

ABSTRACT

Work accidents in the construction sector often result in serious injuries or even fatalities. One crucial step in preventing head injuries is to ensure the proper use of safety helmets by workers. This research aims to develop a safety helmet detection system using deep learning technology, specifically the You Only Look Once Version 8 (YOLOv8) algorithm, as an effort to prevent work accidents in the construction sector. This approach utilizes a dataset with two classes (helmets and heads) that have undergone augmentation to increase diversity and sample size. The detection model is trained using a pre-trained model with hyperparameter tuning for batch size, learning rate, and optimizer. This tuning process aims to improve the accuracy and speed of safety helmet detection. The experimental results show that the trained model achieves a precision value of 0.936, recall of 0.901, and a Mean Average Precision (mAP) of 0.96 with a batch size setting of 16, learning rate of 0.001, and SGD optimizer. Model testing results an mAP of 0.95, precision of 0.905, and recall of 0.927

Keywords : Object Detection, Safety Helmet, YOLOv8