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Graph Neural Network (GNN) based Truth-tagging Tool in ATLAS

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Flavour tagging is a crucial component for the LHC physics program. The performance of the flavour-tagging algorithm is such that the statistical precision of the simulated samples is diluted when flavour tagging is applied in particular to many jets per event. Truth-flavour tagging is based on weighting jets according to their probability of being tagged and is an alternative approach that preserves the statistical power of the simulated samples. This contribution describes a novel implementation of truth-flavour tagging in ATLAS based on graph neural networks. The approach is demonstrated to describe effects due to near-by topologies typical in boosted environments, offering a more elegant solution compared to the traditional strategy based on efficiency histograms.

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