

Pressemitteilung

Fraunhofer-Institut für Intelligente Analyse- und Informationssysteme IAIS

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08.10.2018

<http://idw-online.de/de/news703576>

Forschungsprojekte, Kooperationen
Informationstechnik
überregional



Spreading Machine Learning – BMBF Competence Center Launches in North Rhine-Westphalia, Germany

Establishing cutting-edge research, supporting young scientists, strengthening technology transfer into companies – these are building blocks for bringing the development of Artificial Intelligence in Germany to a globally leading level. With this aim, the “Competence Center Machine Learning Rhine-Ruhr” (ML2R), initiated and funded by the Federal Ministry of Education and Research (BMBF), was launched. Together, the Technical University of Dortmund, the University of Bonn and the Fraunhofer Institutes for Intelligent Analysis and Information Systems IAIS in Sankt Augustin and for Material Flow and Logistics IML in Dortmund will promote top research in the field of Machine Learning.

Machine learning (ML) is the basic technology for applications that rely on Artificial Intelligence – they interpret texts and images, provide medical diagnoses or optimize manufacturing processes. In conjunction with increasingly cheaper and more powerful sensors and processors, ML technologies are becoming decisive competitive factors in many areas. Research, politics and companies want to leverage this potential, but are facing central challenges: They need comprehensible, trustworthy technologies that can be flexibly integrated into existing processes. Germany currently suffers from a shortage of leading international researchers and well-trained specialists who develop the relevant technologies. Often, there is also a lack of well-prepared data sets to optimally train learning systems and utilize them profitably.

“We want to meet these challenges by promoting excellent research locations in the field of Machine Learning and closely interlinking them with businesses”, says Anja Karliczek, Federal Minister of Education and Research. “I am therefore delighted that we have been able to establish the Competence Center Machine Learning Rhine-Ruhr as one of a total of four central hubs in Germany.” In addition to ML2R in Dortmund and Bonn/Sankt Augustin, three further BMBF competence centers are planned in Berlin, Baden-Württemberg and Bavaria.

Attractive Environment for Outstanding Research

“The Rhine-Ruhr location combines a pioneering role in the development of Artificial Intelligence with Germany's leading institutions for industry-related, applied research”, says Prof. Dr. Katharina Morik, spokeswoman for the competence center. “We thus offer renowned top researchers as well as young scientists an attractive environment in which to expand the theoretical foundations of ML and on this basis develop responsible applications.” ML2R concentrates its research work on three main areas:

- Human-oriented Machine Learning focuses on humans and designs Machine Learning processes in such a way that decisions made with the help of Artificial Intelligence become understandable as well as traceable and can be validated.
- Machine Learning with Restricted Resources makes it possible to reliably perform computations using Machine Learning even on small devices such as smartphones or embedded sensors. While computing platforms traditionally played a minor role, the models of Machine Learning are now developed with various computer architectures or even

quantum computing in mind.

- Machine Learning with Complex Knowledge integrates logical knowledge from various sources into learning systems to ensure reliable results even with small or insecure data sets.

Within these main areas of research, aspects such as the modular design of technologies, real-time capability, and error limits play just as important a role as data security.

New Cooperation Models Strengthen Transfer and Promote Networking

The research results are to be used by short routes for practice-oriented applications and serve as foundation for the development of new data-based services. Application examples from the fields of industry 4.0 and logistics as well as the automation of cognitive processes provide orientation. Especially for small and medium enterprises, MLzR offers access to strategies, knowledge and data so that they can successfully apply Machine Learning technologies and hold their ground in international competition. "Here we offer companies concrete ways of cooperating, such as agile collaboration in the 'Enterprise Innovation Campus'", emphasizes Prof. Dr. Stefan Wrobel, speaker of the competence center. "In addition, we will set up an open source platform with curated data and models so that businesses can gain direct access to data and technologies and start immediately."

In order to counteract the shortage of skilled professionals, MLzR will be strongly committed to supporting young scientists and promoting further training opportunities for skilled employees. The competence center is initially planned to run for four years and aims to achieve long-term sustainability in order to promote Machine Learning and support Germany's industry in international competition.

The first public event of the Competence Center MLzR, with international experts from ML research and an exhibition of innovative use cases, will take place on 23 January 2019 in Dortmund.

Anhang Press Release: Spreading Machine Learning – BMBF Competence Center Launches in North Rhine-Westphalia, Germany <http://idw-online.de/de/attachment66834>



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