Contribution ID: **196** Type: **Talk (invited)**

Machine Learning with Quantum Computers

Monday, 3 December 2018 11:20 (20 minutes)

Quantum machine learning investigates how quantum computers can be used for data-driven prediction and decision making. The talk introduces to this relatively young discipline and shows the potential of "Big Data" applications on near-term quantum computers, as they can be found in the cloud at present. Data encoding into quantum states, quantum algorithms and routines for inference and optimisation, as well as the construction and analysis of genuine "quantum learning models" will be introduced.

Presenter Biography

Francesco Petruccione was born in 1961 in Genova (Italy). He studied Physics at the University of Freiburg i. Br. and received his PhD in 1988. He was conferred the "Habilitation" degree (Dr. rer. nat. habil.) from the same University in 1994. In 2004 he was appointed Professor of Theoretical Physics at the University of KwaZulu-Natal, in Durban (South Africa). In 2005 he was awarded an Innovation Fund grant to set up a Centre for Quantum Technology. In 2007 he was granted a South African Research Chair for Quantum Information Processing and Communication. At present, he is also one of the Deputy Directors of the National Institute for Theoretical Physics. In 2018 he has been appointed as UKZN Pro Vice-Chancellor - Big Data and Informatics.

He has published more than 170 papers in refereed scientific journals. He is the co-author of a monograph on "The Theory of Open Quantum Systems" (about 6000 citations according to Google Scholar), that was published in 2002, reprinted as paperback in 2007, and recently translated in Russian. Recently, he co-authored a monograph on "Supervised Learning with Quantum Computers (Springer, 20918). He is a member the Editorial Board of "Open Systems and Information Dynamics" and "Scientific Reports". He is the editor of several proceedings volumes and of special editions of scientific journals.

Primary author: Prof. PETRUCCIONE, Francesco (UKZN)

Presenter: Prof. PETRUCCIONE, Francesco (UKZN)

Session Classification: HPC Technologies

Track Classification: HPC Technology