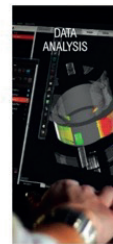
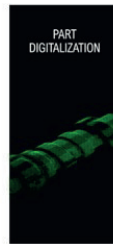


UNIMETRIK is a Metrological Service company, oriented to offer solutions for the industry related to Calibration, Measurement and Metrological engineering. With a vast experience of more than 10 years, UNIMETRIK offers solutions directed to improve client's verification and control systems, according to the highest Quality Standards.

Supporting Partners

A!DEAS



Problem Addressed: The UNIMETRIK pilot focuses on optical measurements for machinery components using M3, high-performance software for capturing and analysing point clouds. However, this parameterizable software provides different results depending on the expertise of the operator, and as it is designed as a “black box”, which makes it difficult to verify those results and the process behind them. The measurement plans are designed mostly based on the experience of the metrologists and only tacitly profiting from the information that previous similar projects have with the object of study. This is a waste of know-how and time. Information from previous projects can be used to accelerate M3 configuration and training of junior metrologists.

Pilot Objectives

Increase the efficiency in the measurement plan definition

Reduce the measurement time

To minimize the effect of errors in the manufacturing process due to deviations in measurement

Predict, based on certain key parameters and Explainable AI techniques, the level of reliability of the result

Implemented Use Cases (UC)

UC 1

Optimal Parameters

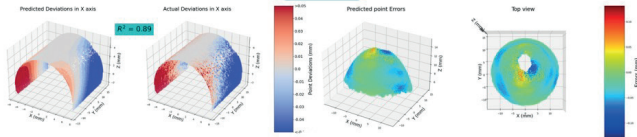
- Assist metrologists in their preliminary study of the part to be measured
- Accelerate the process & minimize costs
- Ensure consistency of results

Fit between nominal and estimated data points

Optimal set of Scanning Parameters

PointNet as the best ML model for deviation estimation

Cylinder 15.0219mm, Lateral Density=100, Direction Density=10, Exposure Time=1.0



UC 2

Optimal Point Cloud

- Maximize measurement accuracy
- Minimize execution time
- Ensure consistency of results



Outlier Elimination

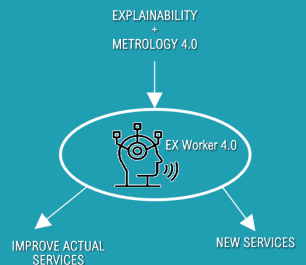
Denoising & Surface segmentation

Point Cloud segmentation



XMANAI Added Value

- XMANAI will enhance the actual metrological software used by Unimetrik with new functionalities related to big data and AI (Explainability + Metrology 4.0)
- In the future, adding explainability to metrology decisions will make possible to bring this technology to the production system of our clients, enabling the manufacturers to carry metrology measurements without the need of metrology expertise



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