ABSTRACT

Packaging is a very important factor in a product. The packaging used in a product consists of various types. Cardboard is a type of packaging that is often used as packaging for shipping goods. Cardboard comes in various sizes, shapes and weights. The cardboard used in this research is a corrugated box, namely cardboard made from corrugated cardboard with a thin layer on each surface. Damaged cardboard can cause complaints and dissatisfaction from customers, which can have an impact on the sales and marketing process of production. Technology in detecting cardboard quality is needed so that it can have a positive impact on the production and distribution processes of goods. In its development, the use of Artificial Intelligence (AI) technology is used to identify the quality of cardboard. In this research, the method used is a CNN and the YOLOV5 architecture as the detection technique. The cardboard quality detection system created using YOLOV5 is expected to be able to obtain system performance in the form of recall, precision, mean Average Precision (mAP) and accuracy values to obtain the best quality model. This research designed a system for implementing artificial intelligence with processes from input dataset, data preprocessing, data training, model optimization, testing, validation, and model implementation. The implementation of artificial intelligence technology in this cardboard quality detection system also aims to obtain the best performance values for the detection distance from the system and light intensity so that it can be used as a cardboard quality detection system. The results of the cardboard damage type detection system using YOLOV5 were obtained in the best model with variations in batchsize 50 and epochs 350 with recall values of 0.906, precisions 0.944, mAP 0.969, and accuracy 60% while the worst model was obtained in variations in batchsize 60 and epochs 100 with recall values of 0.848, precisions 0.857, mAP 0.921, and accuracy 57%.

Keywords **: AI,** *CNN, Corrugated Box, YOLOV5*