ABSTRACT

The rapid advancement of technology has led to an increasing variety of clothing types in society. This creates challenges in automatically grouping, recognizing, and recommending clothing based on its contextual usage, including seasons. The purpose of this research is to develop a system capable of detecting clothing types and classifying their seasonal usage using You Only Look Once (YOLO) and Residual Network (ResNet) methods. The scope of this research is limited to classifying clothing based on four seasons: spring, summer, autumn, and winter.

The steps taken in this research include literature studies, collecting annotated clothing image datasets, preprocessing such as resizing and labeling, training the YOLOv8n model for clothing object detection, and using ResNet18 for season classification. YOLO was chosen due to its ability to detect multiple objects in a single image, while ResNet was selected for its capacity to overcome vanishing gradient problems in deep networks, making it suitable for image classification tasks. The training process was carried out using a prepared dataset of digital clothing images.

The results show that the YOLOv8n model achieved a mean Average Precision (mAP) score of 0.807 for clothing detection, while the ResNet18 model reached a classification accuracy of 83.68% for identifying the clothing season. However, the classification performance was affected by class imbalance in the dataset, potentially reducing the model's overall effectiveness. This research produced a web-based system prototype that can automatically detect clothing types and classify their seasonal usage, with potential applications in fashion product recommendation systems.

***Keywords**: Detection, Classification, Season, Clothing, ResNet, YOLO*