AI for the Industry 4.0

AI in the verification of fiber optic sensors

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Presentations are tools that can be used as lectures.

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Introduction

Company XYZ manufactures 50 fiber optic sensors per day. Currently, after the sensor is manufactured, its characteristics should be verified each time in three reference substances in order to configure:

- Air
- Water
- Isopropanol

After the procedure in the laboratory,
they collect three spectroscopic signals.
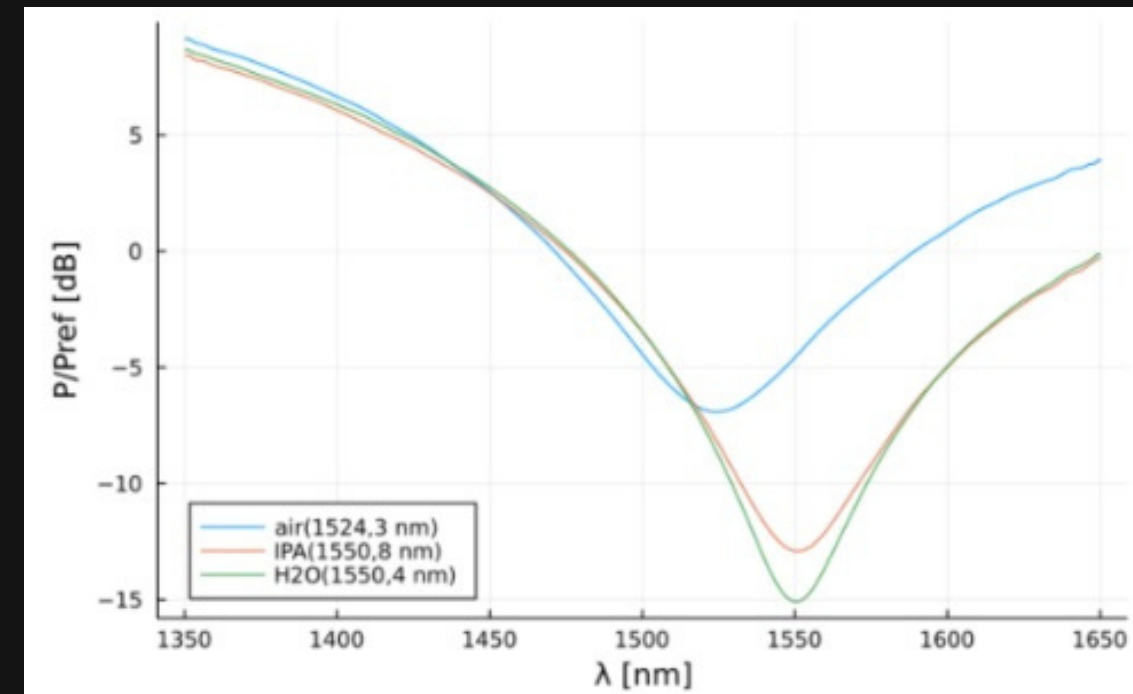
Unfortunately, such procedures are extremely time-consuming and require large human resources. Each measurement takes an average of 5 minutes. During an 8-hour shift, there are 2 people working in the laboratory who only deal with sensor measurements.

Goal

The aim of the project is to implement AI techniques to automate the verification of manufactured sensors.

A lab worker will measure the spectroscopy in the air. Then, based on the measurement, the model will predict the rest of parameters (spectroscopy in isopropylene alcohol and water).

Implementation plan

1. Collection of data from the laboratory.

2. Creating a model for prediction based on the collected data.

3. Creation and implementation of an application that generates predictions.

4. Evaluation of model performance based on laboratory and predicted data.

5. After a positive evaluation of the model, the permanent implementation of the model.

Benefits

Reducing the number of measurements performed in the laboratory

$\longrightarrow$ Reduction of employees in the laboratory (one employee per shift)

$\longrightarrow$ Lower laboratory maintenance costs

Implementation the concept of Industry 4.0

$\longrightarrow$ Creating a smart factory

$\longrightarrow$ Following industry trends

$\longrightarrow$ Prestige and innovation