cloud specialist can help keep your next project on track.



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## **Learning from the best: is your business next?**

As existing business processes continue to evolve, more and more companies are warming to the idea of an automated future.

[Gartner](#) predicts smart machines will enter mainstream adoption by 2021 and, as this trend continues, we'll begin to see more commonplace examples of machine learning and AI.

Industries lacking competition will benefit from the innovation and commercial advantages the machine learning revolution will bring. If we look at the five current biggest companies in the global market, we see that every single one of them has [embraced digital transformation](#) and used technology such as machine learning to change the game for everyone else.

## Top 5 market capitalization

1997



Coca-Cola

NTT

Exxon

Microsoft

2007

Exxon



Microsoft

Shell



PetroChina

2017



Alphabet

Microsoft

amazon

facebook

With most organisations currently in the early stages of machine learning adoption, there's still plenty of time to set yourself up as a frontrunner in your industry.

Not only will this provide businesses with a competitive edge, it'll completely redefine the way we think about work.

Find this interesting? Let us know your thoughts on the potential of machine learning in the comments below.

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