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Cloud Detection and Tracking System using Machine Learning

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Abstract: *Cloud detection is an important task in remote sensing (RS) image processing. Numerous cloud detection algorithms have been developed. However, most existing methods suffer from the weakness of omitting small and thin clouds, and from an inability to discriminate clouds from photometrically similar regions, such as buildings and snow.Here, we derive a novel cloud detection algorithm for optical RS images, whereby test images are separated into three classes: thick clouds, thin clouds, and noncloudy. First, a simple linear iterative clustering algorithm is adopted that is able to segment potential clouds, including small clouds. Then, a natural scene statistics model is applied to the super pixels to distinguish between clouds and surface buildings. Finally, Gabor features are computed within each super pixel and a support vector machine is used to distinguish clouds from snow regions. The experimental results indicate that the proposed model outperforms state-of-the-art methods for cloud detection.*

Keywords: Sigmoid Function, Image, Object Detection, Object Tracking, Cloud Mask, Convolution Neural Networks, Optical Flow, Deep Learning, U-Net, Augmentation, etc.

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