CLASSIFICATION OF FACIAL EXPRESSIONS USING LOCAL BINARY PATTERN AND SUPPORT METHOD VECTOR MACHINES

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ABSTRACT

In overcoming the challenges faced by ordinary people in distinguishing categories of facial expressions based on their characteristics, which is a crucial aspect in nonverbal communication. By using 200 facial expression images consisting of 188 from the Kaggle dataset and 12 from images taken using the Vivo V15 smartphone taken from six students at Yogyakarta University of Technology, this research developed a sophisticated computing system to functionally classify facial expressions. The research process includes image data pre-processing which involves resizing, noise removal, detail and edge enhancement, and image conversion to grayscale. This is followed by feature extraction using the Local Binary Pattern Histogram method, which allows identifying local texture patterns typical of facial expressions. Classification was carried out with the Support Vector Machine algorithm, where the C parameter was adjusted between 0.1 to 10 and a linear kernel was used for optimization. Experimental results show that this approach succeeded in achieving 100% accuracy on training data and 67.74% on testing data, indicating the system's effectiveness in helping ordinary people understand facial expressions more accurately and deeply.

Keywords: Support Vector Machine, Local Binary Pattern Histogram, Facial Expression Classification, Image Pre-processing, Image Dataset..