

ABSTRACT

Rice is one of the staple foods most widely consumed, particularly in Asia, including Indonesia, where it serves as the primary source of carbohydrates for the majority of the population. With a large population and a high dependence on rice, various innovations have been continuously developed to enhance the available varieties. Generally, rice is categorized into several types based on color, such as white, brown, red, and black, with white rice being the most commonly consumed type. However, each type of white rice has unique characteristics, such as shape, texture, aroma, and taste. This study focuses on five types of white rice: Arborio, Basmati, Jasmine, Ipsala, and Karacadag, aiming to identify and classify rice types based on their textural features. The research employs a classification method using Support Vector Machine (SVM) with Gray Level Co-occurrence Matrix (GLCM) feature extraction. The image data were processed at a resolution of 256×256 pixels to preserve optimal texture details. Two scenarios were conducted in this study. In Scenario 1, testing was performed using combinations of distance and angle parameters with image sizes of 128×128 pixels to evaluate the impact of image resolution on accuracy. In Scenario 2, testing was carried out using 256×256 pixel images to assess the effect of distance and angle parameters with higher resolution. The best results were obtained in Scenario 2 with a combination of a 3-pixel neighborhood distance, a 45° angle, an RBF kernel, and hyperparameters $C = 10$ and $\gamma = 10$. This model achieved an accuracy rate of 95%, demonstrating high reliability in distinguishing the five rice types. The conclusions of this study emphasize that the selection of appropriate distance, angle, image resolution, and kernel type parameters is critical in the texture-based classification process. These findings can serve as a foundation for further research to improve classification accuracy and implement automated systems for rice type identification.

Keywords : Rice, Gray Level Co-occurrence Matrix (GLCM), Support Vector Machine (SVM), Classification