Machine Learning for Pipeline Integrity

Introduction Training Course on the latest risk and predictive modelling best practices for pipeline integrity and risk management

Pipeline-Risk

About the Class

Machine Learning is emerging as a fundamental practice in support of pipeline integrity and risk management. As the amount and complexity of data is ever expanding, machine learning is making it possible to **efficiently identify** risks and manage what is important to integrity objectives. This course presents the fundamentals of machine learning through interactive discussion and presentation of real-world use cases.

This course is a 1.5 day highly interactive **hands-on** workshop using provided example or attendee data to take the mystery out of machine learning and associated analytics in the context of pipeline integrity. Through a secure web-based application, the attendee will work through key fundamentals and use cases to **personally experience** how models are learned and validated, complex patterns revealed, outliers identified, and data quality assessed and mitigated

Who Should Attend?

Integrity Managers

Managers responsible for integrity management programs will gain a basic understanding of machine learning methods and how the model performance indicators of the model can be used to support allocation of resources and budget.

Pipeline Risk Engineers

Engineers responsible for identifying potential risk will understand how to develop machine learned models with a specific target of interest such as external corrosion predictions.

Data Scientists

Data specialists will learn Exploratory Data Analytics (EDA) fundamentals and the best practices for collecting the data a required for machine learning models.

What You Will Learn

Exploratory Data Analysis – Ensure your predictor data accurately represents the environment your assets operate in.

Model Learning – Select the right method to support your target of interest and ensure the method performs to an acceptable level of efficacy.

Model Application – Apply the learned model to a large sample size and generate probabilistic for all your assets.

Explore Results – Drill into the predictions and interpret model results and consequential influencing factors.

Three Benefits of a Machine Learning Short Course

1 **Enhanced Understanding of Machine Learning Fundamentals**

Participants will go beyond a high-level overview, diving deeper into foundational concepts of machine learning such as supervised vs. unsupervised learning, feature selection, model training, and evaluation.

2 **Application to Pipeline-Specific Data**

With more time, participants can explore pipeline-specific datasets, such as pressure, flow, maintenance records, and corrosion data. Learning how to preprocess, clean, and analyze these data types enables participants to better understand data-driven decisions relevant to pipeline risk.

3 **Hands-On Model Building**

Participants could engage in practical exercises to build models, potentially including clustering for anomaly detection or predictive modeling for failure forecasting. With ample time, participants would have opportunities to try multiple approaches, evaluate performance, and iterate on models, gaining confidence in model development and troubleshooting.

Pipeline-Risk

Engineering Solutions & Software

Contact Us

+1 (303) 881-4379

sales@pipeline-risk.com

More Information

www.pipeline-risk.com

www.linkedin.com/company/pipeline-risk

www.youtube.com/@MachineLearningIntegrity