

ABSTRACT

Scattered rubbish has become a problem that is difficult to eliminate. There are still many people who are lazy to throw their rubbish in the right place. Trash such as plastic bags, cans, plastic bottles and styrofoam is waste that is often thrown away carelessly by people without considering the impact it will have on the surrounding environment. There are still many people who throw rubbish into rivers which can cause natural disasters if people are not aware of this. This research aims to make it easier for environmental cleaning officers to clean up rubbish that is still thrown away carelessly by the community.

The rubbish that is often thrown away by the public is usually in the form of plastic bags, plastic bottles, cans and styrofoam. One way to make selecting rubbish easier is to create a rubbish detector using the YOLOv5 (You Only Look Once Version 5) algorithm. YOLO (You Only Look Once) is a deep learning model that can detect objects according to the dataset that has been input and studied by YOLO. By using YOLO, we can detect waste according to the type of waste that people often throw into the river using CCTV cameras that monitor the area around the river.

The dataset used to train the YOLO algorithm is a dataset created by ourselves, where the dataset has 2004 datasets consisting of 4 classes according to the dominant waste objects that appear in the Cikapundung River. Of the total dataset created, the dataset is divided into 3 partitions, including 1749 Training Data, 159 Validation Data, and 96 Testing Data. With mAP (Mean Average Precision) = 76.4%, Precision = 92.3%, and Recall = 71.1%. By looking at the matrix, the detection has good enough accuracy to detect waste in the Cikapundung River. We use YOLOv5 as the best model that can be adapted to the device specifications we use. The implementation and testing of this project succeeded in detecting waste which can help cleaning officers at the Cikapundung River to be able to monitor the waste contained in the Cikapundung River.

Keywords: YOLO, CCTV, River, Garbage,