HCLTech | Supercharging Progress™

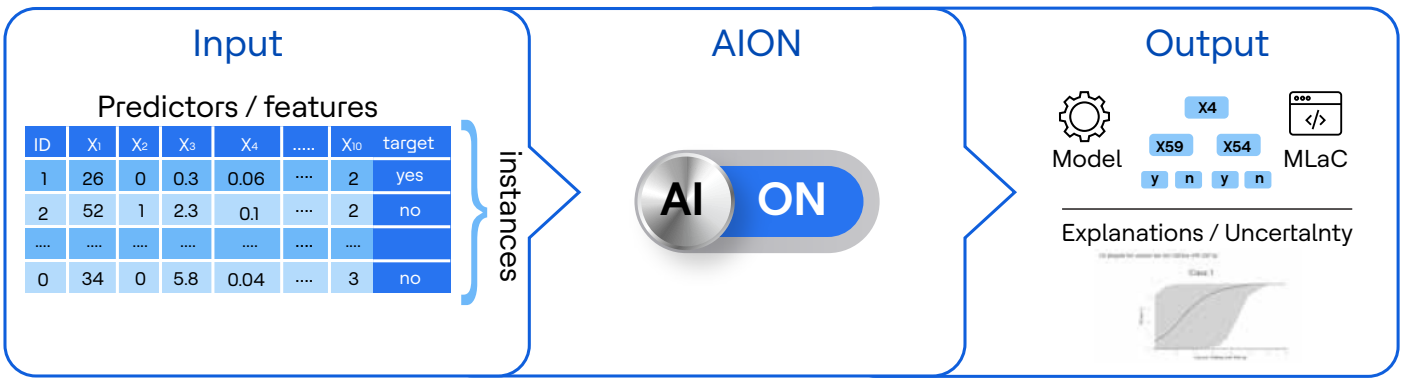
AION:
"switch on AI"

Overview

Organizations today are targeting to promote the democratization of machine learning and AI. This will unlock immense potential that is still untapped, as most of the domain expes are not capable of building ML models. AION will enable domain expes (also known as citizen data scientists) to build ML models to derive useful insight from raw data and help resolve business problems.

AION is an AI lifecycle management platform for applying machine learning to real-world problems. AION encompasses the complete pipeline from raw dataset ingestion to a deployable machine learning model with a low-code/no-code approach. AION Includes the following sub-processes:

- Data exploration, insights generation and transformation (Data Engineering)
- Machine learning, deep learning and artificial intelligence training (Algorithms and Models)
- Prediction interpretation/explanation, model testing and uncertainty quantification (XAI / ML Test / UQ)
- Model deployment, model observation and model operations (MLOps)



Industry challenges and solution using AION

Challenges	
Development of ML models takes long time and need specialized skill set	Empower people in organization whether technical (working in code) or business (low-code/no-code) to create ML models
Data scientists do not have deep domain understanding and domain expes do not understand machine learning	AION helps citizen data scientists develop ML Models. Reduces Repetitive work needed by data scientists in developing models saves precious data scientist effo by automating low end work
ML models are black box and give no explanation on predictions	AION provides detailed explanations on reasons for prediction

HCLTech AION advantage	
Data needed for building ML models is not centralized and is available in varied data formats and platforms	Hooks to integrate with varied enterprise data sources handle data cleansing, data quality issues, data outlier issues, handle multiple data types and unstructured data
ML model and data might drift with time, resulting in incorrect insights and predictions	Model monitoring suppo and drift analysis for input/output data and model predictions
Code generated by AI lifecycle mgmt. Platform is not reusable across platforms	MLaC feature generates platform independent Python code and containers that can be consumed outside AION as well

AION Differentiators

Integrate with any digital platform and provide analytics as a service

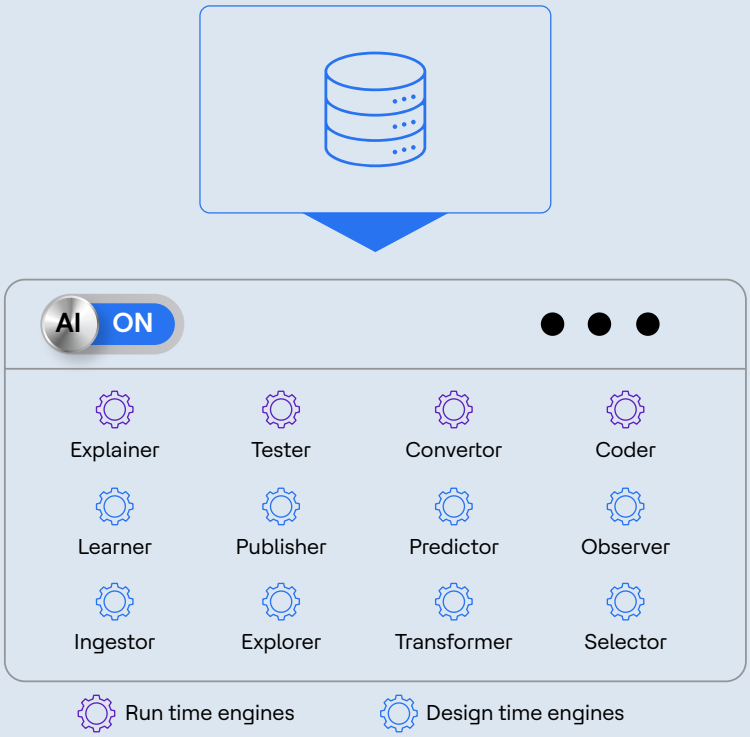
Easy integration with different data sources and hyperscalers

