Special Issue

Quantum Optimization & Machine Learning

Message from the Guest Editor

Optimization and machine learning algorithms that use quantum effects to process information have caught a lot of attention in recent years. Quantum optimization and machine learning algorithms may allow for solving problems that are intractable for known classical algorithms. Advances in variational quantum circuit theory offer techniques to design new quantum optimization and machine learning algorithms. Several of these algorithms, e.g., the quantum approximate optimization algorithm, and quantum neural networks, are among leading candidates for demonstrating quantum advantage in solving practical industry problems. Thus, there is an increasing need to understand in which problems and with which algorithms quantum advantage can be expected. In particular, understanding underlying problem symmetry, and parametrized quantum circuit's symmetry, could allow for achieving helpful quantum interference effects leading to quantum advantage. This Special Issue is intended to discuss quantum algorithms for optimization and machine learning, and how machine learning techniques can help in improving these algorithms.

Guest Editor

Dr. Alexey A. Melnikov
Terra Quantum AG, 9000 St. Gallen, Switzerland

Deadline for manuscript submissions

closed (31 October 2023)

Symmetry

an Open Access Journal by MDPI

Impact Factor 2.2
CiteScore 5.4

mdpi.com/si/87197

Symmetry
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
symmetry@mdpi.com

mdpi.com/journal/symmetry

Symmetry

an Open Access Journal by MDPI

Impact Factor 2.2
CiteScore 5.4

mdpi.com/journal/symmetry

About the Journal

Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

Editor-in-Chief

Prof. Dr. Sergei Odintsov
1. ICREA, 08010 Barcelona, Spain
2. Institute of Space Sciences (IEEC-CSIC), C. Can Magrans s/n, 08193 Barcelona, Spain

Author Benefits

Open Access:

free for readers, with article processing charges (APC) paid by authors or their institutions.

High Visibility:

indexed within SCIE (Web of Science), Scopus, CAPlus / SciFinder, Inspec, Astrophysics Data System, and other databases.

Journal Rank:

JCR - Q2 (Multidisciplinary Sciences) / CiteScore - Q1 (General Mathematics)

MDPI