DATA INTELLIGENCE USING MACHINE LEARNING POC
Predicting Machinery Failure in the Auto and Air Industry

LIXAR
Fueled by BDO

What is Predictive Maintenance?

Predictive maintenance is a process whereby machine learning and artificial intelligence technologies are leveraged to anticipate failures and breakdowns before they happen.

Machine Learning (ML) is the science of enabling computer systems to act independently. Action is taken based on the patterns the system recognizes in the data. Essentially, it learns from past experiences, so that it can then make decisions upon encountering similar scenarios. This is a significant aspect of Artificial Intelligence (AI), which is more sophisticated in its ability to perceive its environment and mimic cognitive behaviour.

Predictive maintenance applies these advanced technologies to accurately detect early signs of machine failure. Subsequently, such issues can be corrected before it's too late. This proactive process results in less downtime for machinery, and less time and costs spent on manual labor to seek out and fix failed machinery.

Lixar has demonstrated experience applying predictive maintenance processes to the auto and air industries. With a forward-thinking approach, Lixar has been able to successfully design ML and AI technologies that can more accurately recognize and anticipate signs of failure before they happen, thus reducing time and costs associated with after-the-fact maintenance.

Predicting Machinery Failure in the Auto and Air Industry

Manufacturing industries in air and auto currently has little to no visibility when it comes to unexpected machinery failures. When such failures occur, downtime to fix the machinery is time and money lost. Applying machine learning technology creates the ability to recognize signs of failure so that they can be proactively addressed. This approach offers a much more cost effective and time-efficient process. Lixar set out to determine the viability of a such a model.

Solution

Lixar successfully created a predictive model that can more accurately forecast unplanned downtime events using machine diagnostics data. Lixar made several improvements to the data curation and pipeline, determining that such a solution allows for faster data/model exploration and significantly streamlines the prediction pipeline.

Taking a ground-up approach to this project, Lixar made significant observations in the following areas:

| Data pertaining to machinery downtime

| Methods for labelling and sampling

| Model performance

| Metrics for reporting model performance

From these observations, Lixar found sufficient evidence of the predictive power in machine diagnostics data. A predictive model is therefore viable, and an advanced approach to it has clear potential to further strengthen the accuracy of these predictions.

Benefits

The benefit of being able to predict machinery downtime is that proactive measures can be put in place to prevent or reduce such events. Unplanned downtime has a direct effect on productivity and expenses meaning that any measures taken to address issues before they happen is a more time and cost-effective approach.

The Overall Results

Lixar's work in predictive maintenance has yielded strong positive results thus far. Using unique methods of data collection and analysis, Lixar has demonstrated ability in applying ML and AI to create reliable predictive maintenance technologies that result in overall lower costs, time and downtime for machinery, in both the auto and air industries.

What's Next?

Lixar will further develop predictive maintenance technology within the auto and air industries. Current and upcoming projects give Lixar more and more opportunities to develop, test, and implement these systems, thus realizing the full potential of Industry 4.0.