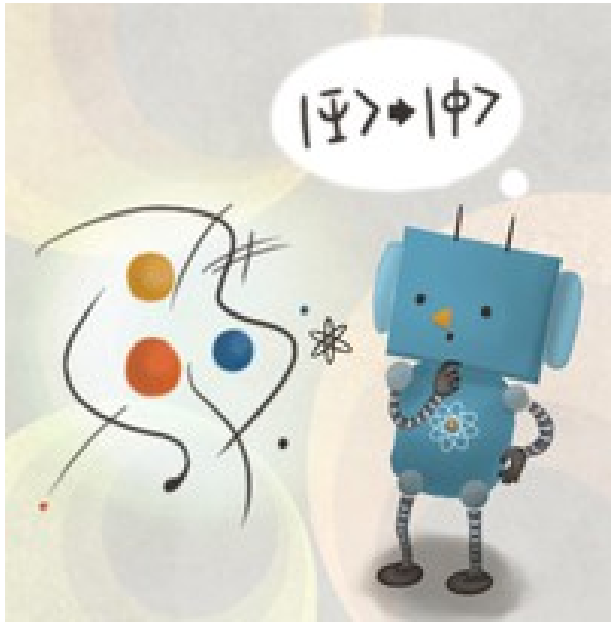
AI goes Quantum:
From Neural Networks to Quantum Machine Learning

Short Description of the Course:
We will discuss a selection of topics from classical machine learning (kernel methods, neural nets, decision trees) that build the basis to understand recent trends in quantum convolutional neural networks, quantum (deep) neural networks, and quantum machine learning algorithms applied to quantum data sets.

We have paired classical and quantum versions of different machine learning algorithms. The idea is that (teams of two to four) students pick an algorithm and then present both its classical and quantum version.

Talks can be given in German or English.



From Huang et al.,
PRX Quantum 4, 040337 (2023).

Level / Required Knowledge
Master level physics / quantum engineering / data science
Bachelor students of all disciplines and guests are welcome!

Mode of Participation and Examination
Complete attendance at the seminars; one presentation on a topic from ongoing research. UdS participants are required to attend the seminar in person, others can attend remotely via MS Teams.

Where: E2 6, Room E04
When: Wed. 12 (s.t.)
Module Code: 155977
Contact:
- Dr. habil. Philipp Hövel
- Prof. Dr. Giovanna Morigi
- Prof. Dr. Peter P. Orth