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Tagging Higgs bosons at the LHC with Interaction Networks

We show how Interaction Networks could be used for jet tagging at the Large Hadron Collider.
We take as an example the problem of identifying high-pT H->bb decays exploiting both jet substructure and secondary vertices from b quarks. We consider all tracks produced in the hadronization of the two b's and represent the jet both as a track-to-track and a track-to-vertex interaction. The representations of the two interactions are learned training two dense neural networks. The derived information is used to train a classifier of H->bb jets. Interaction networks achieve state-of-the-art discrimination performances, even when the training is prevented from learning to exploit the jet mass value as discriminating information.

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