COLOR DETECTION APPLICATION FOR VISUALLY IMPAIRED PEOPLE WITH MOBILE-BASED KNN METHOD: A CASE STUDY IN SLB NEGERI JEMBER

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ABSTRACT

Visually impaired people have limited vision, making it difficult to carry out daily activities, especially in terms of identifying colors in objects. This research aims to build a mobile-based color detection system application that can help visually impaired people identify colors in objects in real time. The method used in this research is K-Nearest Neighbors (KNN) using HSV (Hue, Saturation, Value) color feature extraction. This research was conducted at SLB Negeri Jember by involving blind students and teachers as application users.

The results showed that the developed application was able to detect colors in objects with high accuracy. Based on the test results, the accuracy rate obtained in identifying colors on objects using the KNN method with a value of k = 5 is 92.28% on training data and 89.13% on test data. This value shows that the system can recognize colors with a small error rate. The talkback feature integrated in the application also makes it easy for visually impaired users to operate the application. With this application, it is hoped that it can help improve the independence of visually impaired people in carrying out daily activities.

Keywords: *Color, Color Detection, KNN, K-Nearest Neighbors, Kotlin, Disability, Visually Impaired, Color Blind , Weka, OpenCV, Android*