DigiEduHack Solution
Lappeenranta - Digital Twins & Raw material sustainability - Global better future for next generations
Challenge: Lappeenranta - Digital Twins & Raw material sustainability - Global better future for next generations Challenge 2020

Predictive Maintenance for Process Genius

Our experience and challenge

We participated in the DigitalEduHack to get real market experience from companies and challenge ourselves creating a valid solution in the short period of time.

Challenge: How can we use data from the productional machines and from environment?

Our solution: Using sensor for predictive maintenance.

Team: InterTeam

Team members

Elizaveta, Toivo, Yekaterina

Members roles and background

Elizaveta is studying Software Engineering in LUT.
Yekaterina is studying Software Engineering in LUT.
Toivo is Data analyst, studying Computer Sciences, responsible for the analysis of the data.

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Solution Details

Solution description

As a solution, we offer the company to use the existing infrastructure, namely sensors, data mining tools, visualization tools for predictive maintenance. To track changes in machine activity, they need to use algorithms such as predicting measurement data and comparing the predictions to actual measurements and similarity-based prognosis. To find the relationships between various factors, our team analyzed the data provided by the company. The results found can be used for further implementation of predictive maintenance. As a result, the company will be able to expand the use of the collected data, provide customers with a wider range of services, and monitor the technical condition of their equipment.

One option for predicting a need for predictive maintenance would be to monitor the machines power usage over time (assuming the monitored machine consumes more power as the parts are worn and require maintenance).
Average daily power usage is Sep 7 - 10 between 600 and 670 for the machine that the test data was provided from.
However, for example Sep 3 average daily power usage was over 1000 so would need to either monitor the device for over longer periods of time, tweak the model further or both.

We suppose university should create more such events for student, as both parts are benefiting from this partnership. It is useful real-world experience for students. Fresh and innovative ideas and clear vision are for the companies. We learnt how to work effectively in the team, how to brainstorm ideas, how to deliver the presentation and make audience understand your solution and idea.

Solution context

We faced a problem what are the ways that data from electricity, humidity and temperature sensors could be useful, by using ML/AI tools.

Solution target group

Process Genius and customers of Process Genius.

Solution impact

- Allows you to extend the life cycle of machines
- Prevent brownouts with real-time monitoring and AI prediction
- Balance the machineries
- Predict performance characteristics and environmental response
- Continuous monitoring of the technical condition of machines
- Eliminates the need for routine checkups

Solution tweet text

Process Genius collects lot of data from the productional machines and from the environment. Such as electricity consumption, humidity and temperature. Challenge: How can we use this data? Our

solution: Using sensor readings for predictive maintenance.

Solution innovativeness

Predictive maintenance is not a new solution, but each company is unique, and as far they have all the necessary infrastructure and sensors, the company can extend its services to monitoring the state of assets. In long term a company can set a trend and create a smart algorithm for analyzing sensor data.

Solution transferability

Our solution is quite universal and flexible and can be adapted in another industrial companies which have a lot of machineries.

Solution sustainability

We are still working on the analysis of the data to find valuable insights for the company, any correlations or abnormality that can be used for better understanding of the machinery processes.

Solution team work

Team spirit remains the main competitive advantage because it is essential, our team had it and worked well on this challenge. We did not face any issues or misunderstandings between us. Each member was useful, active, and contributed a lot for the final solution.