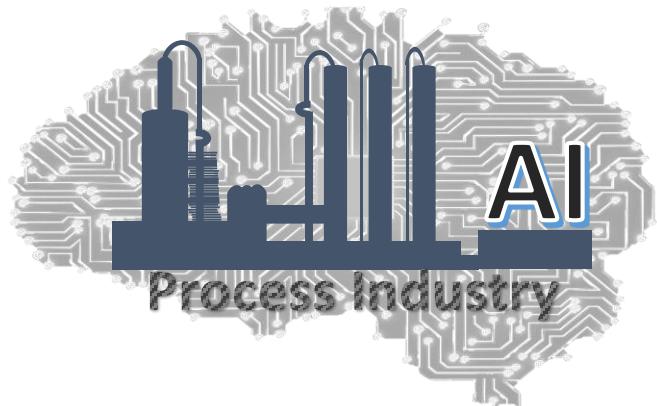


Statistical Techniques for Monitoring Industrial Processes



Lecture : PCA – Fault Detection Implementation

Module : PCA-based MSPM

Course TOC

❑ Introduction to Statistical Process Monitoring (SPM)

❑ Python Installation and basics (optional)

❑ Univariate SPM & Control Charts

- Shewhart Charts
- CUSUM Charts
- EWMA Charts

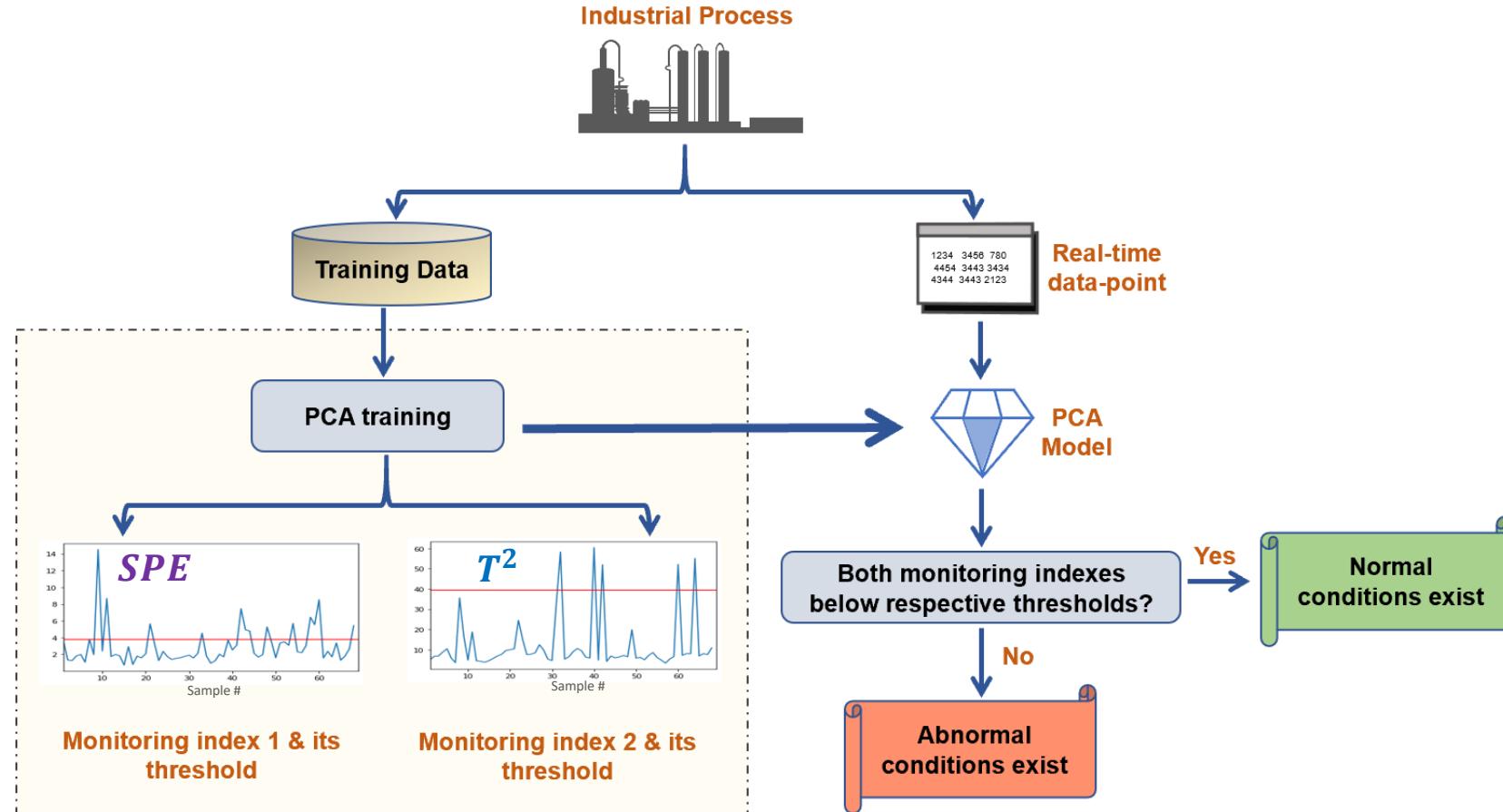
❑ Multivariate SPM

- Principal Component Analysis (PCA)-based MSPM
 - Dimensionality reduction
 - Fault detection & diagnosis (FDD) using PCA
 - Application to a Polymer Manufacturing process
- Partial Least Squares (PLS) regression-based MSPM
- Strategies for handling nonlinear, dynamic, multimode systems



❑ Deploying SPM solutions

PCA-based Fault Detection Workflow



Statistical Techniques for Monitoring Industrial Processes



Next Lecture : PCA – Fault Diagnosis

Module : PCA-based MSPM

