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Automated Cloud Pattern Identifier from Satellite Images

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Abstract

In this millennial climate changes have become a hot topic and researchers are trying to address many possible problems regarding our planet earth and its atmosphere. Clouds play a major role when it comes to atmosphere. Moreover, clouds have been helpful in weather forecasting, photovoltaic fields, disaster recovery and etc. Scientists who are doing research regarding the world's ever-changing atmosphere they have faced a need of identifying cloud patterns. In order to overcome the need these scientists have carried out cloud pattern recognition through crowd sourcing, which means they have gathered several scientists and they have identified several cloud patterns based on their appearance and several other scientific factors and thereafter this group have identified these cloud patterns from satellite images manually.

Identifying cloud patterns manually take a considerable amount of time. As a solution to this the Author came up with an idea of automating the cloud pattern identification process from satellite images. This system would automate the manual process of identifying cloud patterns from satellite images using segmentation and classification methods along with Deep Learning algorithms. This system is first of its kind in Python language and no other existing systems covers and end to end workflow of automating cloud pattern identification. It is capable of identifying cloud patterns in a single image as well as in multiple images. It is available as a desktop solution along with GUIs to carry out the necessary user actions and finally the results could be exported to the local machine.

Keywords: Segmentation, Classification, cloud pattern identification, python, Machine Learning, CNN