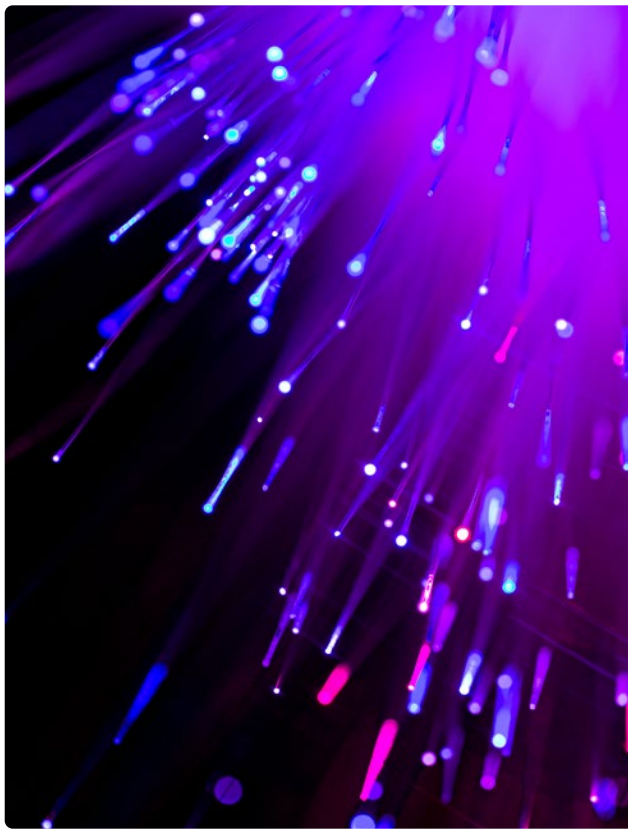
Model and prediction explainability

Single platform providing services to conve raw data into insights and value

ML-as-a-code (MLaC) available for expert data scientists and easier maintenance

AION engines





Ingestor
Hooks to consume data from disparate sources

Transformer
Data cleanup and preparation to improve data quality

Explorer
Visual exploratory data analysis to derive descriptive insights

Selector
Identification of relevant features based on correlation and impoance

Learner
Identify best algorithm and parameters for highest scor

Publisher
Flexible ML model deployment options for varied environments

Predictor
ML model serving and inference services

Observer
Model monitoring for input and output drift of data or predictions

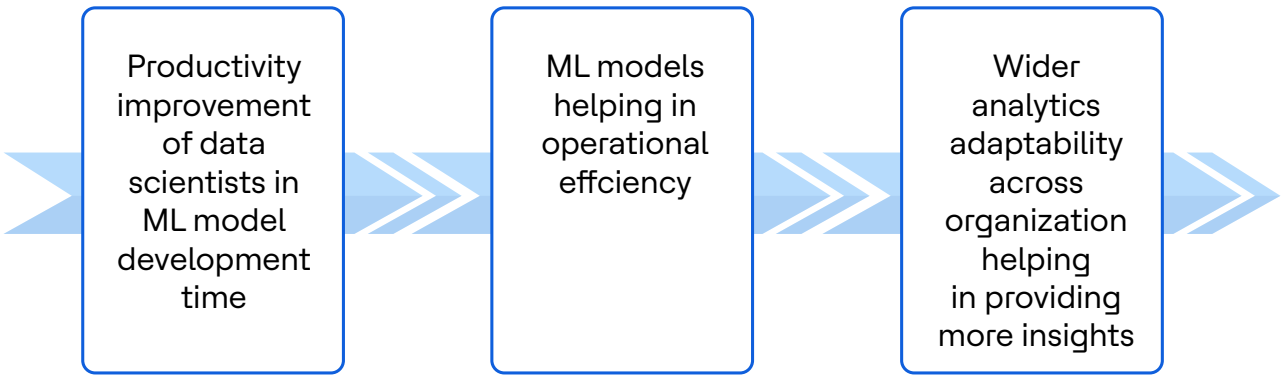
Explainer
Explanation and unceainty quantification of the prediction

Tester
Benchmarking and testing of ML models

Convertor
Conve ML models to edge and hyperscaler platforms

Tester
Automatic generation of Python code for ML pipeline components

AION business benefits



Proof points

Complaint identification for medical devices

The problem was to identify cases of medical device complaints given a set of device services repo records using unsupervised and supervised techniques. The complaint data was passed through AION pipeline, where data profiling and feature selection were peormed. Constant features were removed and low-variance features were handled. Features with empty rows were imputed appropriately. Supervised classification and unsupervised clustering were peormed as two diferent approaches to categorizing complaints.

Network quality of service QoS) classification

A leading telecom service provider wanted to introduce QoS analytics capabilities in a device management platform that they were using from HCLTech AION, a solution to provide descriptive and predictive analytics insights for the CPE devices was developed. The descriptive analytics included dashboards for QoS analysis, degraded QoS and statistical insights. Predictive analytics included quality-based traffc paerns, forecasts of error rates, noise and signal strengths.

Customer Order Forecasting

A leading telecom service provider wanted to automate order volume and trend monitoring (which was being monitored manually). No telemetry was defined for order volume variation. AION was introduced for AI/ML based forecasting to help in defining telemetry for order volume variation. A time series forecasting model was developed that was trained automatically every 24 hours (or as per configured interval) to forecast volumes for the next period (one hour or configured interval).

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