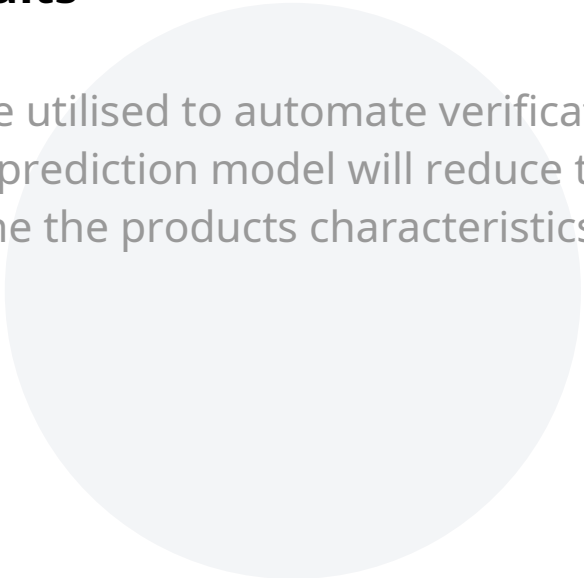# Fibre sensor testing

Predicting Characteristics

Cezary Gruszka

Goals

Extrapolating test results

Machine learning can be utilised to automate verification of sensors. A well tailored prediction model will reduce the need for testing to define the products characteristics.

Advantages of Prediction Models

- Replaces costly processes
- Frees up human resources
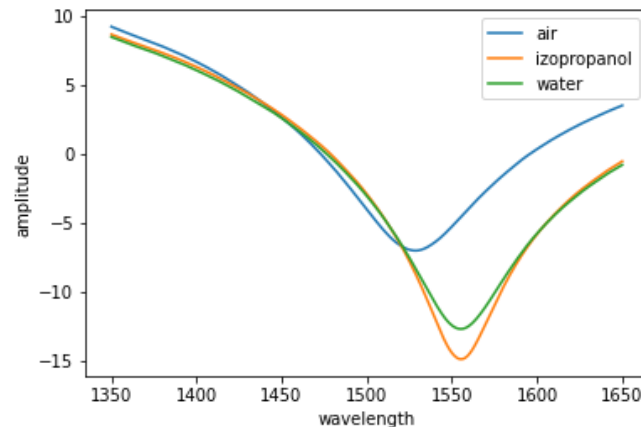- Speeds up testing
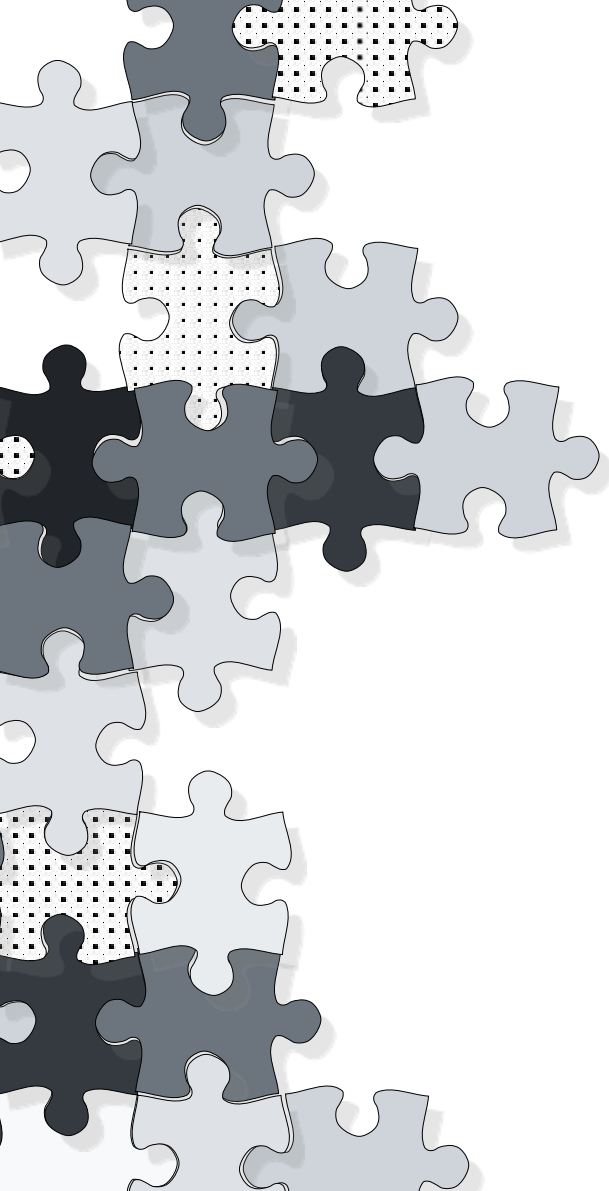- Reduces product validation needs

Illustrations by Pixeltrue on
icons8
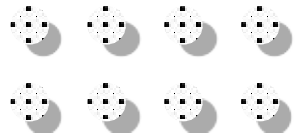
Sensor verification

Gathering data

Verifying our sensor is a very repetitive process. We make measurements in one enviroment, then the next, then the next… each more problematic than the last one. What if we could get all necessary characteristics from just one reading?

"

In the end you should only measure and look at the numbers that drive action, meaning that the data tells you what you should do next.

"

- Alexander Peiniger, CEO at Quintly

Need convincing?

