

ABSTRACT

Food crops such as rice, tubers, nuts, vegetables, fruit, and animal food sources are included as biological resources. Rice comes from rice plants as a staple food source for Indonesian people. However, the rice plants used often experience crop failure because the rice leaves are attacked by pests and diseases. Of course, this will affect crop yields, so a system with good performance is needed for classifying rice leaf diseases. Therefore, in this era of technological advancement, digital imagery can be used for classification, one of the classification methods is using K-Nearest Neighbor (KNN), which is a classification procedure based on learning data information with the closest distance. Some of the objects used have a very complex diversity, so we need a color feature extraction method and invariant moment to get information on the distinguishing characteristics of an object from other objects. The data used in this study came from the UCI Repository with a total of 120 images divided into 3 types of bacterial leaf blight, brown spot, and leaf smut diseases, each class has 40 images. The color features are hue, saturation, and value. The invariant moment uses the seven features H1-H7 introduced by Hu. All features will be subjected to the KNN classification process using K-fold k=10 with KNN experiments k=1 to 10 based on the best feature variations. Testing the system obtained confusion matrix. The system succeeded in classifying with the best accuracy results obtained from the classification when k = 1 when the system performance uses the 6 best features namely hue, saturation, value, h2, h3, and h7 resulting in a confusion matrix of 81.66%.

Keywords: *Color Feature, Invariant moment, K-fold, KNN, Rice Leaf*