Artificial Intelligence: Boon to Humans or the Beginning of the End?

Artificial intelligence, also called AI, is a catchall that includes different technologies designed to give computers abilities that mimic those of humans.

These abilities include hearing, seeing, reasoning and learning.

AI uses techniques to accomplish these abilities such as machine learning (ML), deep learning (DL), computer vision (CV) and natural language processing (NLP) to uncover hidden patterns in large data sets and parse them using algorithms to find correlations.

To really understand AI's capabilities, we need to be familiar with each of the technologies used.

Machine learning uses complex algorithms to build probabilistic models about a data set and use it to make assumptions and predictions about a similar set of data.

Deep learning is considered to be one of the most promising areas of artificial intelligence development and is being used in cognitive computing, image recognition and NLP.

It uses the model of the human brain's neural network to make predictions about data sets.

Natural language processing enables computers to understand written and spoken human speech and produce natural sounding speech and writing.

NLP is also used to translate one human language into another.

Computer vision identifies images and can be used to identify patterns in visually rendered data that would be impossible for humans to discern.

All artificial intelligence depends on the quantity and quantity of data as well as its granularity (the more specific, the better).

Artificial intelligence, on its most basic level senses input around it.

The next step is to comprehend the information that the system is sensing.

After comprehension, the next step in the continuum is to predict likely outcomes based on the conclusion and the final goal is for the system to act based on its information and adapt to any changes in the data.

Machine learning and deep learning are the basis for the other modalities because they enable the system to interpret the data.

By identifying patterns in large amounts of data and connecting different elements within and among data sets, ML and DL can do complex analysis with lightning speed and can make connections that humans cannot.

The end game for humans in using ML and DL is to handle tasks more quickly and accurately to boost productivity and efficiency.

Benefits of Artificial Intelligence for Companies
For companies and organizations, ML and DL can assist or entirely replace systems that are resource sensitive and that currently involve humans with their propensity to make mistakes, cost money and sometimes be inefficient.

AI can give companies new insights into patterns they might not otherwise have discovered.

For example, artificial intelligence used at Target made a splash when it predicted that a young girl was pregnant based on some seemingly unrelated purchases she had made online.

When the girl's father saw the baby-related direct mail advertising he became incensed, until his daughter revealed to him that she was, in fact, pregnant.

Artificial intelligence can make companies more nimble in reacting to market factors or when they decide to shift their focus to a different target market.

By identifying previously invisible patterns, AI can be used to identify opportunities for new business idea or models, creating new streams of revenue or enhancing existing ones.

Certainly, this quick adaptation and capitalization on customer trends and behavior can be a huge competitive advantage compared to companies who are still operating the old fashioned way, with human intuition or by sticking to the status quo.

All of these benefits make the pursuit and use of artificial intelligence technology very compelling for companies with the capital to invest in it.

But what are the potential pitfalls and consequences for companies, employees, customers and society as a whole?

Potential Impacts and Dangers
Any fan of science fiction is familiar with dystopian scenarios where computers or robots take over the world and try to exterminate or enslave humans.

Examples include 2001: A Space Odyssey, The Terminator, iRobot and many more.

The main fear is a matter of magnitude.

Humans are arguably the most intelligent creatures on the planet, but our intelligence was developed over thousands of years of relatively slow biological evolution.

However, computer processing speed has historically adhered to Moore's Law, which says that the processing power on a computer chip doubles every year, while costs are halved.

So, rather than the slow pace of natural selection, computers "evolve" at an exponential pace.

If computer technology advances into workable quantum computing, the rate of processing speed will be virtually limitless, enabling artificial intelligence that could potentially be as far above humans in intelligence as humans are above bacteria.

Already, scientists have created artificial intelligence programs that can evolve and learn in real time and have taken forms that humans can barely comprehend, let alone replicate.

On the other hand, there are many obstacles in creating a human-level AI that have not been solved by AI researchers and there is no clear timeline when that will take place.

A 2015 poll of AI researchers asked them when they predicted we would develop human-level AI and the median answer was by 2045, but there was no consensus with some researching guessing that it would be hundreds of years in the future.

While some experts in the industry, like Elon Musk and the late Stephen Hawking, predict that super-intelligent machines may treat humans as poorly as humans treat factory farm animals, chief engineer for Google and famous futurist Ray Kurzweil, is more optimistic.

Kurzweil thinks that artificial intelligence will not replace humans, but instead will enhance human abilities with human-machine integration.

But aside from complete robot annihilation, we should be cautious and wise about artificial intelligence development because of other potential dangers.

A 100-page report by artificial intelligence experts in industry and academia points out that although AI can be used by good people for good purposes, it can just as easily be used by bad people for bad purposes.

Some of these negative activities that can be enabled or enhanced by AI include automated phishing and hacking and intentionally fooling AI systems by exploiting flaws in how the system sees the world.

Other potential dangers of AI are automating terrorism by highjacking commercial drones, computerized weapon systems, autonomous vehicles or robots for nefarious purposes.

AI can also be used to propagate political propaganda, suppressing dissent and using publicly available information to persuade people about something.