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Neural Networks for the Gamma/Hadron Separation of the Cherenkov Telescope Array

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The Cherenkov Telescope Array (CTA) will be the largest ground-based gamma-ray observatory. CTA will detect the signature of gamma rays and cosmic
rays hadrons and electrons interacting with the Earth's atmosphere. Making the best possible use of this facility requires to be able to separate events
generated by gamma rays from the particle-induced background. Deep neural networks produced encouraging results, but so far there has been no
evaluation of their performance for gamma/hadron separation with respect to well established approaches. In this paper we compare convolutional neural
networks and a standard analysis technique, namely boosted decision trees. We compare the performance of the two techniques as applied to simulated
observation data. We then looked at the Receiver Operating Characteristics (ROC) curves produced by the two approaches and discuss the similarities
and differences between both.

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