

PRESS RELEASE

How machines learn and adapt

The Leading-Edge Cluster it's OWL presents new approaches at Hannover Messe

Hanover, 24 January 2019. Networked manufacturing, intelligent products and smart services: machine learning is of great importance for the digital transformation of industry. In the Leading-Edge Cluster it's OWL, companies and research institutes jointly develop new approaches for SMEs. At Hannover Messe, over 40 companies, research institutes and startups from OstWestfalenLippe present new solutions at the OWL joint stand (Hall 16 A04). The focus will be on machine learning, assistance systems, intelligent product development and new business ideas.

Prof. Dr. Roman Dumitrescu (Managing Director of it's OWL Clustermanagement GmbH and Director of Fraunhofer IEM) explains: "Machine learning has a big impact on all divisions. In our projects we develop new technologies in the field of machine learning, that can be utilised for the optimisation of production processes and products. Here, we also bear in mind implications and opportunities for business models. At it's OWL, we have the best conditions: our global market leaders in the automation industry are major drivers and we offer proven research expertise in the field of artificial intelligence."

Integrating employee knowledge into machines

Fraunhofer Institute for Mechatronic Systems Design IEM demonstrates how machines and plants are becoming intelligent with the help of machine learning methods. One typical application example is the operational control of a mechanical industrial centrifuge that may be used for the production of apple juice. Here, companies make use of their employee's knowledge and experience to detect deviations from the normal condition.

Fraunhofer IEM has developed a digital expert system which will in future support employees with that task. Machine learning methods which assess the correlation between data from explicitly integrated sensors and personalised expert knowledge have been utilised. Production errors can thus be detected as well as prevented without the need for the centrifuge to be monitored continually by employees. Maintenance is facilitated as well. Visitors of the Hannover Messe can experience how the expert system continually monitors and analyses the operating status of the separator, providing detailed information about deviations from the normal condition on a display.

Intelligent automation for learning machines

Beckhoff, KEB, Lenze, Phoenix Contact, WAGO and Weidmüller, global market leaders from the automation industry, will also present new approaches in the field of machine learning. Visitors can thus obtain an exceptional overview of all the different solutions and their added value.

Weidmüller presents a live application for predictive maintenance that has already been implemented at compressor manufacturer Boge. By means of Industrial Analytics, the future need for maintenance can be predicted during operation which allows for an optimal planning of repair and service work. Anomalies are detected and classified early by comparing them with automatically learned models based on real-time data. This enables the operator to react accurately to potential problems before they affect the performance of the machines or equipment.

Beckhoff demonstrates, how monitoring, analysis, control and optimisation procedures can be integrated into the control of production systems. Machines and plants are therefore enabled to detect attrition, initiate preventive maintenance and temporarily compensate for component failures.

From digital model to intelligent product

Due to more and more intelligent products, requirements for their production grow. Together, Fraunhofer IEM, Miele, Dassault Systèmes and Paderborn University demonstrate on the stand, what the intelligent production development of the future looks like. They present Advanced Systems Engineering (ASE) as an approach for interdisciplinary development that comprises the whole innovation process – from strategic planning to market success. A core element of ASE is, for instance, the deployment of digital models which depict all development data virtually in the concept phase already.

Various Miele products exemplify how products can be designed and tracked digitally from requirements to finished product by means of ASE and digital models. Actual operation data can thus optimise the development of the virtual model. “Digitalisation will not only change the products of tomorrow, but also the way we develop them. Intelligent development processes will be a main key for the innovation power of our economy”, states Dumitrescu.

Software for additive manufacturing

The cooperation in the network creates new business ideas. Eight startups present their concepts at the OWL joint stand. Among them is the Paderborn startup AMendate that develops a software for the fully automated optimisation of components for additive manufacturing. AMendate was founded 2018 and is a spin-off of Paderborn University.

The software creates seemingly organic structures with smooth, perfectly shaped surfaces. All components are thus tailored precisely to their individual application areas which makes both the development and production of the components faster and more cost-effective. Errors and rejects can be avoided whereas the product quality is improved. The service addresses customers in plant engineering as well as the aviation and automotive industries. AMendate was awarded as most innovative startup of 2018 by the industry portal 3D-Natives.

Exhibitors at the OWL joint stand Hannover Messe

At the OWL joint stand, organised by OstWestfalenLippe GmbH and OWL Maschinenbau, the following exhibitors will be present:

Companies: Adamos, Beckhoff, BOGE, Böllhoff, CLAAS, Contact Software, Dassault Systemes, DENIOS, GSR Ventiltechnik, KEB, Lenze, Miele, Phoenix Contact, steute, topocare, Torwegge, WAGO, Weidmüller

Research institutes: CoR-Lab and CITEC Bielefeld University, Fraunhofer IEM, Fraunhofer IOSB-INA, Institute Industrial IT, OWL University of Applied Sciences, Bielefeld University of Applied Sciences, Paderborn University

Startups and founding initiatives: Startup Region_OWL, InnovationslaborOWL, Founders Foundation, garage 33, knOWLedgeCube, OWL University of Applied Sciences, Bielefeld University, TecUP Paderborn University

Networks and business-related organisations: Clarion/ FMB Zuliefermesse Maschinenbau, Digital in NRW, Energie Impuls OWL, it's OWL Clustermanagement, OstWestfalenLippe GmbH, OWL 4.0, OWL Maschinenbau, WEGE Wirtschaftsentwicklungsgesellschaft Bielefeld

For more information on the stand, this press release and additional photos please go to www.its-owl.com/hannovermesse

The Leading-Edge Cluster it's OWL

In the technology network it's OWL, more than 200 companies and research institutes develop solutions for intelligent products and production processes. Therefore, we want to implement EUR 200 million worth of projects until 2022. Currently, the emphasis is on the topics artificial intelligence, digital platforms, safety and security, digital twins and the working world of the future. Small and medium-sized companies get access to new technologies via an innovative transfer concept. Named as one of the Leading-Edge Clusters by the Federal Ministry of Education and Research, it's OWL is considered to be one of the largest Industrie 4.0 initiatives for SMEs. We thus contribute to securing the production location Germany.

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Contact

Salome Leßmann
it's OWL Clustermanagement GmbH
Tel: +49 5251 5465283
s.lessmann@its-owl.de