Smart Manufacturing with AI

Smart Manufacturing with AI: Backstory

Self-learning machines are the essence of artificial intelligence (AI). While concepts already date back more than 50 years, only recently have technological advances enabled successful implementation at industrial scale. AI has proven to be the core enabler of this automation based on advances in fields such as natural language processing or visual object recognition. AI is expected to lift performance across all industries and especially in those with a high share of predictable tasks within industrial sector.

The essence of intelligence is learning. Just as humans learn how to communicate, identify visual patterns, or drive a car, machines can similarly be trained to perform such tasks based on powerful learning algorithms. A common method of training machines consists of providing them with labeled data. Typical applications of AI include autonomous driving, computer vision, decision-making, or natural language processing. AI holds the benefit of being adaptable to very heterogeneous contexts just like humans. Well-trained AI is capable of performing certain tasks at the same skill level as humans but with the additional advantages of high scalability and no need for pauses. AI can discover patterns in the data that are too complex for human experts to recognize.

In the industrial sector, AI application is supported by the increasing adoption of devices and sensors connected through the Internet of Things (IoT). Production machines, vehicles, or devices carried by human workers generate enormous amounts of data. AI enables the use of such data for highly value-adding tasks such as predictive maintenance or performance optimization at unprecedented levels of accuracy. Hence, the combination of IoT and AI is expected to kick off the next wave of performance improvements, especially in the industrial sector.

AI-enhanced predictive decision-making

Predictive maintenance aims at improving asset productivity by using data to anticipate machine breakdowns. A well-established and relatively simple method of recognizing failures early on is condition monitoring. The complexity of forecasting failure is often due to the enormous amount of possible influencing factors. Data sources can be manifold and depend on the scenario. AI-based algorithms are capable of recognizing errors and differentiating the noise from the important information to predict breakdowns and guide future decisions.

AI and Future of Manufacturing

Artificial intelligence is changing the way in which organizations innovate and communicate with their processes, products and services. Practical strategies for employing AI and choosing the right tool that should have the following key components.

- Chatbots driven by artificial intelligence (AI) is already playing an important role in interaction with consumers, within the enterprise, and in business-to-business situations.

- Smart machines should be properly set up, maintained and continuously governed if they are of maximum benefit to the enterprise.

- Chatbots targeting specific industries and can perform niche tasks that are required for smart manufacturing.

Chatbots and AI Solutions for Manufacturing

Intelligent Chat is an AI solution that interacts with customers or internal users to answer questions, complete transactions, or walk users through a process, typically represented as a virtual avatar. Cognitive capabilities go beyond static question-then-answer formats and offer dynamic conversations that require intuition, judgment, creativity, persuasion, and/or problem solving.

Intelligent Chats are not the standard run-of-the-mill Chabot. They offer advanced capabilities to digest data provided in a comprehensive manner—drawing intent from customer interactions. In contrast, Chatbots process data and information received from users linearly, which limits the human-like interaction and can lead to customer frustration. Intelligent Chats can use machine learning to identify improvements to processes or responses and alert an organization to possible improvements. They can also be explicitly "trained" by human operators to follow business processes and serve organization-specific needs.

Intelligent Chats offer a digital solution that can be applicable for any customer-facing organization. The advanced Intelligent Chat solutions leading today's market interact with users in a natural, conversational format and adapt to customer expressions of frustration, happiness, and other emotions. Intelligent Chats also understand the content and context of a conversation in order to solve customer problems. They learn better problem-solving processes through repeated interactions and continuously suggest improvements.

Intelligent Chats will transform service delivery by making customer interactions easier and more painless. By applying a natural language interface across delivery channels (including online portals and mobile text/messaging apps), Intelligent Chats can serve more customers in the channels they prefer. When they cannot answer a question, Intelligent Chats can escalate the customer to traditional support functions, and learn

how to handle similar interactions in the future. In addition, Intelligent Chats can integrate across an organization's technology portfolio and link to back end systems. These capabilities allow Intelligent Chats to enable a truly seamless customer experience.

The accuracy, consistency, and machine processing that Intelligent Chats offer can also enhance the service being provided to customers. Whether public- or internal-facing, Intelligent Chats can authenticate through user accounts or physical credentials to integrate with multiple databases. The results are customized responses that have been vetted through systems, processes, and data that would normally be time-consuming for a human agent to access and analyze. Through Intelligent Chats, this information cannot only be quickly returned to the customer but information can also be attained, cleansed, and entered into databases. This provides a more seamless user experience allowing for providing and collecting information in a single interaction, rather than directing the customer to a form that would have to be submitted by paper or electronically.

Advantage, Intelligent Chats

- Is always available, 24x7/365

- Follows best practices consistently

- Leaves a full audit trail

- Works at machine speed

- Scales easily

- Easy to train and retrain

- Is mostly variable in cost

- Speaks multiple languages