QClass23/24: Quantum Machine Learning Task

Deadline: March 31, 2024
Submission: https://forms.gle/7phfivPCEd2qaDLB9
Help/support: Use "AULA → qml-and-pennylane" channel on the QClass23/24 Discord server

Recordings during QClass23/24:
- Differentiable quantum programming with PennyLane by Ivana Kurečić (Xanadu)
- Demo session on QML & PennyLane by Cenk Tüysüz

Assignment details

Prepare a single Jupyter notebook in which you implement a QML model to perform binary classification on the first two classes of the Iris dataset.

You can refer to Pennylane's tutorials for QML models. You can choose any relevant model that is suitable to perform binary classification.

Pennylane demos can be found here: https://pennylane.ai/qml/demonstrations/

The Iris dataset contains three types of irises. We want to construct a classifier that can determine whether an Iris flower is Setosa or Versicolour based on its petal and sepal lengths.

The Iris dataset can be found here:
https://scikit-learn.org/stable/auto_examples/datasets/plot_iris_dataset.html

When building your model take the following into consideration and briefly explain your reasoning:

- QML model
- data uploading / encoding method
- cost function
- optimization method

Judging criteria:

- Provide detailed explanation in every step of your notebook.
- Give comments where necessary and further explain your choices and the results in plain text.
- Cite the relevant sources that you used.

>>> Submit your notebook through [this Google Form](#)!