How COVID-19 will impact use of AI/machine learning in manufacturing, energy and media/entertainment

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Introduction

The impact of COVID-19 varies perhaps by industry more than any other factor; airlines suffer while online commerce thrives, on the whole. We know that use cases for AI and machine learning get very industry-specific very quickly, so we thought it would be interesting to look at which use cases in which industries might get more traction and which ones will likely see less adoption during the COVID-19 pandemic and what comes after.

We track use cases for AI and machine learning across multiple industries as part of our Voice of the Enterprise AI & Machine Learning survey-based research. Our most recent survey was performed in November 2019, right on the cusp of the COVID-19 outbreak. So, while we didn't ask respondents how COVID-19 would affect their use of AI, we can make informed projections about the leading and lagging use cases. In this report, we look at three industries: manufacturing, energy and media/entertainment. An additional report looks at use cases in healthcare, financial services and retail.
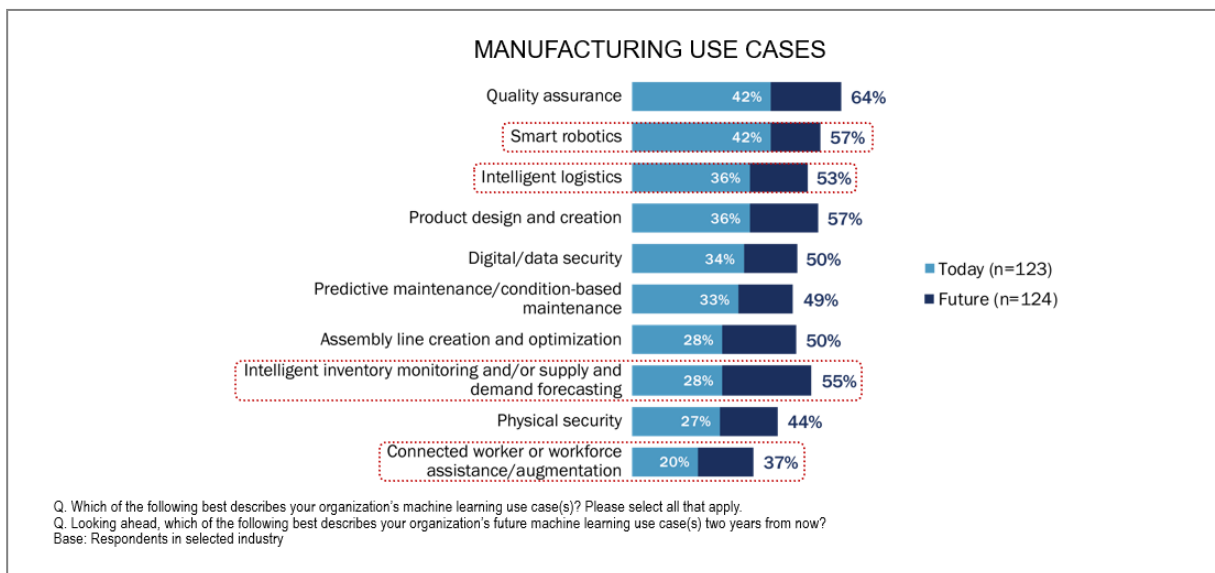
The 451 Take

Any technology that is sufficiently general-purpose has opportunities in a crisis. And machine learning is a general-purpose layer of technology that is enabling all sorts of use cases across every industry. In the good times, there is a surge of innovation and new technical development, which we have seen in spades with AI over the past five years. When a crisis hits and things slow down – or more or less grind to a halt as in the case of COVID-19 – some deployment of innovative technology gets accelerated. This is what we expect to happen in certain machine learning use cases that our surveys have identified, as well as in others that nobody has even thought of yet.

Manufacturing

The manufacturing sector had been demonstrating impressive adoption of AI technology pre-COVID, and we expect that to accelerate for those that survive the pandemic. If social distancing is maintained for a long time (i.e., multiple years), it will change the way many manufacturers operate. Smart robotics is already a strong use case now (see figure below), and survey respondents predicted it will remain so; we expect more investment in this area due to the need to have fewer humans directly engaged in the manufacturing process wherever possible and more automation, especially in more complex discrete manufacturing. It won't be the case that all manufacturing ends up looking like the semiconductor manufacturing process, where a combination of the need for cleanliness and the miniaturization of components means human hands aren't much use and machines do the work instead, but more sectors will take lessons from it and invest accordingly. Similarly, automating the quality assurance process using machine learning – the top use case identified by respondents both now and in two years' time – is one we expect to remain strong.

