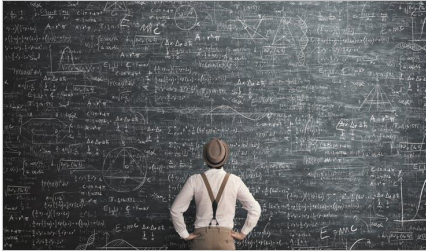


What is the role of machine learning in industry?

14th January 2020 | Louise Smyth

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In 1950, Alan Turing developed the Turing test to answer the question “can machines think?” Since then, machine learning has gone from being just a concept, to a process relied on by some of the world’s biggest companies. Here Sophie Hand, UK country manager at industrial parts supplier **EU Automation**, discusses the applications of the different types of machine learning that exist today.

Machine learning is a subset of artificial intelligence (AI) where computers independently learn to do something they were not explicitly programmed to do. They do this by learning from experience – leveraging algorithms and discovering patterns and insights from data. This means machines don’t need to be programmed to perform exact tasks on a repetitive basis.

Machine learning is rapidly being adopted across several industries – according to Research and Markets, the market is predicted to grow to US\$8.81 billion by 2022, at a compound annual growth rate of 44.1 per cent. One of the main reasons for its growing use is that businesses are collecting Big Data, from which they need to obtain valuable insights. Machine learning is an efficient way of making sense of this data, for example the data sensors collect on the condition of machines on the factory floor.

As the market develops and grows, new types of machine learning will emerge and allow new applications to be explored. However, many examples of current machine learning applications fall into two categories; supervised learning and unsupervised learning.

How does supervised learning work?

A popular type of machine learning is supervised learning, which is typically used in applications where historical data is used to develop training models predict future events, such as fraudulent credit card transactions. This is a form of machine learning which identifies inputs and outputs and trains algorithms using labelled examples. Supervised learning uses methods like classification, regression, prediction and gradient boosting for pattern recognition. It then uses these patterns to predict the values of the labels on the unlabelled data.

This form of machine learning is currently being used in drug discovery and development with applications including target validation, identification of biomarkers and the analysis of digital pathology data in clinical trials. Using machine learning in this way promotes data-driven decision making and can speed up the drug discovery and development process while improving success rates.

Unsupervised learning

Unlike supervised learning, unsupervised learning works with datasets without historical data. Instead, it explores collected data to find a structure and identify patterns. Unsupervised machine learning is now being used in factories for predictive maintenance purposes. Machines can learn the data and algorithms

responsible for causing faults in the system and use this information to identify problems before they arise.

Using machine learning in this way leads to a decrease in unplanned downtime as manufacturers are able to order replacement parts from an automation equipment supplier before a breakdown occurs, saving time and money. According to a survey by Deloitte, using machine learning technologies in the manufacturing sector reduces unplanned machine downtime between 15 and 30 per cent, reducing maintenance costs by 30 per cent.

It's no longer just humans that can think for themselves – machines, such as Google's Duplex, are now able to pass the Turing test. Manufacturers can make use of machine learning to improve maintenance processes and enable them to make real-time, intelligent decisions based on data.

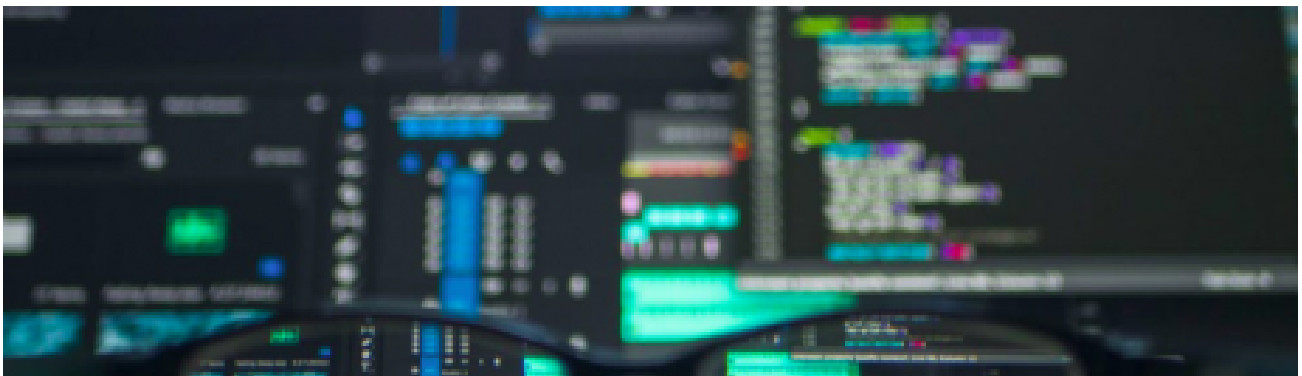
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