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Quantum Machine Learning in the Latent Space of HEP Events

Monday, 29 November 2021 19:00 (20 minutes)

We investigate supervised and unsupervised quantum machine learning algorithms in the context of typical data analyses at the LHC. To deal with constraints on the problem size, dictated by limitations on the quantum hardware, we concatenate the quantum algorithms to the encoder of a classic autoencoder, used for dimensional reduction. We show results for a quantum classifier and a quantum anomaly detection algorithm, comparing performance to corresponding classic algorithms.

Significance

References

Speaker time zone

Compatible with Europe

Primary authors: WOZNIAK, Kinga Anna (University of Vienna (AT)); PIERINI, Maurizio (CERN); BARKOUTSOS, Panagiotis; VALLECORSA, Sofia (CERN); BELIS, Vasileios (ETH Zurich (CH))

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Session Classification: Track 2: Data Analysis - Algorithms and Tools

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