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Improving particle-flow with deep learning

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Canonical particle flow algorithm tries to estimate neutral energy deposition in calorimeter by first performing matching between calorimeter deposits and track
direction and subsequently subtracting the track momenta from the matched cluster energy deposition.
We propose a Deep Learning based method for estimating the energy fraction of individual components for each cell of the calorimeter.
We build the dataset by a toy detector (with different resolutions per calorimeter layer) using GEANT and apply image-based deep neural network models to regress the fraction of neutral energy per cell of the detector. A comparison of the performance of several different models is carried out.

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Session Classification: Workshop

Track Classification: 1 ML for data reduction : Application of Machine Learning to data reduction, reconstruction, building/tagging of intermediate object