



PHYSICS AND ASTRONOMY ARCNet SPECIAL SEMINAR

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“Assessment of astronomical images using combined machine learning models”

Abstract

"We present a Machine Learning (ML) based approach for classify astronomical images on the basis of data-quality via an examination of sources detected in the images and the image pixels values from representative sources within those images. This approach uses a small fraction of image pixels to determine the quality of the observation. The representative images (and associated tables) are ~ 800 times smaller than the original images, greatly reducing the time required to train our algorithm. The useful information in the images is preserved, permitting them to be classified in different categories, but the required storage is reduced. Using ground-based telescope imaging data we demonstrate that the method can be used to separate ‘usable’ images from those that present some problems for scientific projects – such as images that were taken in sub-optimal conditions. This method uses two different data sets as input to a deep model, and provides a better performance than if we only used the images pixel information. The method may be used in cases where large and complex data sets should be examined using deep models. Our automated classification approach achieves 97% agreement when compared to classification generated via manual image inspection. "

Thursday, February 28, 2019

10:00 a.m.

CLE Building – Room C113