

ABSTRACT

Elderly (elderly) is the final stage of the development of human life which is indicated by the decline in an individual's ability and quality of life, so that it requires care and monitoring from younger adults. However, most adults, especially those who are married, have difficulty taking care of their parents and children at the same time because they are busy with work, different places of residence and so on. So, a solution is needed, namely an object detection-based monitoring system where we can monitor the daily activities of the elderly in real-time.

The way this system works is by using a webcam, which will detect the movement and position of the elderly in the house using the You Only Look Once (YOLO) algorithm. The YOLO algorithm applies a single neural network to the entire image. This network will divide the image into regions and then predict bounding boxes and probabilities, for each bounding box the probability is weighed so that it can classify an object or not. At the end, the bounding box with the highest value will be selected to separate one object from another. After that, the data obtained will be sent to the caregiver's smartphone and family via Telegram in the form of messages and notifications.

With that system, the users can find out the daily activities of the elderly in a room or location through the Telegram application when the user is out of reach of the elderly in the form of routine messages in the form of elderly activity data and notifications via Telegram so that users can always monitor the activities of the elderly every day. The results of the research in this final project show that the monitoring system of elderly daily activities based on object detection using yolo algorithm obtains 100% precision, 100% recall, 100% F1 Score, 87.26% Average IoU, 6.41% Average Loss, 100% mAP and the resulting accuracy reaches 100% with the model parameters used are Ratio 90% : 10%, Batchsize 64, Learning rate 0.008 and Max Batches 4000.

Keywords: *Elderly, Monitoring System, YOLO, Object Detection, Telegram.*