

Abstract Submitted
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An FPGA deployed neural network solution to hit energy estimation with ATLAS LAr calorimeter at the HL-LHC MESUT UNAL, University of Texas at Austin, ATLAS COLLABORATION — Estimation of calorimeter hit energy resolution will be a significant challenge in proton-proton collisions during the HL-LHC era. This study is dedicated to a novel neural network approach to identify physics signatures in ATLAS LAr calorimeter to overcome that challenge. The ATLAS Readout Electronics Upgrade Simulation (AREUS) software is used to produce simulation samples, which contain necessary information obtained by optimal filtering techniques for various pile-up values. This information is used for training the architecture to predict the optimal filtering coefficients and thus the shape of a calorimeter hit on the fly. Moreover, we aim to use FPGAs in order to create a low-latency real-time interface that would allow the architecture to run on the LAr calorimeter back-end systems. Implementation of the architecture into a format suitable for deployment on FPGAs is in production.

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