QML

QUANTUM MACHINE LEARNING SEMINARS

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NEURAL NETWORKS ON NOISY INTERMEDIATE SCALE QUANTUM COMPUTERS

We present a memory-efficient quantum algorithm implementing the action of an artificial neuron according to a classical model of the perceptron with both binary and continuous variables on a quantum computer. Then we show that this model is amenable to be extended to a multilayered artificial neural network, which is able to solve tasks that would be impossible to a single one of its constituent artificial neurons. We discuss how the scalar product operation can be efficiently obtained in quantum circuits, thus laying the basis for a fully quantum artificial intelligence algorithm run on noisy intermediate-scale quantum hardware.
The algorithm, tested on noisy IBM-Q superconducting real quantum processors, succeeds in elementary classification and image-recognition tasks through a hybrid quantum-classical training procedure.

DATE: December 18, 2020
TIME: 15:00 – 16:00
ZOOM LINK: https://univr.zoom.us/j/88905610805
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