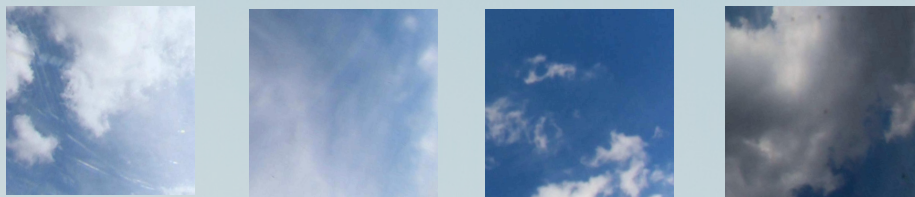


Weather forecast using cloud images

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

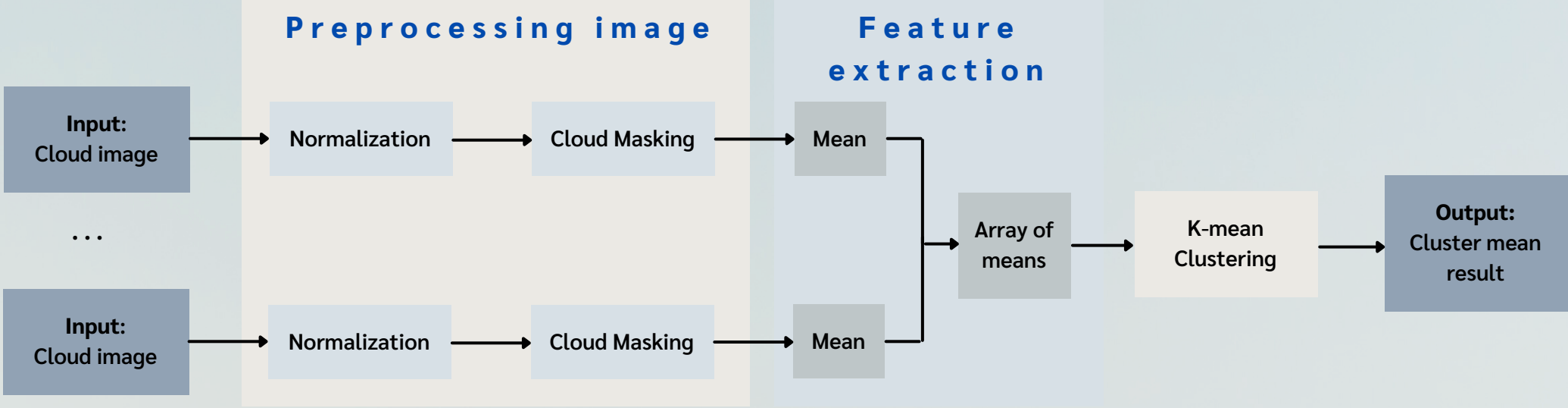
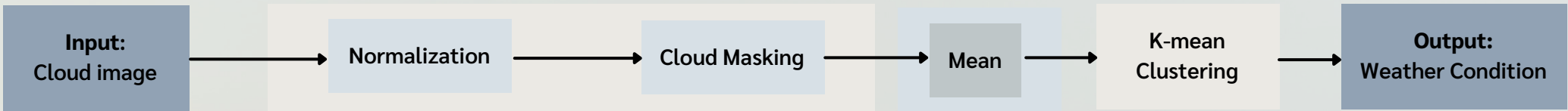


Image Processing Techniques

- 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)

Testing

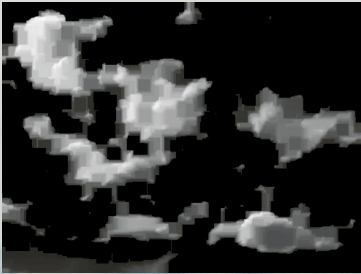


Output

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

Result analysis:

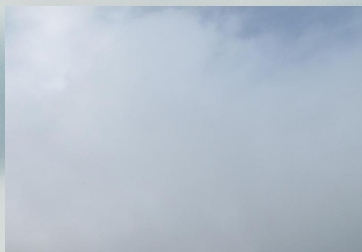
Cluster mean result = $[[59.346], [112.251], [175.905]]$



mean = 121.511

Cluster 1

CLOUDY



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.