FABRIC MATERIALS CLASSIFICATION DEVICE WITH CMOS SENSOR-BASED USING COMPUTER VISION TECHNIQUES

SKRIPSI

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PADANG

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A paper is one of the requirements
to obtain a Bachelor of Science degree
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ABSTRACT

The fashion industry in Indonesia significantly contributes to the country's creative economy. However, public knowledge about various fabric materials is still limited, often leading to fraud. This research aims to develop a prototype device that can classify fabric materials based on their structure using computer vision techniques. The device uses a Digital Microscope Endoscope Magnifier 1600x USB camera to capture fabric structure images and the YOLOv8 algorithm to classify 17 fabric materials from 1700 raw image data. The research methodology includes collecting fabric image datasets, preprocessing data, and training the YOLOv8 model. The results show that the YOLOv8 model achieves an accuracy of 98%. The classification results are displayed on an LCD connected to NodeMCU ESP8266. System testing shows that the device effectively classifies fabric materials, sends the results to the MQTT via API, and displays the results on the LCD. Overall, this device provides an effective solution for distinguishing types of fabrics and preventing fraud in fabric purchases.

Keywords: Accuracy, Classification, Computer vision, Fabric materials, Fashion, YOLOv8