Investment costs

Data required for predictions is the same data that is already gathered and stored. No upfront investments required.

Human resources

Testing such devices is a long process that requires a lot of work by multiple people. Why go to all the trouble when a person with a laptop is all you need?

Decision making

Want to experiment with your product? Try different ideas without certainty they will be good enough? Why not simulate the results before throwing money at something that might not work.

Time requirement

A simple model can train in seconds. Even with tons of data and complex models, a couple hours overnight and it's good to go!

Risks

Unsure if a prediction can really replace a reading? You can just make a measurement every now and then to compare with.
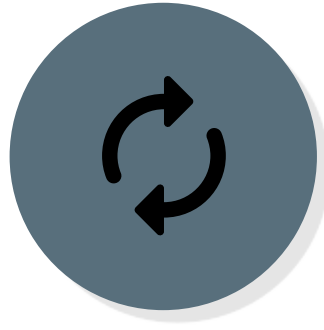
Does it work?

Only one way to find out...

Creating Prediction Models

Analyze Data

Using existing data we further our understanding of the problem, pin-pointing important data that can be of use in the future.
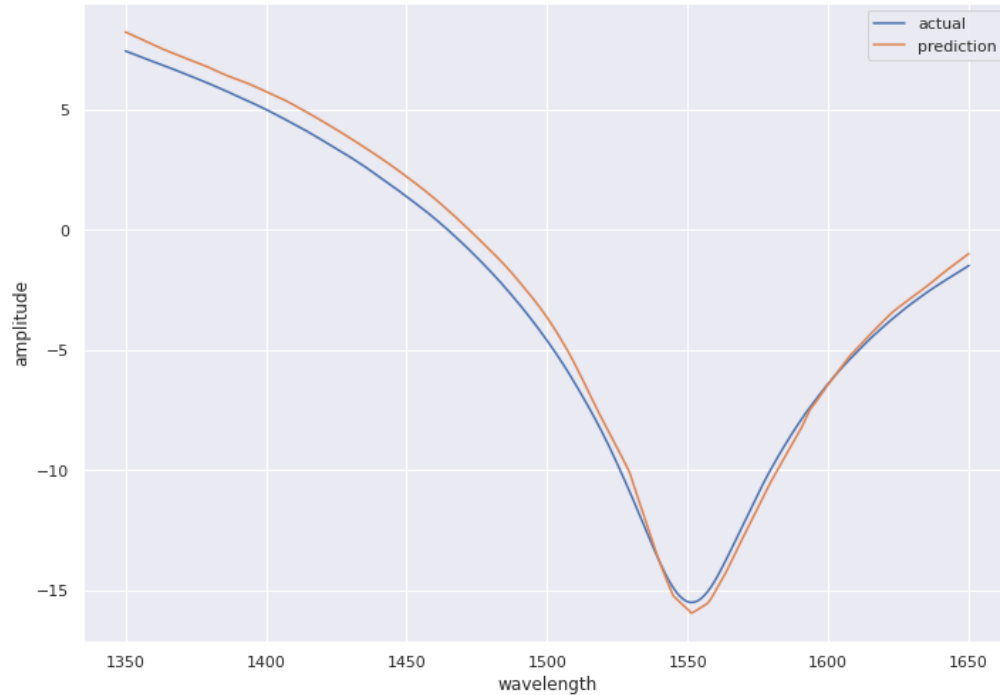
Data Processing

With a full understanding of our data and the potential it offers, we isolate important data points that can be used to make predictions.

Modeling

With our data processed and prepared, we let our model learn on the data we have. Armed with this knowledge, it can replace many manual processes entirely.
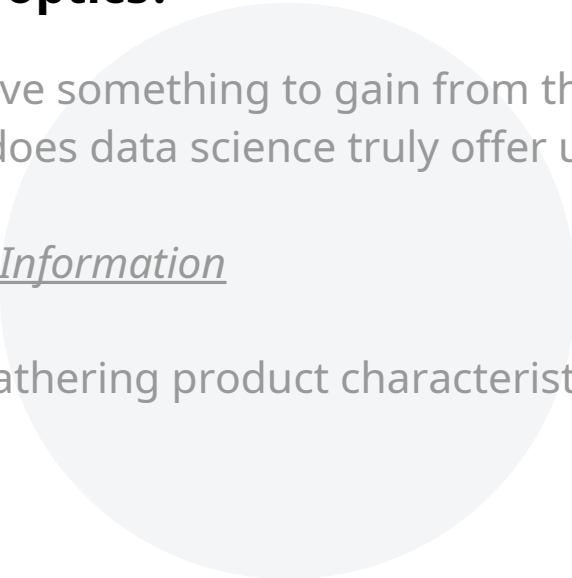
Results

Now imagine if our model could use hunderds of data sets, instead of just ten...

Is data sciene a good fit?

Can it really help fibre optics?

> Whilst all buisinesses have something to gain from the data they gather, what does data science truly offer us?
>
> *Information*
>
> Isn't that exactly what gathering product characteristics is all about?

Conclusion

At the end of the day, running a business is about managing costs. Be they monetary or otherwise.

Predicting results lets us save on either.

Not only is data science a great and universal tool, many consider it to be the future.

I hope you can see the value this solution can provide, as well as the potential it has with more resources. The choice is yours.

Photo by Dave Hoefler on Unsplash