Quantum Information and Computing
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1) Starting from the paper https://arxiv.org/pdf/2208.14468.pdf study the quantum annealing algorithm (continuous time and digitized) and consider specifically the case of the perceptron model (Eq. 7).

2) Develop a code for simulating the continuous dynamics with exact diagonalization and compare it to the Trotterized one (digitized quantum annealing) in the case of the small and large timestep.

3) By using the Quantum Matcha Tea Library https://baltig.infn.it/quantum_matcha_tea simulate the quantum circuit corresponding to the digitized dynamics for different bond dimensions. Please consider a dataset with 10-15 features, which allows the comparison with the exact case.

4) (*Optional*) Verify the accuracy of the perceptron model with increasing bond dimension (100 max) for different sizes of the problem.

By the due date please submit both the code and the presentation of the final project. The presentation has to cover the topics detailed above, including the theory part. There is no limit to the number of slides however, the final presentation should last at most 15 minutes for each component of the group.