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Capgemini and Fraunhofer IAIS lead study in Quantum Machine Learning for IT security commissioned by the German Federal Office for Information Security

Bonn/St. Augustin/Paris, November 4, 2021 - The German Federal Office for Information Security has commissioned Capgemini and the Fraunhofer Institute for Intelligent Analysis and Information Systems IAIS to conduct a fundamental study on Quantum Machine Learning (QML) in the context of IT security. Under the scientific leadership of Professor Christian Bauckhage from Fraunhofer IAIS, a joint team will investigate key security-related issues for the first time.

Quantum Machine Learning aims to optimize classical machine learning approaches by utilizing quantum informatics. The core objective of the study is to identify the threats and potential of QML at an early stage in order to use the findings to actively and securely shape digitization in Germany. It will examine the vulnerability of QML methods and their applications to new forms of cyberattack.

Another element of the study is the threat posed by QML to classic IT security systems. It will address whether there are novel attack vectors or a significant increase in the efficiency of existing attacks. The study also aims to answer the question of opportunities for IT security through QML, using QML to defend against attacks and strengthen IT security.

"Until now, there hasn't been a study like this that summarizes all currently relevant QML methods, evaluates them in terms of their practicality for the coming years, and discusses QML in the context of IT security," said Prof. Dr. Christian Bauckhage, Lead Scientist Machine Learning at Fraunhofer IAIS.

Frank Jacobsen, Head of Public Sector at Capgemini in Germany, adds: *"Quantum computing will be one of the predominant innovation drivers for IT in the future. This makes it all the more important to address today the risks and opportunities for classic security architectures that arise from the combination of the mega trends toward the use of artificial intelligence and quantum computing."*

About Fraunhofer IAIS
As part of the largest organization for application-oriented research in Europe, the Fraunhofer Institute for Intelligent Analysis and Information Systems IAIS based in Sankt Augustin near Bonn is one of the leading scientific institutes in the fields of Artificial Intelligence, Machine Learning and Big Data in Germany and Europe. With its more than 300 employees, the institute supports companies in the optimization of products, services, processes and structures as well as in the development of new digital business models. Fraunhofer IAIS thus shapes the digital transformation of our working and living environment.

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