Weather forecast using cloud images

• Dataset: Training









SWIMSEG Dataset

1,013 cloud images (many kinds of cloud and sky)

• Dataset: Testing







HYTA Dataset
32 cloud images (many kinds of cloud and sky)

• Architecture

Training

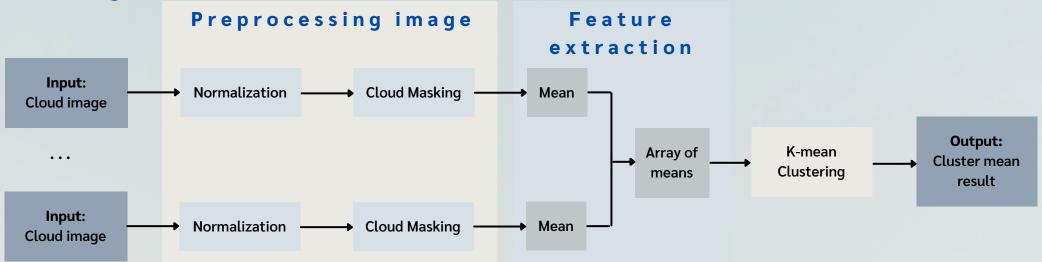


Image Processing Techniques

- Normalization: Grayscale (BGR Ratio) & Arithmetic Operation
- Cloud masking: Thresholding (cv2.THRESH_TOZERO) & Morphology (Closing)
- Mean: Extract average of cloud area in the image
- K-mean clustering: 3 clusters (Euclidean distance)

<u>Testing</u>



Output

• Weather condition: Sunny/Cloudy/High chance of rain

• Result analysis:

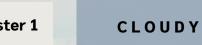
Cluster mean result = [[59.346], [112.251], [175.905]]





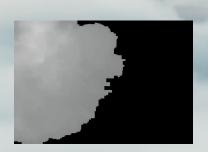












mean = 157.222

Cluster 2

HIGH CHANCE OF RAIN

If we use preprocessed images for training and testing, we will get 78.125% accuracy of weather prediction, which is higher than using normal images with 62.5% accuracy.

SWIMSEG dataset: https://dataverse.harvard.edu/
HYTA Dataset: https://github.com/Soumyabrata/HYTA/tree/master/images
Code: https://github.com/Zeno-PT/WeatherForcast

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