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hls4ml: enabling real-time deep learning in HEP trigger and DAQ systems

Friday, 19 March 2021 14:40 (15 minutes)

Hls4ml is a user-friendly software, based on High-Level Synthesis (HLS), designed to deploy deep neural networks on FPGAs within applications characterized by tight constraints in terms of latency and resources. In this talk we present the core features of the library and recent progresses in supporting quantization-aware training with arbitrary precision, DNN architectures with large convolutional layers as well as the exploration of custom graph neural networks. Examples of applications to the trigger and DAQ of HEP experiments, such as the particle detectors at the LHC, will also be described.

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