

Night-time cloud classification with machine learning

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Abstract: Cloud classification with different types of machine learning algorithms as already been done many times. This paper aims to apply one of the methods used and present it in an easy to understand way as well as analyse the human judgment side of machine learning samples. Only cloud coverage and cirrus cloud coverage in 1/8's is predicted which is far simpler than the predictions made by other algorithms.(Summary of results)

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1. Introduction

(What other papers have done),(Machine learning is only as good as the dataset),(Dealing with large amounts of data)

2. The Data Set

(Do I agree with the assigned values?),(How does the algorithm interpret this dataset?)(Cloud/Cirrus split)

3. The Method

(Summary of the method used)

3.1. Cutting and Transforming the image

(Circle crop)(Square crop)(Squircle function)(Not using a hough Circle to remove the moon/In theory since David classified it, the moon is already filtered out from the results which means the A.I learns to ignore the moon as well since there isn't a correlation between moon brightness and cloud coverage result)(Example images)

3.2. Creating the Learning Array

(How the images were stored in pandas)(Describing the 2 dimensional array wanted by scikit)(How the pixel values were taken out)

3.3. Training the Algorithm

(Mod function)(Slicing and fitting to train algorithm)

3.4. Predicting values

(Mod function)(Slicing and Predicting values)(Analysis of those values)(Moon/other effects)

4. Analysis of Results

(What was the ideal result)(The parameters used)(Computation times)

4.1. Different Algorithms

(Effect of using different algorithm types)

4.2. Different Sample Sizes

(Effect of increasing the sample size)

4.3. Human Error

(How does human error effect the results)

Appendix A.

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