TrendMiner
A SOFTWARE AG COMPANY

Industrializing Machine Learning for Operations

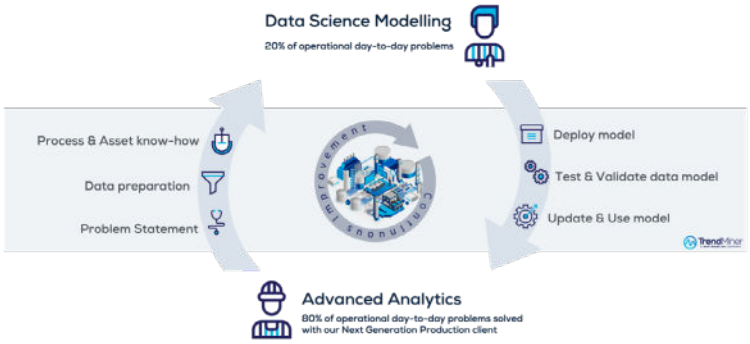
Solve more and more industrial use cases by bridging the gap between operations and central data science groups

About 74% of machine learning projects never make it out of pilot phase, according to McKinsey & Co.[1] Yet, their use cases for deep analysis of process performance are plentiful. Machine learning projects have long been the realm of central data science groups, which quickly become overloaded with projects. As a result, production sites relying on the availability of data scientists see improvement possibilities left on the table because operational experts often lack the statistical and programming knowledge needed to put the power of machine learning in their own hands. Conversely, data scientists often need to spend significant time learning about the process so they can crunch numbers.

What if you could industrialize machine learning to make the work of data scientists available to everyone in operations? And what if you could take the work of the operational experts, and apply that knowledge directly to data science projects?

TRENDMINER MLHUB

TrendMiner's machine learning environment (MLHub) fosters efficient collaboration between operational experts and data scientists. Rather than receiving one-off requests from operations, central data science teams can begin a machine learning exercise using pre-processed time-series and contextual data that has been collected and stored from sensors throughout a plant.



MLHub industrializes machine learning for operations. It allows (citizen) data scientists to validate a hypotheses using a prepared and contextualized problem statement based on TrendMiner views. They can quickly and easily deploy models and visualizations created in the solution's notebook environment. Data scientists on centralized teams become trusted advisors because they continuously provide even richer insights into operational behavior.

BENEFITS

LEVELED PLAYING FIELD

More than ever before, data science is becoming a team sport. MLHub levels the playing field and bridges the gap between data science groups and operations.

EASY TO GET STARTED

A model is only good if it is used. MLHub makes it easy to create, train, and deploy machine learning models into use, which helps improves adoption rate among users.

COMPETITIVE ADVANTAGE

MLHub contributes to sustainability, plant safety, and overall profitability goals by helping to solve more use cases and increase an organization's data maturity level.

[1] Operationalizing Machine Learning in Processes. McKinsey & Co., Sept 27, 2021.
https://www.mckinsey.com/capabilities/operations/our-insights/operationalizing-machine-learning-in-processes

MLHUB – KEY CAPABILITIES

CLEAN DATA COLLECTION
Make the most of TrendMiner views. Use saved views that contain interesting fragments of time-series and contextual data and upload them as data frames in MLHub, where they can be further pre-processed and analyzed.

FLEXIBLE MODELLING
Users have a choice. They can build and train machine learning models with MLHub's built-in modeling toolkits, or they can import models directly from third-party environments, such as AWS Sagemaker or Microsoft Azure.

OPEN-SOURCE COMMUNITY
Our Jupyter Notebook environment comes pre-loaded with the most common algorithms for data processing in addition to importing your own custom tools or consulting the extensive libraries of the world's largest open-source communities.

SEAMLESS DEPLOYMENT
By converting them to open standards (PMML or ONNX), machine learning models in MLHub are made available for efficient scoring by TrendMiner's internal ML engine.

RICHER INSIGHTS
TrendMiner ML Model Tags offer a no-code interface to leverage the machine learning results for any operations user, like any other tag (sensor reading), for greater insights on process behavior.

CROSS-PLATFORM INTEGRATION
Augment operational analytics by using machine learning models throughout TrendMiner.

- TrendHub: Just like any other tag for descriptive analytics, visual exploration, value-based or threshold searches, and for monitoring purposes
- ContextHub: Deployed models can be used to enrich process events
- DashHub: Additional visualizations

MLHUB USE CASE AREAS

TrendMiner is versatile software capable of handling a wide variety of use cases to analyze, monitor, and predict process and asset performance within their operational context. With the addition of MLHub, machine learning capabilities become available throughout the solution. These include clustering, classification, regression, and dimension reduction. MLHub provides the resources to solve new end-to-end use cases in the following areas:

Soft Sensoring

Soft sensors can reduce costs, create redundancy for crucial assets, and save time and manpower when resources are short. Use cases include modus operandi classification, clustering of seasonal behavior, and estimated steam consumption.

Anomaly Detection

Enhanced **anomaly detection** capabilities with several options. TrendMiner offers anomaly detection out of the box with fingerprinting and thresholding functionality. MLHub extends the scope with several new principles, such as isolation forest and K-nearest neighbor. Our Self-Organizing-Maps algorithm can even cope with processes that have fluctuating durations (such as batch processes).

Predictive Maintenance

Extend TrendMiner's **predictive maintenance** capabilities. Use cases include survival analysis for events that haven't happened yet, simulation for most durable runtime process parameters, classification of failure modes, and predicting batch and quality.

Process Data Classification

With MLHub, users can determine different types of set-points based on the quality features of raw materials, which is useful for clustering similar **processing** conditions or for predicting the yield.

DISCUSS WHAT TRENDMINER CAN DO FOR YOUR COMPANY

CONTACT TRENDMINER

Read more about MLHub in our blog or watch the introduction to MLHub in our webinar.