CHEAT SHEET:
AI IN MANUFACTURING

AI is changing the world of manufacturing
- but do you know which AI applications can improve manufacturing and how?
Don´t fall behind, learn about AI in manufacturing now.

MACHINE LEARNING

Subfield of AI which gives computers the ability to learn without being explicitly programmed. ML allows the machine to learn how to process large amounts of data, spot correlations, patterns and report anomalies. ML can help manufacturers optimize workflows, reduce costs in labor/logistics, minimize product defects and speed up business decision-making thanks to on real-time analytics of the whole manufacturing process. Machine learning, for instance, helps to innovate waste management - it can predict when a trash bin is expected to become full and alert on it or even automatically sort and recycle garbage.

DEEP LEARNING

A powerful field of machine learning that takes inspiration from the neurological structures of the human brain. Information is processed with deep artificial neural networks, which interpret the input through increasingly complex layers of abstraction. Deep learning (DL) is able to learn from complex processes, often where the number of parameters is high and behavior is hard to predict, therefore one use-case is to detect quality deviations through inspection of video, images, sound and other sensors. DL can also be used for predictive maintenance, with which manufacturers can more accurately forecast equipment breakdowns and schedule maintenance before failure.

ROBOTIC PROCESS AUTOMATION

In past, people used to move data between the relevant systems manually, for example copying a phone number from one database to another. With robotic process automation (RPA), the machine is able to watch and learn how people do these simple, repetitive database tasks and with enough training data, can start working on its own and automate high-volume, rules-driven tasks. RPA can help manufacturers not only with optimization of production line but also with back-office processes such as migration of data from old systems to the new ones, real-time monitoring of customer demand and hence make inventory turnover more efficient and avoid delay on shipment.

NATURAL LANGUAGE PROCESSING

A field of computer science dealing with the ability of the computers to analyze, extract and interpret the text in the same way as humans do. Meaning: the machine is able to process everyday language and turn it into structured data. Customer opinions are typically captured through multiple channels like user reviews, warranty claims, social media, and so on. These channels are often designed as text boxes to encourage the honest and natural expression of opinions. Such data is generally of high value and is typically analyzed using Natural Language Processing (NLP) techniques for translating it into influencing actions in manufacturing, customer service, marketing, and product development. The manufacturer Honda used NLP to extract, analyze and organize customer feedback and start detecting and improving quality issues in their vehicles.

COMPUTER VISION

This subfield of AI focuses on the ability of computers to see, process and interpret an image or video, inspired by the human vision. Computer vision (CV) can help a machine recognize faces in a photograph and determine traits like age and ethnicity. Deep learning algorithms are often used in modern CV applications. When it comes to manufacturing, CV can help with time-consuming, repetitive tasks and make better/faster quality decisions than human operators. Machines are able to check if labels on products are correctly printed, control if the beer bottles are not under/overfilled or sort out sardines on the production line.

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