

Abstract Submitted
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Exploring Deep Learning as an Event Classification Method for the Cherenkov Telescope Array¹ BRYAN KIM, BRIAN HUMENSKY, Columbia University, DANIEL NIETO, Complutense University of Madrid, ARI BRILL, Columbia University, MEERA DESAI, Barnard College, CHERENKOV TELESCOPE ARRAY COLLABORATION — Telescopes based on the imaging atmospheric Cherenkov technique (IACTs) detect images of the atmospheric showers generated by gamma rays and cosmic rays as they are absorbed by the atmosphere. The much more frequent cosmic-ray events form the main background when looking for gamma-ray sources, and therefore IACT sensitivity is significantly driven by the capability to distinguish between these two types of events. Supervised learning algorithms, like random forests and boosted decision trees, have been shown to effectively classify IACT events. In this contribution we present results from exploratory work using deep CNNs (convolutional neural networks) as an event classification method for the Cherenkov Telescope Array (CTA). CTA, conceived as an array of tens of IACTs, is an international project for a next-generation ground-based gamma-ray observatory, aiming to improve on the sensitivity of current-generation experiments by an order of magnitude and provide energy coverage from 20 GeV to more than 300 TeV.

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