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Scaling studies for deep learning in LArTPC event classification

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Measurements in LArTPC neutrino detectors feature high fidelity and result in large event images. Deep learning techniques have been extremely successful in classification tasks of photographs, but their application to LArTPC event images is challenging, due to the large size of the events; two orders of magnitude larger than images found in classical challenges like MNIST or ImageNet. This leads to extremely long training cycles, which slow down the exploration of new network architectures and hyperparameter scans to improve the classification performance.
We present studies of scaling an LArTPC classification problem on multiple architectures, spanning multiple nodes. The studies are carried out in simulated events in the MicroBooNE detector.

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