

ABSTRACT

Artificial Intelligence has several components in it, one of example is computer vision. Computer vision is a technology that allows computers to recognize objects as humans do. In recent years, computer vision technology has penetrated to the retail product industry and the retail product industry has entered a new era where products can be identified and classified automatically using computer vision technology. However, automatic retail product recognition still has problems such as the similarity between one product and another so that technology is difficult to distinguish them. In this research, a system for automatic retail product recognition is designed using the SimCLR algorithm combined with B-CNN. The combination is done by replacing the default SimCLR base encoder, ResNet with B-CNN algorithm where the B-CNN model used is the pretrained VGG-16 model. The dataset that has been prepared is divided into 2 parts, namely the coarse-grained class dataset and the fine-grained class dataset.

There are two stages in this research, namely the detection process and the classification process. In the detection process, the coarse-grained class dataset is trained using YOLOv8 then the training results obtained are used to predict the images after that the predicted images are cropped according to the bounding box of the prediction results. The images obtained at the detection process are forwarded to the classification process. In the classification process, the cropped images are first trained using SimCLR that has been combined with B-CNN then the weight of the training results is transferred to the architecture of the SimCLR and B-CNN combination model. Based on the results obtained, it shows that the SimCLR model combined with B-CNN gets a good result when compared to other models that have been trained using the same dataset.

Keywords: B-CNN, Computer Vision, Retail Product, SimCLR, YOLOv8