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Muon Hunter: a Zooniverse project

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The large datasets and often low signal-to-noise inherent to the raw data of modern astroparticle experiments calls out for increasingly sophisticated event classification techniques. Machine learning algorithms, such as neural networks, have the potential to outperform traditional analysis methods, but come with the major challenge of identifying reliably classified training samples from real data. Citizen science represents an effective approach to sort through the large datasets efficiently and meet this challenge. Muon Hunter is a project hosted on the Zooniverse platform, wherein volunteers sort through pictures of data from the VERITAS cameras to identify muon ring images. Each image is classified multiple times to produce a "clean"dataset used to train and validate a convolutional neural network model both able to reject background events and identify suitable calibration data to monitor the telescope performance as a function of time.

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