

Analysis of Features Extraction Performance to Differentiate of Dental Caries Types Using Gray Level Co-occurrence Matrix Algorithm

Abstract

This study analyzes the features extraction performance of dental caries image using Gray Level Cooccurrence Matrix (GLCM) algorithm for contrasted two types of caries is based on the theory of GV Black, namely: Dental caries Class 3 and Class 4. The study aims to determine the pixel value and quantization value of the GLCM used for an automated classification system of dental caries types. The analysis is conducted by using variations of pixel distances and quantization value to perform features on the image in values such as contrast, correlation, energy, and homogeneity. Then these values are used as input to the classification stage Knearest neighbor (KNN). Result performed on four data sets containing 60 images of each set is an accuracy value. The highest performance obtained is 80% of accuracy in 100 and 200 of pixel distances and 16 and 32 of quantization value. The pixel distances and quantization values are recommended to be used for an automated classification system of dental caries types based on X-ray images.

Keywords

Classification; Co-occurrence matrix; Dental caries; Extraction; Grey level; Image processing; KNN