Views on Automation, Artificial and Business Intelligence

AASBI Staff, 01 August 2019

The terms *Artificial Intelligence* and *Automation* are similar in that they are associated with software or physical robots and other machines to operate efficiently and effectively — whether it's a mechanical construct piecing together a car or sending a follow-up email the day after your customer hasn't completed his order.

There are, however, big differences between complexity level of both systems. Automation is making hardware or software to do things automatically, that is without human intervention. Artificial Intelligence on the other hand is a science of making intelligent machines to mimic and eventually supersede human behaviour and intelligence.

Industrial automation places sensors and making something do corresponding to sensor readings. Automation evolved into production with automatic testing and control systems, mechanical labour, operating equipment and of course computers, all bound by explicit programming and rules.

If you want to make the same thing to be an AI, you need to power it up with huge quantities of data. Like use of neural networks, graphs, Machine Learning (Deep Learning) in your software. Your coding level will decide to how much extend you can make your system stimulate like human, but you are most likely going to end up at teaching the system only what you already know. In case of simple automatic you can easily predict the output, according to sensor readings, while in case of AI there is always a bit of uncertainty, just like human brain. (Kamila Hankiewicz, "What is the real difference between automation and AI?" becominghuman.ai 10 August 2018.)

An eample of AI is the autonomous vehicle, which is able to perceive its surroundings and make decisions to reach its destination without human intervention. Other examples are *Amazon*'s *Alexa*, which is capable of voice interaction, music playback, making to-do lists, setting alarms, streaming podcasts, playing audiobooks, and providing weather, traffic, sports, and other real-time information such as news, and control several smart devices using itself as a home automation system. Users are able to extend the Alexa capabilities by installing additional functionality ("skills") more commonly called apps such as weather programs and audio features.

AI in business intelligence is entering everyday business by using machines algorithms to identify trends and insights in vast reams of data, and make fast competitive decisions in real-time. (Joao-Pierre Ruth, "6 Examples of AI in Business Intelligence Applications," emerj.com 20 May 2019.)

It's not a simple process for companies to incorporate machine learning into their existing business intelligence systems. "AI is just a box, math and code. If this, then that. That is the simplest way to describe it. If this, then that. That is the simplest way to describe it." Organizing data collection and testing an algorithm with this data for accuracy over the first few months is where many businesses get stuck.

In March 2016 Siemens launched its *MindSphere* developed with SAP, putting machine learning technology to use by monitoring industrial equipment's performance at plants around the world by scheduling preventive maintenance avoiding down-times that, in the mining industry, could run into millions of dollars a day and to improve the assets' operational lifespan.

MindSphere works with machines and plants regardless of the manufacturer. The intent is to help plant operators increase the uptime of their equipment and make maintenance more efficient by assessing when a piece of machinery is expected to breakdown. Furthermore, machine builders may see reductions on expenses related to warranty repairs by virtue of their machines running smoothly for longer.

Companies that use *MindSphere* get a box that connects to their machines and collects data to show how the machines are operating. (Dr. Florian Beil, Head of Technical Sales and Mobilization, Siemens Digital Factory on YouTube at https://youtu.be/8VQXrD2XCBQ?t=157)

Will Knight writes in *MIT Technology*, "Instead of practicing, this AI learned by reading about it," 31 July 2019:

> "Chess fans love nothing more than discussing a masterful sacrifice by Bobby Fischer or an ingenious line of attack from current world champion Magnus Carlsen. It turns out that this chatter could help AI programs learn to play the game in a new way. One day, the same technique could allow machines to use the emotional content of our language to master various practical tasks.
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> "The chess algorithm, called SentiMATE, was developed by a team of researchers at University College London. It evaluates the quality of chess moves by analyzing the reaction of expert commentators.
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> "The team analyzed the text of 2,700 chess game commentaries available online. They pruned out commentary that didn't relate to high-quality moves, and examples that were too ambiguous. Then they used a special type of recurrent neural network and word embeddings (a mathematical technique that connects words on the basis their meanings), trained on another state-of-the-art model for analyzing language.
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> "AI has recently made significant progress in parsing language. For example, an algorithm developed by researchers at OpenAI, a research company in San Francisco, proved capable of generating whole news stories from a prompt of a few words.
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> " 'The next step in the advancement of natural language processing is to convert this learnt information into tangible actions to help solve real-world tasks,' the researchers said in an email to MIT Technology Review. 'We felt that learning strategy from text-based data could be a very important research avenue to explore.' "

Stephen Hawking, Elon Musk, Steve Wozniak, Bill Gates, and many other big names in science and technology have recently expressed about the risks prosed by AI, joined by many leading AI researchers. (Barnard Marr, "Is Artificial Intelligence Dangerous?" *Forbes*, 19 November 2018.)

Bryan Johnson, founder and CEO of Kernel by Catherine Clifford, CNBC, 14 March 2018
https://www.cnbc.com/2018/03/13/elon-musk-at-sxsw-a-i-is-more-dangerous-than-nuclear-weapons.html

Elon Musk: ‘Mark my words — A.I. is far more dangerous than nukes’. “I am really quite close, I am very close, to the cutting edge in AI and it scares the hell out of me,” said Musk. “It’s capable of vastly more than almost anyone knows and the rate of improvement is exponential.”Musk worries AI’s development will outpace our ability to manage it in a safe way.

”Our civilization will flourish as long as we win the race between the growing power of technology and the wisdom with which we manage it. (Max Tegmark, President of the Future of Life Institute, “ Benefits & Risks of Artificial Intelligence,“ futureoflife.org undated.)

„How does society cope with an AI-driven reality where people are no longer needed or used in the work place? What happens to our socio-economic structure when people have little or no value in the work place? What will people do for value or contribution in order to receive income, in an exponentially growing population with inversely proportional fewer jobs and available resources?“ (Opinion by Jeff Hershkowitz, 05 August 2016.*)*