

Digital Solutions

Artificial Intelligence & Machine Learning

Improving technology is enabling more control and optimization of processes

This increases competitiveness among businesses and first movers stand to gain the most from market capitalization. INTECH's AI/ML enable enterprises to explore hidden efficiencies and optimize processes that can save days of manual work in a matter of minutes and discover critical performance factors that would have been invisible to traditional detection methods.

INTECH's anomaly detection module enables real time autonomous detection of such univariate/multivariate patterns which do not conform to predetermined normal behaviour of equipment or process.

INTECH's AI/ML Capabilities

Delivered through a team of multiple PhDs, data engineers, data scientists, and software engineers

Maintenance Analytics



Anomaly Detection

Autonomously detects in real time patterns that do not conform to predetermined normal behaviors in equipment or processes



Diagnostics

Identifies equipment and process faults based on predefined patterns of failure or inefficiencies, alerting users to take corrective actions on time



Prognostics

Assesses the health of equipment and processes in real-time and predicts time to specific events



Root Cause Analysis

Uses failure data of past to train a model which can then be used to detect root causes of events in an automated manner

Production Analytics



Soft Sensing

Performs real-time prediction of critical process variables that usually require expensive online analyzers at low sampling rates or off-line analyses like lab tests



Golden Batch

Builds a "golden batch" profile from historical data of best batches, tracks performance of current batches against this benchmark



Intelligent Forecasting

Utilizes deep learning to estimate demand for specific periods, taking into account seasonality, macro trends, and incidental factors

Operations Support



Maintenance Cost Estimation

Estimates future work orders and their costs for different types of assets based on historical data and equipment metadata



Shop Floor Scheduling

Balances demand with available resources while optimizing operations in light of contextual constraints and time limitations



Transfer Learning

Overcomes the scarcity of labeled data by using transfer learning - a technique where a pre-trained model is used as a starting point for a new task

Libraries, Tools, & Technologies

Data Processing & Visualization



Model Development and Deployment



Data Processing & Visualization

Time Series Forecasting

- › LSTMs
- › DeepAR
- › HMMs
- › TFT
- › Ensembles

Prognosis

- › Time Series Forecasting
- › Weibull NN
- › Survival Analysis

RCA

- › Bayesian Networks
- › Transfer Entropy
- › First Out

Soft Sensing

- › Ensemble (Bagging/Boosting/Stacking)
- › Representation Learning

Anomaly Detection

- › Bayesian Networks
- › LSTMs
- › Autoencoder
- › HMMs
- › Statistical Methods

Miscellaneous

- › Scheduling
- › Routing

Diagnostics

- › Transfer Learning using CNN
- › LSTMs
- › Siamese NN

INTECH's AI/ML Workflow

1. Data Ingestion

- › Both Streaming as well as batch data ingestion.
- › Data Ingestion from different sources using architectural best practices.
- › Efficient and optimized ETL pipelines

4. Model Development & Deployment

Deep learning and machine learning based models to solve complex industry problems.

Model life cycle management.

2. Data Storage

- › Choice of storage depends upon the nature of data (structured, semi-structured, unstructured).
- › Our certified experts help you make right choice of data storage mix for your data.

5. Apps & Reporting

- › Report actionable insights from models in form of widgets, grids, and reports.
- › Cross platform and use-case specific apps to make ML actionable.

3. Data Preparation & Analysis

- › Clean the data and remove missing values
- › Understand the cleansed data using powerful visualizations.