AI Innovation at SPS 2023

Munich-based startup Xplain Data debuts autonomous Causal DiscoveryBOT

Munich, October 10, 2023 - Xplain Data introduces its autonomous Causal DiscoveryBot at SPS - smart production solutions 2023 in Nuremberg, Germany, November 14-16. This groundbreaking bot works in the background of a plant and continuously analyzes the data from all production steps. The goal is to find the few factors that have a causal influence on a target variable – e.g., factors that endanger the quality of the workpieces produced. If significant new causes emerge, a message is sent to the relevant stakeholders. Visitors to Hall 6, Booth 241F in the "Automation meets IT" area will have the opportunity to learn more about the comprehensive range of Causal AI technologies for production optimization.

According to a [Deloitte study](), the manufacturing industry generates approximately 1,812 petabytes of data per year, more than any other industry. This observational data, stored in various databases (SCADA, MES, CRM...) along the supply chain, is the basis for Xplain Causal AI solutions. These identify the factors that have a causal impact on value creation (e.g., root causes for n.i.o. products).

"*Post-mortem analysis is often of limited use. With the introduction of the DiscoveryBOT, we are for the first time able to integrate our processes directly into the ongoing operation of a plant. This makes the bot an integral part of a production line and gives our customers the assurance that they will be alerted quickly to newly occurring failure factors,*" says Dr. Michael Haft, CEO of Xplain Data.

By identifying cause and effect in Historian data, Xplain Data customers are able to

- make more informed decisions about corrective actions in the manufacturing process,
- significantly improve the quality and sustainability of manufacturing activities, thereby
- sustainably reduce production costs.

Die Xplain Data GmbH will present the following solutions at SPS 2023:

Xplain CausalDiscoverer

Causal AI algorithms identify causal relationships in complex production environments

In large production data sets with many process steps, there are many factors that correlate with a target variable (e.g., n.i.o. rate of produced parts). The challenge is to identify the few causal relationships to a target variable from the large number of correlations. The Discovery Algorithm achieves this through a deep statistical search along all process steps: The basis for targeted interventions to optimize the production line.

Xplain Causal DiscoveryBot

Application of causal algorithms "in the loop"

The discovery procedures are embedded in an interface that allows interactive causal exploration. The autonomous Causal DiscoveryBOT works in the background. It continuously scans the

accumulating production data for emerging root causes that threaten production. Affected stakeholders are alerted (via email, Slack, etc.) as soon as new causal factors become significant. From a methodological perspective, it represents a significant advancement in plant monitoring in the SCADA/MES context.

Xplain ObjectAnalytics Database

Aggregates all data along the supply chain into a single view of the business object (machine, part) under consideration

ObjectAnalytics is the foundation for Causal Discovery and provides the integrated, easy-to-use ObjectExplorer for performing and visualizing the necessary exploratory pre- and post-processing analysis. Thanks to the object-centric representation, complex queries analyzing relationships between different sub-objects (workpieces, process parameters, events, messages...) can be executed at high speed. ObjectAnalytics provides the overall view needed to optimize a plant across all process steps.

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About Xplain Data

Xplain Data GmbH, founded in 2015, focuses on the development of innovative technologies in the field of Causal AI. Xplain Data's algorithms enable companies in all industries to identify the few, potentially causal relationships in their "real world data" that are hidden behind a plethora of trivial correlations. Users can use these cause-and-effect insights to intervene in their business processes to eliminate root causes or amplify positive effects. Xplain Data's customers include leading companies in the engineering, manufacturing, and healthcare industries, who use the technologies not only for advanced data analysis but also for production and yield optimization.

Images:
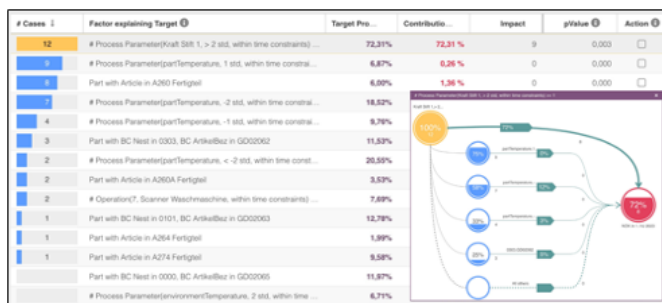
Captions:
1. Presentation of the results from the Causal Discovery procedure
2. Dr. Michael Haft, CEO of Xplain Data GmbH

High-resolution images for download here.