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Quantum Measurement and Control in Quantum Machine Learning

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Deadline for manuscript submissions:

closed (31 October 2022)

Message from the Guest Editors

Dear Colleagues,

Machine learning and optimum stochastic control share similar objectives: to modify the dynamics of a complex stochastic dynamical system using measurement mediated feedback, to minimize the cost function of the output. Quantum control is now a mature subject and includes, in addition to the analogue of classical measurement-based control, a number of uniquely quantum protocols based on coherent control. In this Special Issue, we request papers addressing the role of measurement/coherent quantum control for quantum machine learning. Topics will include:

Noisy intermediate scale quantum (NISQ) learning machines using quantum control for training.

Quantum thermodynamics in quantum machine learning.

Coherent control schemes for quantum machine learning.

The role of quantum information in quantum machine learning.

Coherent Ising machines and similar models.

Quantum machine learning as large scale dissipative many-body systems.

Design protocols for dissipative quantum machine learning.



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Special Issue



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Editor-in-Chief

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Message from the Editor-in-Chief

The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

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