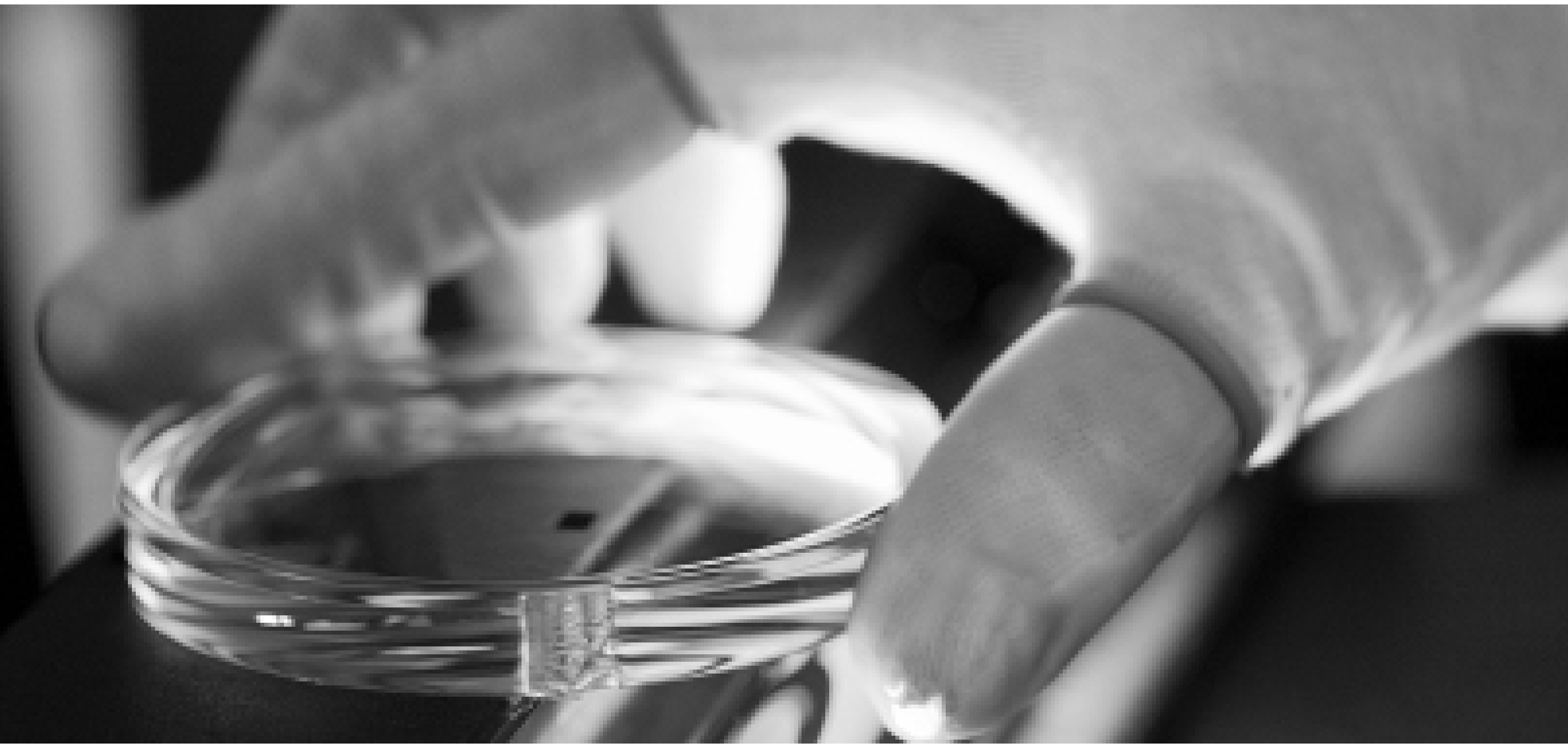

Harnessing Large, Heterogenous Datasets to Improve Manufacturing Process

Using Artificial Intelligence in a Predictive Maintenance Process to Improve Industrial Performance

Today, predictive maintenance is widely considered to be the obvious next step for any business with high-capital assets, harnessing machine learning to control rising equipment maintenance costs. Predictive maintenance takes data from multiple and varied sources, combines it, and uses machine learning techniques to anticipate equipment failure before it happens.

