

Abstract

We present an algorithm to classify and assign numbers to teeth in bitewing dental images. The goal is to use the result of this algorithm in an automated dental identification system. We use Bayesian classification to classify the teeth in a bitewing image into molars and premolars and assign an absolute number to each tooth based on the common numbering system used in dentistry. Fourier descriptors of the teeth contours are used as features in the Bayesian classification. After the Bayesian classification, the spatial relation between the two types of teeth is considered to number each tooth and correct the misclassification of some teeth in order to obtain high precision results. Comparison between the two kinds of FDs was done to select the best method for teeth classification. Experiments with 50 bitewing images containing more than 400 teeth show that our method is capable of classifying and assigning absolute index number to the teeth with high accuracy.

Keywords: Dental identification system; Forensic odontology; Bayesian classification; Fourier descriptors; Bitewing dental images