Machine Learning Use Cases in the Manufacturing Sector

Source: 451 Research's Voice of the Enterprise: AI & Machine Learning, Use Cases 2020

Intelligent logistics is another area we expect to get more attention post-pandemic. The ability to intelligently route manufactured goods will be crucial to help build more resilient supply chains, which in some cases will focus more on just-in-case than just-in-time. Autonomous delivery using drones and robots will get a boost.

Intelligent inventory monitoring is an area our respondents placed quite low on their list of priorities at the time of the survey, although they predicted it would see a strong uptick over the next couple of years. Now we expect to see things such as the use of robots do inventory monitoring to accelerate in uptake. Similarly, connected workers and workforce augmentation had been lagging, but we expect more interest in this as working patterns change, though of course, manufacturing is one area where it is hard for certain workers to do their job anywhere other than the factory floor.

Energy

The energy industry has suffered the double blow of COVID-19 causing huge slumps in demand, coupled with the collapse in oil prices. According to the International Energy Agency, demand could

drop across the world by 6% in 2020, which would be seven times the rate after the 2008 Great Recession. Its forecast issued on April 30 predicted oil demand would fall by 9.3 million barrels per day and pointed out that power demand declined by about 20% in countries with full lockdowns in place.

Picking up on that last point, predicting energy consumption was the second-most-popular machine learning use case in our survey, with 38% of respondents choosing it and 55% doing so for two years' hence. We expect interest to accelerate driven by the experience during the pandemic, where we have seen surges in home usage offset by slumps in office, shop and factory energy consumption. Usage peaks have shifted; the peak in Europe now comes later in the morning instead of early evening or early morning. In the US, peak is still in the evening as the lockdown is less uniformly enforced and has even eased in some states. AI technology can help energy providers adapt to new consumption trends or even help operators predict how the relaxation of social distancing measures will impact energy consumption going forward.

Smart grid distribution was another popular use case with 34% of respondents choosing it now and 52% in the future. When demand is reduced, demand response is key to keeping the grid operating at a stable frequency – e.g., 60Hz in the US and parts of Asia, 50Hz in most of the rest of the world. With normal grid distribution patterns no longer providing much value, AI can help grid distribution managers manage the new normal.

Risk analysis is something utilities are well prepared for – arguably better than some governments. They have business continuity plans for pandemics and have acted upon them. Some 34% of respondents see risk analysis as a machine learning use case now, rising to 52% in two years' time. We expect when we ask that question again, those numbers will be higher, considering that companies could want to turn to AI to help them evaluate and manage the proliferating risks created by these uncertain times.

Media and entertainment

The outlook could be grim for many segments of the media industry, including some parts that have seen a massive boost as the pandemic took hold. For example, take OTT services such as Netflix and Hulu. A survey of 974 US adults at the end of March by Kagan, a media research group within S&P Market Intelligence, found that if respondents lost their job and had to reduce expenses, the media service they would be most likely to cancel was streaming service subscriptions at 37%. Traditional TV services, i.e., cable or satellite, came in second at 28% with home internet and finally mobile phone being the last two things to be cut, at 21% and 14%, respectively. Given that 52% in the same survey said they were 'very' or 'somewhat concerned' about losing their job (and 6% already had lost theirs), the picture for media in the short term at least is a dicey one, despite the surge in subscriptions to OTT services during the pandemic and lockdown.

Given all that, where does machine learning fit in? The use cases we identified in the 451 survey in Q419 in the media and entertainment industry are pertinent to the issues facing the sector both during and after the COVID-19 pandemic. The second-most-popular use case (32%) was network optimization, which has been crucial for OTT services such as Netflix that have had to downgrade their video quality to avoid crashing networks in certain countries, something they have achieved seamlessly from the customers' point of view. This is also due in part to the increasingly software-driven networks these companies employ, which themselves use machine learning.

At the time of the survey, respondents cited Intelligent archive search and asset identification as having the joint best prospects, leaping from 27% choosing it as a current use case to 51% in two years' time. For sports broadcasters having to rely on showing famous sporting events from the past during a pandemic where no sports are being played, this has been the source of their content.

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The other use case to have strong prospects (a 24-percentage-point increase from current to future use case) was automated content creation. Given how much cost cutting will be happening at media companies of various types, using machine-learning-driven natural-language generation may be one of the key ways media companies stay in business. This use case may also be buoyed by the need of content providers to generate alternative forms of content or accelerate post-production of captured content to keep up with customer demand for new entertainment.

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