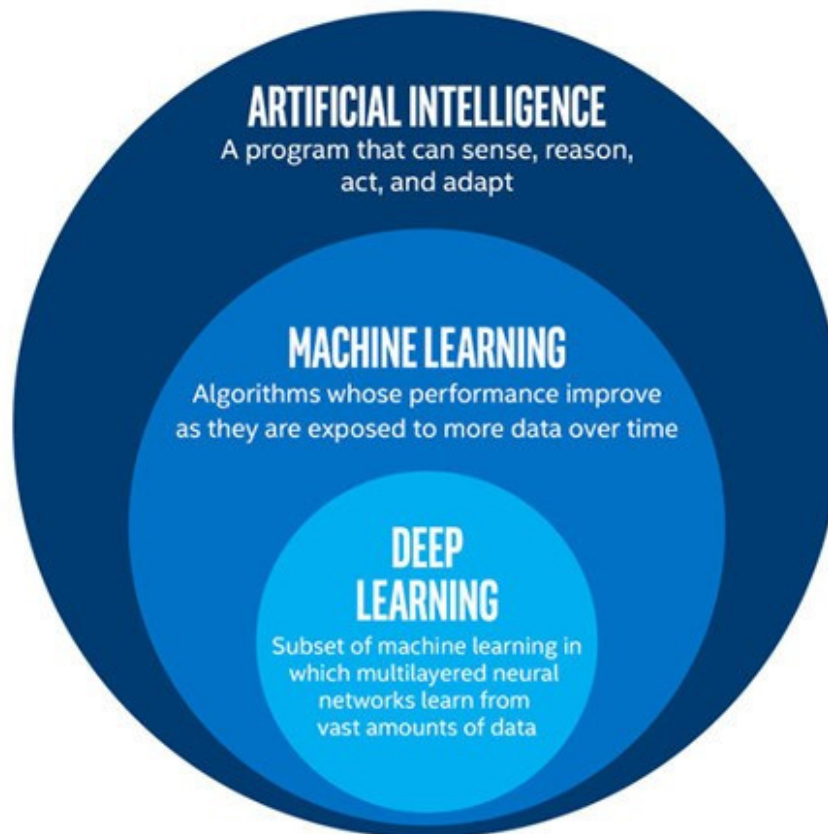


# The difference between AI, machine learning and deep learning

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In recent years, along with the explosion of the industrial revolution 4.0, terms such as artificial intelligence (AI), machine learning and deep learning are becoming more and more popular. and become concepts that citizens of the 4.0 era must grasp.

It is possible to explain the relationship between these three concepts by imagining them as circles, in which AI - the earliest idea - is the largest circle, followed by machine learning - the concept that appears later. , and finally deep learning - which is driving the current outbreak of AI - is the smallest circle.



*The relationship between AI, machine learning and deep learning*

Building an AI system is of course extremely complicated, but understanding it is not so difficult. Most of the current artificial intelligence are just really good guessing machines (similar to our brains). You provide the system with a set of data (such as digits 1 through 10) and require the model creation system ( $x + 1$ , starting from 0) and making predictions. (The next number will be eleven). There is no magic, this is the job that the human brain does every day: use what we know to guess what we don't know.

What makes AI different from other computer programs is that instead of having to create specific programs for each case, we can fully teach AI (machine learning), and it is also capable of self-learning. Deep learning. These three concepts can be defined basically as follows:

**Artificial intelligence (AI):** a machine that can mimic human behavior and thinking.

**Machine learning:** A feature of AI, which allows experts to train AI so that it recognizes data patterns and predictions.

