



Contribution ID : 70

Type : Oral

A hybrid classical-quantum approach to improve Q-learning

martedì 12 ottobre 2021 09:40 (25)

A classical-quantum hybrid approach to computation is presented, allowing for a (quadratic) performance improvement in the learning stage of a neural network. In particular, a quantum computing routine is described, which helps to prepare/update the probability distributions that drive the agent operations. This algorithm can be used not only in a reinforcement learning scenario, but also in several other contexts. After introducing the algorithm and presenting a formal evaluation of its performance (in terms of required qubits, number of required operations, and maximum approximation error), the way it can be exploited in a reinforcement learning set-up is discussed in details.

Primary author(s) : PLASTINA, Francesco (Dip. Fisica UNICAL - INFN Gruppo Collegato di Cosenza)

Presenter(s) : PLASTINA, Francesco (Dip. Fisica UNICAL - INFN Gruppo Collegato di Cosenza)

Session Classification : Session 3