

Abstract Submitted
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Using Neural Networks to Separate Signal from Background with Real Missing Transverse Energy JANNICKE PEARKE, University of British Columbia — Deep neural networks are an exciting technique for approaching classification problems in Machine Learning. This research investigated the potential application of deep neural networks to the ATLAS missing transverse energy trigger. We trained neural networks to distinguish between associated Higgs production signal events and minimum bias background events. We investigated neural networks trained on high level input features and found an overall improvement in performance compared with a one dimensional missing transverse energy threshold. By treating the calorimeter as an image, we were also able to train deep convolutional neural networks to classify the events based entirely on low level input features. The performance achieved using the low level features was marginally poorer than the performance achieved on the high level input features.

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