

PRESS RELEASE

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QUIP Winter School 2024 From the Classical to the Quantum World

As part of the Project »Quantum Initiative Rhineland-Palatinate« (QUIP), the Fraunhofer Institute for Industrial Mathematics ITWM and its partners organised the QUIP International Winter School on Quantum Machine Learning 2024 »Quickstart 2024« last week. Students and young researchers from all over the world as well as industry came together to discuss the latest developments, challenges and applications in this specialised field.

The project »QUIP«, consisting of the University Kaiserslautern-Landau (RPTU), Johannes Gutenberg University Mainz (JGU), the German Research Centre for Artificial Intelligence (DFKI) and the Fraunhofer ITWM, is funded by the Rhineland-Palatinate Ministry of Science and Health (MWG). It specifically supports young scientists in the field of Quantum Computing and Quantum Technologies and offers a detailed and broad research program for training and further education as well as networking.

Around 80 Participants From All Over the World

While around 30 young researchers from all over the world were connected online and listened to the various presentations, around 50 participants from all over Europe also had the opportunity to discuss the various facets of Quantum Computing in a poster session and get to know each other better in an entertaining social program. In addition to exciting courses and presentations by speakers from various application areas of quantum machine learning, the program also included a pub crawl through the old town of Kaiserslautern, a visit to a bouldering hall and a conference dinner.

Industry Joins in the Research

However, the focus was not only on the exchange between the students. On their journey into the world of Quantum Technology, the students were given an insight into Quantum Computing and Deep Learning as well as Quantum Machine Learning

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tutorials. The industry also presented itself and its work in Quantum Technology. Presentations by Quantinuum, the Amazon Cloud Service, BASF, Kipu Quantum, data Cybernetics and Qruise gave the scientists an insight into practical Quantum research. The highlight was the presentation by renowned expert Prof Bob Coecke, who spoke on the topic of the »Large Language Model«. »Overall, Kaiserslautern presented a strong picture in terms of Quantum Computing«, summarized Dr. Valeria Bartsch from Fraunhofer ITWM, who, together with Maximilian Kiefer-Emmanoulidis from DFKI, was largely responsible for organizing the QUIP Winter School.

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Prof Bob Coecke during his lecture on the topic »Large Language Model«. © Fraunhofer ITWM

Further Online Information

www.itwm.fraunhofer.de/quip-winterschool-en

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About the Fraunhofer Institute for Industrial Mathematics ITWM

The Fraunhofer Institute for Industrial Mathematics ITWM in Kaiserslautern is one of the largest research institutes for applied mathematics in the world. We see it as our task to further develop mathematics as a key technology and to provide innovative impulses. Our focus is on the implementation of mathematical methods and technology in application projects and their further development in research projects. The close cooperation with partners from industry guarantees the high practical relevance of our work.

Their integral building blocks are consulting, implementation and support in the application of high-performance computing technology and the provision of customized software solutions. Our various areas of expertise address a wide range of customers: the automotive industry, mechanical engineering, the chemical industry, energy and the financial sector. This also benefits from our excellent networking, for example in the Simulation and Software-based Innovation Center.

About the Fraunhofer-Gesellschaft

The Fraunhofer-Gesellschaft, based in Germany, is the world's leading organization for application-oriented research. With its focus on future-oriented key technologies and the utilization of results in business and industry, it plays a central role in the innovation process. As a guide and driving force for innovative developments and scientific excellence, it helps to shape our society and our future. Founded in 1949, the organization currently operates 76 institutes and research facilities in Germany. More than 30,000 employees, most of whom are trained in the natural sciences or engineering, work on the annual research volume of 2.9 billion euros. Contract research accounts for 2.5 billion euros of this total

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