
MaxiMask: Identifying contaminants in astronomical images using convolutional neural networks.

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Résumé

We present MaxiMask, a convolutional neural network that marks contaminants in astronomical images through semantic segmentation. It has been designed to deal with a broad range of ambient conditions (seeing), PSF sampling, detectors, optics and stellar density, without human supervision. MaxiMask can identify cosmic rays, hot or bad pixels, persistence effects, satellite or plane trails, residual fringe patterns, nebulosity, saturated pixels or diffraction spikes. Training and testing data have been gathered from real data originating from various modern optical and near-infrared cameras, or simulated. We show that MaxiMask generates accurate probability maps after class re-balancing and that it achieves state-of-the-art performance on test data. MaxiMask is available on github at <https://github.com/mpaillassa/maximask>.

*Intervenant