IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 6, February 2025
Impact Factor: 7.67

Advanced Weather Forecasting: Applications of Digital Image Processing and Neural Networks

Siddhi Gharat[1] and Anish Tambadkar[2]
Assistant Professor Department of IT[1]
Student, P.G. Department of IT[2]
Veer Wajekar ASC College, Phunde, Uran

Abstract: *This review paper explores the application of Digital Image Processing (DIP) in weather and climate forecasting. With advancements in satellite imaging technology, it has become increasingly feasible to access and analyze satellite images for real-time weather prediction. The process generally involves two main stages: first, extracting cloud coverage using image segmentation techniques, and second, quantifying this coverage to predict weather conditions. Factors such as humidity, temperature, and wind speed are incorporated into artificial neural networks for accurate forecasts. A crucial component of this methodology is cloud detection, which often uses convolution-based algorithms to ensure precise feature extraction. This paper reviews current technologies and emphasizes the potential of DIP for efficient and timely weather forecasting.*

Keywords: Digital Image Processing, Cloud Segmentation, Weather Forecasting, Climate, Satellite Imagery, Rainfall Prediction, Neural Networks, Infrared Imaging