

Deep Learning strategies for ProtoDUNE raw data denoising

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In this work we investigate different machine learning based strategies for denoising raw simulation data from ProtoDUNE experiment. ProtoDUNE detector is hosted by CERN and it aims to test and calibrate the technologies for DUNE, a forthcoming experiment in neutrino physics. Our models leverage deep learning algorithms to make the first step in the reconstruction workchain, which consists in converting digital detector signals into physical high level quantities. We benchmark this approach against traditional algorithms implemented by the DUNE collaboration. We test the capabilities of graph neural networks, while exploiting multi-GPU setups to accelerate training and inference processes.

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