

The Guide to Understanding Artificial Intelligence

Artificial Intelligence will have a profound impact on how we make decisions in every aspect of our lives. Computerized decision making will guide us nearly as much as our brains do now. The concept of AI is not new, it was introduced in 1956, at a conference at Dartmouth college in the US and while a lot has changed since then, the concepts remain the same.

Right now whether you like it or not it is easy for anyone to access your digital data to learn a tremendous amount about what you're like and this data can be fed into computers that do everything from predict what you want to buy to what you value in life. While this may be scary to many, it produces remarkable results.

The beauty of this revolutionary technology is that it takes in data all day every day, applies and ways the relevant criteria and then recommends a decision. This allows us to make more informed and less emotional decisions much faster than we could on our own. We will use machine assistance as much for decision making as we do for information gathering today. Humans and AI are far better to work together because it produces the best results.

What is artificial intelligence?

It is any innovation which enables machines or technologies to act with human-like behaviour.

AI is the capability; vision, language, analytics, replicating human capability.

Examples: Speech translation, Chat bot, facial/image recognition, driverless cars, NLP (natural language processing).

What is machine learning?

It is the science of getting machines to learn and act in a human-like manner. It's a subset of AI and an important enabler of AI-powered technologies. ML is not useful in isolation. It finds patterns and trends in the data that humans cannot find easily or quickly.

For example, the recommendations that are provided through platforms such as Google, Netflix and Amazon are all powered by machine learning. So too are recommendations for ad improvements on Facebook or Instagram.

The most important thing for business people to recognise with machine learning is that there are now genuinely viable alternatives for completing complex, time-consuming tasks with something other than a human.

What is deep learning?

Deep learning is a subset of machine learning. It is still designed and used as way of teaching machines to behave like humans and therefore, bolster opportunity and productivity for businesses. Deep learning is the most sophisticated technique available and great for large amounts of complex data. The closest thing to a human brain.

What does that mean?

Machine and Deep learning allow computers to learn what to do when they see certain data and data patterns. It then autonomously provides these insights to humans in a commercial and understandable way. Once a machine has learnt how to recognise input data through algorithms (which it has either been taught, or learned for itself), it can then do tasks on behalf of humans.

Why is AI so popular now?

1. Large amount of reliable data

Thanks to the Internet of Things (which refers to any and all devices that have internet connectivity) the amount and type of available data is far greater than ever before. In 2017, Gartner estimated there were approximately 8.4 billion connected devices, all of which have the potential to produce useful data.

This, paired with far more sophisticated websites, smartphones, applications and other data collection points, means data is not only plentiful but varied, and has the potential to provide deep insights.

2. Computer processing power and sophistication

It's old news that computer processing power continues to grow exponentially. It's reported that the computer processing power used to put man on the moon for the first time is less than we have available on our smartphones.

Hardware, software and internet connectivity is, of course, incomparably faster than decades ago.

Alongside this, the interest in artificial intelligence, machine learning and deep learning has continued to grow. Recent breakthroughs in deep learning mean computers can now uncover insights which have previously been thought impossible.

3. Readiness to adopt the technology

As with all technologies, if people are not prepared to adopt and use it, then its relevance and value is easily hampered.

As a result of living in an increasingly digital and technology-enabled world, customers are far more comfortable in trying new technologies, and looking for ways to maximise the value on offer.

With greater readiness and interest from people (and thus business customers and markets), it is easier to gain a return on investment (and so easier to secure an investment to try something new).

4. Relevant and valuable use-cases

Thanks to a rising tide of technological development, there is now far more relevance and value to be had in the use of artificial intelligence. At the very least, data has been proven time and again to

be invaluable in business decision making and using AI-powered technologies to more effectively use this data makes good business sense.

As the economy continues moving towards a digital-centric model, having technologies which support customers in their digital interactions also makes good business sense. At the simplest level, an increased volume of email traffic has created a relevant use case of AI automatically sorting it for us.

Three big reasons for real estate

1. Transparency and accountability: the data now provides evidence and insights to direct the labour, in real time, and everyone can see it.
2. Scale, reliability and risk mitigation: The computer is much better than the brain at thinking about many things at once, and can do it more precisely, uniformly, more rapidly and less emotionally. Because it has such a great memory it does a great job at compounding the knowledge of day to day operational learnings and feedback.
3. Control of data and decision making: This is now in the hands of commercial managers who have data supported insights to make smarter, faster and more accurate decisions about how to best operate the portfolio.

The computer doesn't have the imagination, understanding and logic that humans do which makes it a great partnership. Using AI can work just as the brain works in processing the data and making decisions, like a revolving audit on the buildings vital signs, the computer works in parallel with the teams own analysis and helps with decisions, like having a chess grand master help you plot your moves.

Great insights from big players

The finance industry has been applying and refining artificial intelligence principles for decades and it has accelerated its investment in the space in the past 5 years. The reason this is a good reference is the stakes are high and this sector attracts the brightest individuals from around the globe.

Recently, the largest hedge fund in the world, **Bridgewater Associates**, made public their investment in a team of engineers that is considering the replacement of human traders with an AI-driven algorithm.

***Their founder and CEO, Ray Dalio** says; "The systems we had programmed to take in information and process it were doing superbly, without computers we'd have to do it the old way, weigh in our heads all the markets and all the influences on them and then bringing them together into a portfolio of bets, then hire and supervise a bunch of different investment managers and because we wouldn't be able to have blind faith in them we would need to understand how each one of them made their decisions which would mean watching what they were doing and why so we could know what to do and expect from them while dealing with all the different personality issues!! Why would I want to do that! The best way of investing or managing an organisation was obsolete, like reading a map instead of following a GPS."*

And another well-known figure within the finance industry, **Trevor Mottl, Artificial intelligence portfolio manager** at Lazard Asset Management based in Palo Alto, California.

He says that over the next 5 years, AI will change the way investment is approached. It's evolving quickly, but we are going to see a convergence of the quantitative and the fundamental as we transition. Many will adopt more AI tools that influence the fundamental investment process which becomes more repeatable and less exposed to negative emotional biases, able to integrate more granular data and our understanding of investing and markets will increase over the next 5 years because we are able to use models, data and compute to answer questions we were never able to answer before.