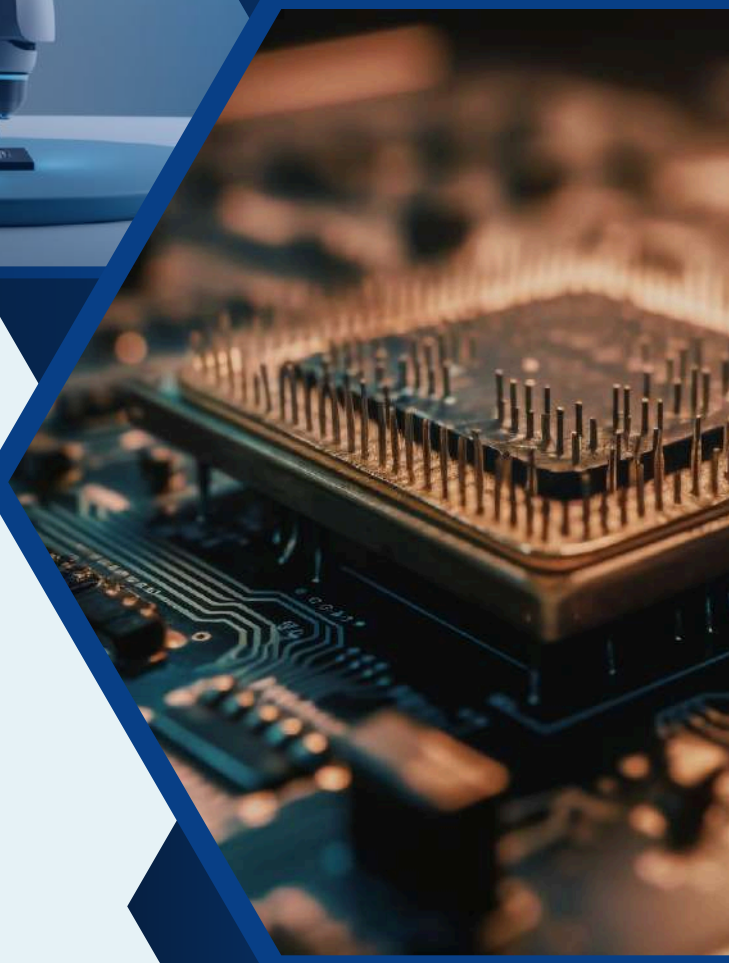
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INDUSTRIAL TIME-SERIES ML FOR SEMICONDUCTOR MANUFACTURING



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Industrial Time-Series ML for Semiconductor Manufacturing

• Program Overview

This two-day hands-on program equips participants with practical capabilities to design, build, and validate time-series machine learning models for semiconductor manufacturingenvironments including assembly, test, and packaging operations.

Unlike static classification models, semiconductor equipment and yield optimizationproblems involve sequential data, drift, rare events, and signal instability. This programfocuses on transforming raw sensor data into actionable predictive insights whilecontrolling false alarms, drift risk, and operational disruption.

Participants will work with real-world manufacturing-style datasets including vibration, temperature, cycle time, and yield traces to design anomaly detection systems suitable forMVP-level predictive maintenance deployment.

• Learning Objectives

By the end of the course, participants will be able to learn about:

1. Understand the differences between static ML and time-series ML.
2. Design rolling window and lag-based feature engineering pipelines.
3. Build anomaly detection models for rare event detection.
4. Calibrate precision-recall tradeoffs for industrial environments.
5. Design early-warning systems with lead-time validation.
6. Evaluate false positive cost vs failure cost trade-offs.
7. Design MVP-ready predictive maintenance pipelines.

• Duration

Two(2) Full-Day Workshop;

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Industrial Time-Series ML for Semiconductor Manufacturing

• Course Schedule (Day 1)

DAY/TIME	Topic
1 Hour 30 Minutes	**Module 1: Time-Series Fundamentals in Manufacturing** Key Content • Static vs sequential data • Sensor telemetry types in assembly & test • Signal noise & smoothing • Drift vs anomaly • Equipment state transitions
2 Hours 30 Minutes	**Module 2: Feature Engineering for Industrial Signals** Key Content • Rolling mean / std / delta features • Window segmentation strategies • Lag features • Frequency-domain transformation basics • Handling missing sensor data
1 Hour	**Lunch**
3 Hours	**Module 3: Feature extraction from vibration + temperature signals** Key Content • Isolation Forest • Autoencoders (conceptual) • One-class classification • Threshold selection strategies • Rare event modeling
	Wrap-up and Recap Day 1

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Industrial Time-Series ML for Semiconductor Manufacturing

• Course Schedule (Day 2)

DAY/TIME	Topic
1 Hour 30 Minutes	**Module 4: Evaluation for Rare Events** Key Content • Precision vs recall in maintenance • False alarm cost modeling • Lead-time validation • Confusion matrix interpretation • Early warning calibration
2 Hours 30 Minutes	**Module 5: Drift Monitoring & Model Decay** Key Content • Concept drift detection • Data drift vs behavior drift • Retraining triggers • Monitoring dashboards
1 Hour	**Lunch**
3 Hours	**Module 6 :MVP Predictive Maintenance Blueprint** Key Content • Define scope (single subsystem) • Alert escalation logic • Human validation loop • Shadow deployment strategy • Define success KPIs
	Wrap-up and Recap

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ABOUT ELITE INDIGO

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