

HCL's Machine Learning based solutions for Wireless Networks

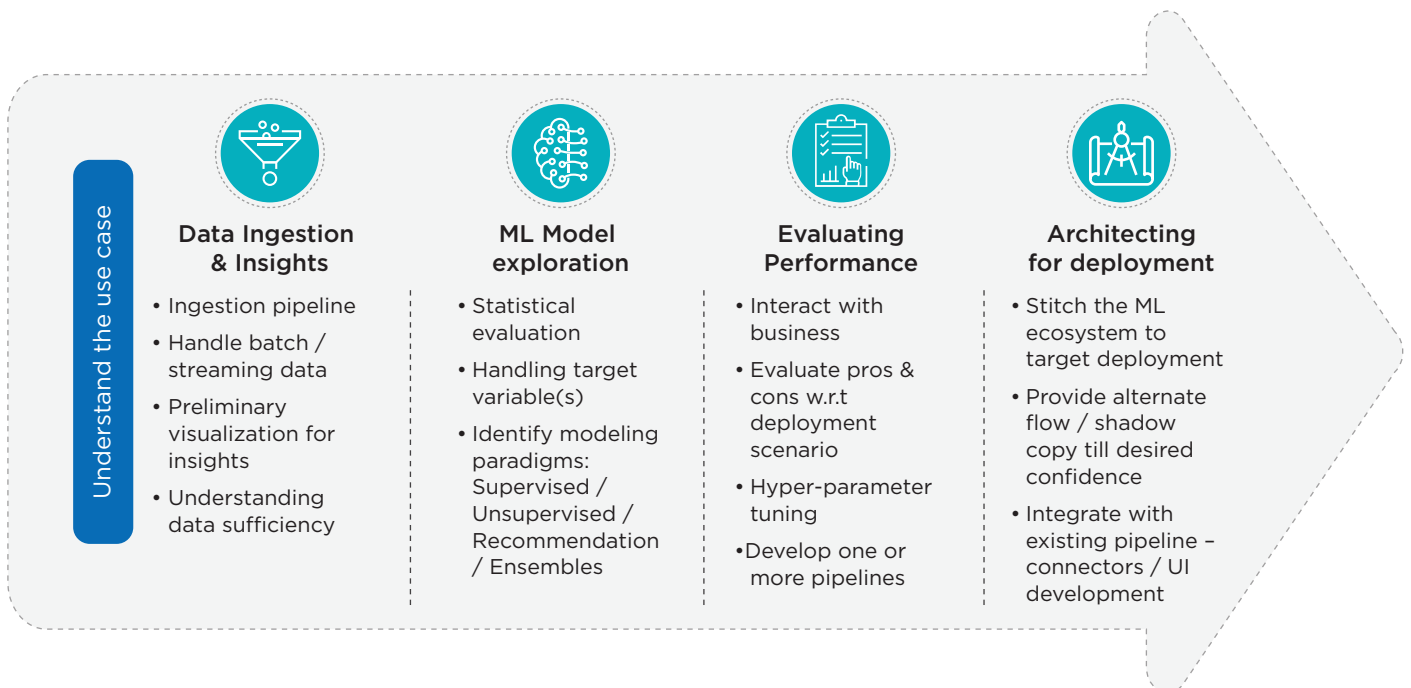


HCL's Point of View on ML for Wireless

VERTICALS: Domain | Infrastructure | Deployment | Continuous Learning

DRIVERS: Standards | ML ecosystem | Programming | Deployment

Customer engagement Process: Collaboration | PoC | Beta Trial | Integration



SKILLS: 3GPP | O-RAN | Python | Spark | Data Science | Machine Learning | AI | Cloud Native

IBM Watson: Knowledge Catalogue | Cognos | Data Virtualization | Model Drift

IP Creation | Whitepapers | Blogs | Webinars

Network Optimization based on ML Algorithms



ML Powered KPI Forecast

- Uses time series based ARIMA models
- Helps forecast KPI for a given future day / time
- Helps define accurate thresholds and can quantify degradation based on seasonality of data
- Integrates with existing system for alerting

Whitepaper link:

[AI Connect: A Machine Learning based time series forecast for Wireless Network Optimization](#)

US Patent Application No 16/748,100



ML Powered KPI Prediction

- Uses Unsupervised or supervised clustering techniques to cluster cells based on different characteristics such as capacity, HO relations, throughput, etc.
- Uses Regression, Classification, Random Forests, etc. to visualize their relationships with KPI
- Helps evaluate KPI tradeoffs
- Reactivity of the model can be fine tuned using hyper parameters

Whitepaper link:

[Machine Learning based KPI prediction for Wireless Network Optimization](#)

US Patent Application No. 16/235,433



ML powered Node Profiling based on KPIs'

- Uses ensemble techniques to characterize KPIs
- PM counters, CMs, Alarms, Logs can be used as inputs for training models
- Uses decision trees as a mechanism to identify underlying root causes

Whitepaper link:

[AI Connect : Machine Learning based Node Profiling for Wireless Network Optimization](#)

US Patent Application

No. 16/365,802, 16/265,029 - Granted

US Patent Application No. 16/251,797

Customer Benefits

- **Plan Network Operations:** Cell-splitting, Resource Augmentation
- **Engineer Adaptive Alerts,** Minimize Alarm Flooding
- **Characterize Network Performance** and get Insights into Optimization
- **Develop Preventive Care Solutions** from System Logs

- **Plan Network Operations:** Feature Enablement, H/W Introduction
- **Resolve Feature Interplay Issues**
- **Map Impact of Features** on Specific KPIs
- **One-click Simulation** of KPI Prior to Application saving OPEX

- **Decide Fix Applicability, Save OPEX**
- **Identify Underlying Root-causes,** one-click RCA Engine
- **Identify Fixes - one-click to Compare Fixes** and Impact
- **One-click Characterization** of Cells/Network Elements



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How can I help you?

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