



AI unlocks untapped potential in Danfoss' robot

Manufacturing companies can improve their product quality by combining a robot, a force torque sensor and artificial intelligence. That is the takeaway from a collaboration between Danfoss Drives, KUKA and the Danish Technological Institute (DTI) in MADE Digital.

Danfoss Drives has gained new insight into the full potential of a number of their production robots.

The reason is a MADE collaboration between Danfoss Drives, KUKA and the Danish Technological Institute (DTI). Here, DTI has explored how the Danish research and electronics giant Danfoss Drives can utilize the potential of the force torque sensors that their existing production robots are equipped with - so that they can measure whether an assembly process is carried out correctly or not.

- The collaboration gave us an insight into how to work with artificial intelligence, and how we will be able to use it, says Jakob Stepping Pedersen, who is a consultant at Danfoss Drives and very satisfied with the collaboration.

And he is not the only one who finds the solutions that come out of the collaboration interesting.

- We have used the data we can extract from the force torque sensor via two different AI techniques. One is a relatively simple statistical method, where we look at whether there are any data discrepancies that indicate problems, explains Rasmus Hasle, Product Manager at DTI.

- The second and more advanced method is a special form of deep learning known as long short-term memory (LSTM), which gives the robot a form of memory sense. So, if something suddenly occurs that the robot has not seen before, then it may be an indication that problems are occurring, he adds.

The system can improve itself

And it is a solution that is not only effective here and now, but especially in the long run.

- The perspective is that the robot installations get the opportunity to constantly learn from the experiences they make. So, if a problem arises and you can get the robot to handle it, then it



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means that the system can constantly get better and better, without requiring human interaction, says Rasmus Hasle from DTI.

- Many companies will - like Danfoss Drives - experience that they already have relevant data sources in their business, and therefore do not necessarily need to invest in new equipment to be able to use AI to optimise their processes, he adds.

A look ahead

In addition to the new solutions that have emerged from the collaboration, Danfoss Drives and Jakob Stepping Pedersen have also had the opportunity to look a little into the technology market of the future.

- It is always fun to have the opportunity to look a little ahead and see what is - and will be - possible with modern technologies, says the consultant from Danfoss Drives.

Curious about how artificial intelligence can improve your production? Then get in touch with Product Manager Rasmus Hasle at +45 72 20 18 64 or raha@dti.dk

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