**Deep learning:** A small machine learning technique, which allows machines to train themselves.

## Specific concepts

### Artificial intelligence - the human brain in the shape of a machine

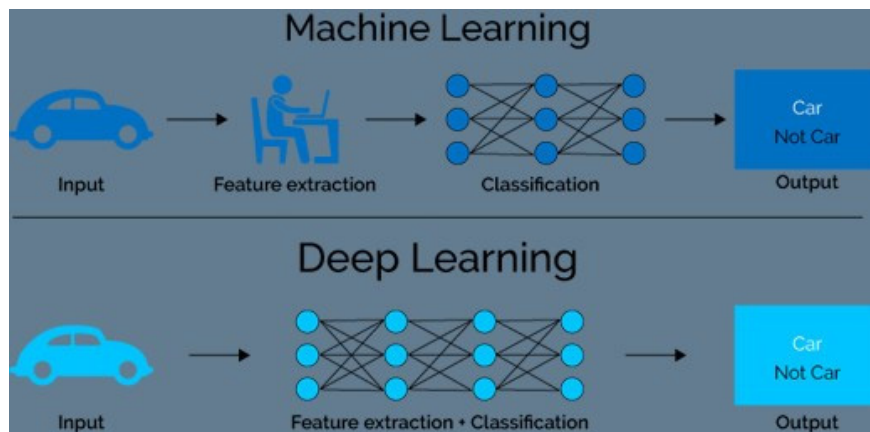


AI can be defined as an industry of computer science that involves the automation of intelligent behaviors. AI is a part of computer science and therefore it must be based on solid theoretical principles, applicable to this field. It is easy to understand: it is the intelligence of machines created by humans. This intelligence can think, think, learn, . like human intellect. Data processing at a wider, more scalable, systematic, scientific and faster level than humans.

However, AI technology is still very limited. For example, Alexa - a great butler, is one of the most popular applications of artificial intelligence but still cannot pass the Turing test.

In short, what we are doing with the current AI is in the concept of 'narrow AI' (Narrow AI). This technology is capable of performing specific tasks in a similar way, or better than humans. Examples of 'narrow AI' are in reality like Pinterest's image classification technology or face recognition to tag friends on Facebook.



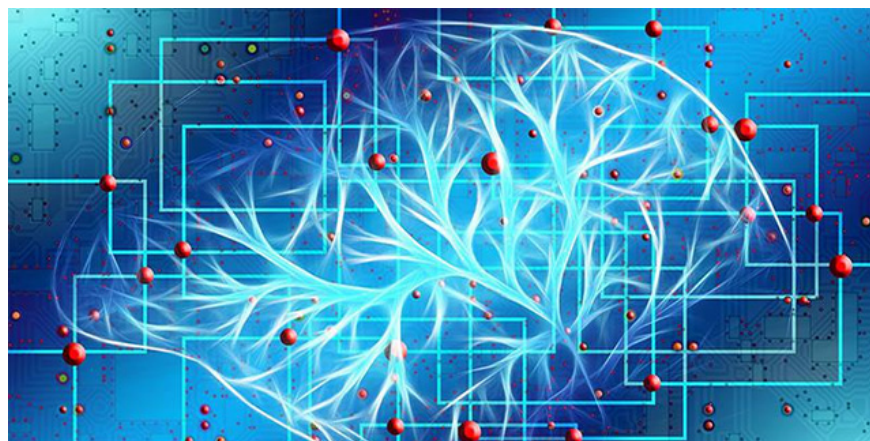


It can be said that until now, AI has achieved a lot of great progress. Think of it as a kind of machine learning with deep "neural networks" that can process data in a way similar to a human brain can do. The main difference here is that people will not have to teach a deep learning program what a cat looks like, but just give it enough necessary images of cats, and it will visualize itself. , self learning. The steps to do are as follows:

1. Provide a lot of photos about cats.
2. The algorithm will check the image to see the general characteristics and details between the images.
3. Each photo will be decoded in detail at various levels, from large shapes, to smaller and smaller boxes. If a shape or lines are repeated many times, the algorithm will label it as an important property.
4. After analyzing all the necessary images, the algorithm will now know which patterns provide the clearest evidence of cats and all humans have to do is provide raw data.

In summary: Deep learning is the type of machine learning in which the machine trains itself. Deep learning requires a lot of input data and computing power than machine learning, but it has begun to be deployed by big technology companies like Facebook and Amazon. In it, one of the most famous names about machine learning is AlphaGo, a computer that can play Go with itself until it can predict the most accurate step moves enough to defeat Many champions in the world.

## Conclude



Deep learning has allowed the application of many practical problems of the machine while expanding the overall field of artificial intelligence. Deep learning breaks down the ways people work by making all kinds of

assistive machines possible, close or identical to humans. Cars are unmanned, health care is better . All are realized in this day and age. AI is the present and future of the world. With the help of deep Learning, AI can realize the science fiction dream that we have imagined for a long time.

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