RapidMiner and Industrial Internet of Things (IIoT)

Maximize value from proliferating smart equipment by using AI to create an Artificial Intelligence Internet of Things (AIoT)

The potential of digitization is accelerating in manufacturing and equipment-intensive industries as the equipment itself is digitized with built-in, network-connected sensors. This internet of things (IoT) is spiking data collection volumes to the extent that traditional data analysis cannot extract value. Only artificial intelligence (AI) can harness the potential of this data with transformative insights from IoT to drive massive efficiency increases, cost reductions, and product quality improvements. We call this powerful combination the Artificial Intelligence Internet of Things (AIoT).

Uses of the Artificial Intelligence Internet of Things (AIoT)

Predict and Prevent Equipment Failure

By continuously gathering detailed data from production or field equipment and applying AI, organizations can predict which equipment is likely to fail, and when. This allows preventive action to be taken at the most opportune moment, reducing repair costs and minimizing downtime. Patterns of failure can also be identified to avoid continued investing in problematic equipment.

Optimize Network Management

Network performance is vastly improved by field equipment with smart sensors that collect data for analysis by AI. Using historical data, AI can begin to predict demands on the network and recommend operational adjustments to maximize performance. Practically any network can be improved with AIoT: telecom nodes, power grids, utility pipelines, transportation fleets, edge computing systems, and more.

Improve Product Design and Quality

AIoT turns end-user products themselves into field equipment. Smart products collect data during usage for delivery back to the manufacturer. When aggregated, anonymized, and analyzed, this rich input provides product designers with information about how products are used, what feature improvements would help, and where production processes need to be stepped up to improve product quality.

Increase Production Efficiency

Smart plant floor equipment can provide insight into overall discrete and continuous production processes, not just the equipment itself. Data can be collected on what was produced when, by which equipment, and under what conditions. An AI digital twin can then compare this data to quality and throughput results to pinpoint opportunities for improvement by making adjustments to equipment, conditions, process flows, and more.

20x
faster and more accurate predictions using AI with IoT than traditional approaches

42B
connected devices will be part of the IoT by 2025

60%
annual growth in IoT usage in industrial settings

$2.3T
market size for AIoT systems by 2023

Benefits of the Artificial Intelligence of Things (AIoT)

Lower Operating Costs

AIoT enables smarter, proactive repair of field and production equipment at lower risk and with less production downtime.

Better Customer Experience

The greater reliability of products and service networks created by AIoT makes for a better customer experience and happier, more loyal customers.

Reduced Risk

Using AIoT to improve product quality and production processes reduces the risk of product failure and health, safety, and environmental liabilities.

Increased Revenue

Improving product design by using AIoT to understand usage and predict and prevent problems drives greater demand from the market and higher revenues.

How RapidMiner Enables the Artificial Intelligence of Things (AIoT)

RapidMiner put the "AI" in "AIoT" through partnerships such as with OSIsoft, the global leader in real-time data infrastructure for critical operations. The integration between the RapidMiner and OSIsoft platforms is called SensorLink. It connects RapidMiner to the PI System, OSIsoft's flagship product, allowing easy extraction of operational data for machine learning applications. SensorLink is available on both the RapidMiner and OSIsoft marketplaces. The partnership and integration aim to empower process engineers and operators to benefit from AIoT by extracting more insight from their daily operations to power predictive maintenance, prescriptive optimization, anomaly detection, and more.

CASE STUDY

RapidMiner and Hivecell Enable Real-Time Scoring at the Edge

HiveCell is the premiere Platform as a Service for edge computing, enabling organizations to deploy compute power to thousands of locations outside the "data closet." Industrial and equipment-intensive industries deploy HiveCell "hives" to sites with smart equipment and devices. These hives collect the data being generated from these IoT sites and route it to a central data lake. RapidMiner can be integrated into the HiveCell architecture, building models centrally using pooled data. RapidMiner models are then pushed back to the hives at the edge for fast execution and to guide effective device- and location-specific decision making without relying on cloud connections. HiveCell and RapidMiner together create a true Artificial Intelligence Internet of Things (AIoT).