

Using Convolutional Neural Networks to Automatically Filter Meteor Events from the Canadian Automated Meteor Observatory

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The use of a custom-built application for machine learning research is to be used for testing the viability of various convolutional neural networks (CNNs) on their ability to identify meteors in optical video data gathered by the Canadian Automated Meteor Observatory (CAMO), a system of two camera stations located in Elginfield and Tavistock, Ontario, Canada. Each deep-learning network will be trained on the same set of manually processed data, containing precise information on the locations of meteors within video frames. The success of the networks will be evaluated on a separate prelabelled data set, containing meteor detections and erroneous detections, e.g. planes and satellites. The CNN capable of identifying the largest number of meteors in the test set, while ignoring the most false positives, i.e. the most successful network, will be used to automatically filter three years of backlogged optical CAMO detections to showcase its real-world applicability.