Lots of businesses are already using continuous monitoring technologies - like Internet of Things (IoT) connected devices - which is a good start; but the key lies in not just simply monitoring the output of various data (which is how many companies use it today), but by taking the next step and employing advanced algorithms and machine learning to take action from real-time insights.

Using Artificial Intelligence in a Predictive Maintenance Process to Improve Industrial Performance

ESSILOR

SEEING THE WORLD BETTER

About Essilor International

Essilor is the world's leading ophthalmic optics company. Essilor designs, manufactures, and markets a wide range of lenses to improve and protect eyesight, in line with its mission of improving lives by improving sight. Essilor employs 67,000 people worldwide. It has 34 plants, 481 prescription laboratories and edging facilities, as well as four research and development centers around the world.

Industry

Manufacturing

Market

Worldwide

Use Case

Predictive Maintenance

"We wanted a data science platform that would allow us to solve our business use cases very quickly. Thanks to Dataiku and its collaborative platform, which is agile and flexible, data science has become the norm and is now used more widely within our organization and around the world."

Cédric Sileo

Data Science Leader, Global Engineering @ Essilor

Challenge

Improving Machine Performance Using Large, Heterogeneous Datasets

Essilor's core business is the production of ophthalmic lenses. In their dedication to ensure factories are efficient, innovative, and respect high quality standards, Essilor has a Global Engineering (GE) service that is responsible for the implementation and standardization of production processes.

The process of lens creation is multi-step, including several different technical operations. Yet the surfacing step is one of the most complex and delicate since it is this key step that gives the lens its optical function (i.e., correcting vision so people can see properly). This step is also responsible for making the optical surface correspond to each person's individual prescription and personal parameters (pupillary space, tilt of the frame, etc.).

Seeing that one of their goals is to find ways to better answer consumer and business needs, the GE team was facing the challenge of improving processes and performance of the surfacing machines to significantly improve their production by using the increasing volume of data. Yet they needed a scalable way to work with large, heterogeneous datasets.

Solution

One Flexible Tool From Start to FInish That Allows for Rapid Iteration

Essilor chose Dataiku Data Science Studio (DSS) to help them effectively work with the extensive amount of data from the surfacing machines because:

- The setup and implementation of Dataiku was easy and allowed them to get started quickly.
- The team wanted one tool from start to finish that would allow them to explore, analyze, and create predictive models and that could be used by everyone, from professional experts to machine operators, data scientists and IT, and everyone in between.
- The data from the surfacing machines came in various formats, and some of the datasets were not reliable or were incomplete. Dataiku allowed them to manage these variations efficiently and effectively.
- Dataiku allowed them to quickly test and iterate on use cases to arrive at a solution faster.
- The team wanted the flexibility to work using code or using the point-and-click visual interface, whichever allowed them to work more quickly.

Impact

Optimizing Component Lifespan Through Predictive Maintenance

The GE team at Essilor was able to use Dataiku to execute on a predictive maintenance use case that indicates to operators the right time to change the consumable components so as to optimize their lifespan while also guaranteeing the production quality standards.

In addition to using Dataiku to predict the optimal conditions under which they will use the consumables completely, the GE team also leverages Dataiku's web application feature to provide a visual decision tool to help operators make a consistent choice when they have to change the consumables. Additionally, the GE team provides value to Essilor as a whole by:

- Promoting the use of data to provide insight throughout the rest of the organization - Dataiku is now being used internationally by additional teams.
- Encouraging cross-team collaboration, as the use case was a collaborative work between the GE department, factories, and IT teams.
- Gaining a dedicated resource for data science, which will allow them to continue to make future improvements.

The next steps for Essilor will be to test their machine learning models in production, deploy dashboards across several labs, and roll out future improvements to surfacing using deep learning with images.