ABSTRACT

Remote sensing is defined as the science of collecting information about an object without touching or having direct physical contact with the object, accurate road extraction has many benefits in real applications such as navigation, traffic monitoring, and urban planning, but road extraction from remote sensing images is a complex task due to the complex features of roads and their interaction with the surrounding environment, using manual methods is no longer considered efficient in terms of time and human resources.

The OBIA and Deep Learning methods are promising solutions given the research that has been done, the OBIA method is semi-automatic and deep learning is automatic, in its implementation the deep learning method will use the DeepLabV3+ model with the ResNet50 encoder, then in the dataset generation the OBIA implementation will be used for the dataset annotation process.

The test results of the designed deep learning model provide satisfactory results using a test orthophoto image of 376 samples for models trained using manual annotations and 100 samples for models trained using OBIA datasets, on models trained using OBIA annotation datasets get an mIoU score 75.31% at epoch 40, and with models trained using mannual annotation datasets get an mIoU score 92.88% at epoch 40.

Keywords : Road Extraction, Deep Learning, DeepLabV3+, OBIA