

Abstract

Forensic dentistry involves the identification of people based on their dental records, mainly available as radiograph images. Our goal is to automate this process using image processing and pattern recognition techniques. Given a postmortem radiograph, we search a database of antemortem radiographs in order to retrieve the closest match with respect to some salient features. In this paper, we use the contours of the teeth as the feature for matching. A semi-automatic contour extraction method is used to address the problem of fuzzy tooth contours caused by the poor image quality. The proposed method involves three stages: radiograph segmentation, pixel classification and contour matching. A probabilistic model is used to describe the distribution of object pixels in the image. Results of retrievals on a database of over 100 images are encouraging.

Keywords: Forensic dentistry; Dental radiographs; Segmentation; Matching; Human identification; Biometrics