Waste Classification Using Support Vector Machine with SIFT-PCA Feature Extraction

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ABSTRACT

Population growth and changes in public consumption patterns cause increases in the volume, types and characteristics of the waste. This increase requires waste management effort. One of the efforts that can be performed is by separating waste into several types. Upon waste separation, the waste can be proceeded to the waste recycling process. Current technological advances have supported automatic waste sorting so that the waste sorting process is easier and faster to do. This research proposes waste image classification to support automatic waste sorting using Support Vector Machine (SVM) classification algorithm and SIFT-PCA (Scale Invariant Feature Transform - Principal Component Analysis) feature extraction. SIFT-PCA is a combination of SIFT to extract feature data and PCA to reduce the dimensionality of the resulting feature data. The data used in this research is Trashnet datasets. The performance of the SVM classification using SIFT feature is compared with the similar algorithm with SIFT-PCA combined feature. The experimental results show that classification using SIFT feature extraction achieve accuracy of 62%. This accuracy is higher than experiment with using SIFT-PCA feature extraction.

KEYWORDS: image classification, waste, SVM, SIFT, PCA, Trashnet, dimensional reduction

DOI: 10.1109/ICICoS51170.2020.9298982

ACKNOWLEDGEMENT

The authors would like to acknowledge the research funding supported by the Faculty of Science and Mathematics, Diponegoro University under the Grant of Primary Research– Contract Number 2007/UN7.5.8/PP/2020.