Contribution ID: **27** Type: **not specified**

Extracting Invisible Higgs signals at the LHC with Convolutional Neural Networks

Tuesday, 24 August 2021 14:30 (20 minutes)

We show that using the full tower information in the form of an image,
a Convolutional Neural Network(CNN) can efficiently recognise Vector boson fusion(VBF)
signal from non VBF backgrounds at the Large Hadron Collider(LHC). As a concrete example, we compare with existing state-of-the-art techniques currently in use, we show that deep-learning algorithms like a CNN can significantly improve the bounds on the invisible branching ratio of the recently discovered Higgs boson. This can help constrain many beyond the Standard Model(BSM) theories, which relies on the Higgs decaying to any new stable (or semi stable) particles which do not interact with the known Standard Model particles.

Primary authors: BHARDWAJ, Akanksaa (University of Glasgow); NAYAK, Aruna (Institute of Physics, Bhubaneswar); KONAR, Partha (Physical Research Laboratory, Ahmedabad, Gujarat-380 009, INDIA); Mr NGAIRANGBAM, Vishal Singh (Physical Research Laboratory)

Presenter: Mr NGAIRANGBAM, Vishal Singh (Physical Research Laboratory)

Session Classification: New Tools in New Physics Searches

Track Classification: New Tools in New Physics Searches