SIEMENS
Ingenuity for life

Data Analytics and Artificial Intelligence

Company Core Technology

Background

The term Artificial Intelligence (AI) refers to computer systems that use algorithms to perform tasks for which humans apply their natural intelligence. Examples of such tasks are reading and interpreting texts, driving cars, recognizing images or playing chess. When attempting to carry out tasks such as these, machines attempt to mimic a human's performance rather than thinking in precisely the same way.

Importance for Siemens

Siemens has been working in the areas of data analytics and AI for some 30 years now. Neural networks are being used to optimize machinery and systems fully autonomously in real-life industrial settings. Siemens has a proven track record of generating business by successfully applying AI in industrial contexts.

Data analytics and AI represent an enormous business potential for Siemens in two ways: Firstly, Siemens is able to utilize such techniques internally across a number of different divisions – to supply new medical technologies or provide services for operators of power plants, wind farms or rail routes. Secondly, Siemens integrates its customers' manufacturing processes into digital platforms that enable them to boost efficiency by means of networked systems and self-learning machines.

Around 200 employees are working on data analytics and AI at Siemens, with deep learning processes that use hundreds of thousands of simulated neurons.

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Success stories and research focus

Siemens is already exploiting the benefits of data analysis and the AI technologies that build on it. Take gas turbines, for example. By generating more electricity and less toxic nitrogen oxides they learn how to continuously improve the way they operate. Such optimization of operations using AI is a service Siemens is now able to offer its power plant customers.

Siemens had enjoyed similar successes in medicine technology as well, where animated images provide real-time support during operations and help medical personnel analyze thousands of x-rays. Data analytics and AI are also of benefit in transportation applications. The high-speed trains in Deutsche Bahn's latest ICE fleet are equipped with sensors. Predictive maintenance using data analytics makes for shorter vehicle maintenance times, and AI support already simplifies the extremely complicated task of configuring signaling centers for train stations.

Artificial intelligence also forms the basis for an enormously complex quality control system used in steel plants. Since 1995, this self-learning AI subsystem has been installed in 30 steel plants across the entire globe, becoming a well-established application.

In the industrial context, data analytics and AI are already being utilized as part of MindSphere. This open, cloud-based operating system for the Internet of Things exploits artificial intelligence in its digital services offerings for predictive maintenance and operational optimization of systems and machinery.

The Company Core Technology unit Data Analytics & AI, part of the Siemens Corporate Technology (CT) R&D division, will play an increasingly important role as initiator and impulse provider. Thanks to the ongoing and continuous advances in R&D, Deep Learning and Reinforcement Learning have already become applications of commercial interest across all areas of business.

Further information

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