

ABSTRACT

Mangroves are vital for the survival and preservation of healthy coastal ecosystems. They shelter inland coastal regions from the effects of erosion and storm surge, are exceedingly biodiverse, and are home to a wide variety of species of plants and animals. Mangrove forests are vanishing quickly because of several climatic events and human activity. This justifies proactive monitoring and mangrove conservation initiatives. The U-net classifier was used to propose a deep learning-inspired pixel classification model to address these issues. A deep learning network called U-Net uses semantic segmentation to categorise the pixels in a raster image. For classifying land cover, this model is utilised. For that, 30m x 30m resolution Landsat 8 imagery of 2016 and 2021 was downloaded. To identify the locations of mangroves in the 2016 images, training labels were made. After that, these labels were exported to train a deep learning model for pixel classification. To determine the change in the size of the mangrove forest cover over time, the model then was trained and used on 2021 imagery for the same study area.

Mangrove forest changes were shown on a map to indicate in which region they are growing as well as where it is disappearing. Management initiatives for mangrove conservation and restoration can benefit from these results.

Keyword: Mangroves, deep learning, pixel classification, train, model, tool.