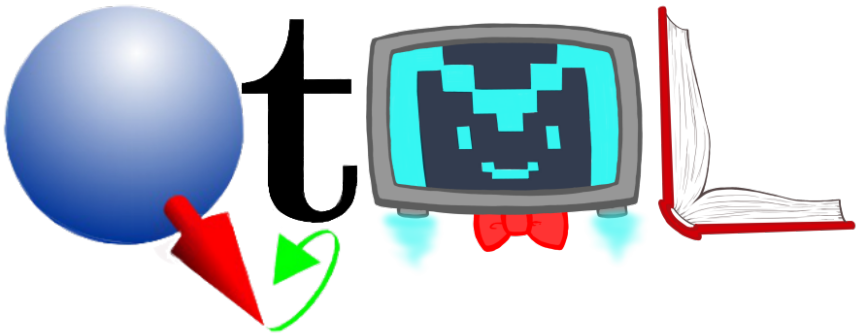

QTML 2017

Invited Speakers

Vedran Dunjko (Max Planck Institute of Quantum Optics, Germany), **Seth Lloyd** (MIT, Boston, US), **Marco Loog** (TU Delft, Nederlands), **Minh Hà Quang** (Italian Institute of Technology, Genoa, Italy), **Jiannis Pachos** (University of Leeds, UK), **Francesco Petruccione** (KwaZulu-Natal, South Africa), **Davide Venturelli** (USRA/NASA), **Andreas Winter** (Universitat Autònoma de Barcelona, Spain), **Peter Wittek** (Institute for Photonic Science ICFO, Barcelona, Spain)

Topics

- Quantum computing for enhancing machine learning algorithms - Machine learning techniques for the analysis of interacting quantum systems - Quantum entanglement and topology for the efficient representation of quantum systems - Topological approaches to machine learning based on Topological Quantum Computation - Advances of algorithmic techniques for quantum optimisation systems (e.g. quantum annealers)

Venue

6 - 8 November, Verona, Italy

Quantum Computing (QC) has been for a long time known only for a restricted set of applications where it allows for the achievement of an exponential speed up over the classical computer (e.g. the simulation of quantum physics and chemistry, and the factorisation of large numbers). Recently, however, new developments have opened up opportunities for the application of quantum algorithms to the field of Machine Learning (ML) that may solve problems such as clustering, classification, and pattern matching faster than their classical counterparts. This includes new algorithmic techniques based on Topological Quantum Computation which seem to be especially suitable for kernel-based pattern recognition. The prospects that near term quantum devices could be able to solve computationally hard problems in ML has given rise to Quantum Machine Learning (QML) as a research field in its own right at the intersection between QC and ML. It includes quantum optimisation where theoretical and empirical analysis of quantum annealing approaches are currently subject of intense study.
The QTML 2017 workshop aims to set up a common ground where students and leading researchers in both Quantum Computing and Machine Learning can meet and exchange ideas on the topics of the workshop and discuss how the results from one field can help solving the problems in the other field and viceversa.
Please visit http://qtml2017.di.univr.it for more details.

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