

Abstract

Forensic odontology is the branch of forensics that deals with human identification based on dental features. In this paper, we present a system for automating that process by identifying people from dental X-ray images. Given a dental image of a postmortem (PM), the proposed system retrieves the best matches from an antemortem (AM) database. The system automatically segments dental X-ray images into individual teeth and extracts the contour of each tooth. Features are extracted from each tooth and are used for retrieval. We developed a new method for teeth separation based on integral projection. We also developed a new method for representing and matching teeth contours using signature vectors obtained at salient points on the contours of the teeth. During retrieval, the AM radiographs that have signatures closer to the PM are found and presented to the user. Matching scores are generated based on the distance between the signature vectors of AM and PM teeth. Experimental results on a small database of dental radiographs are encouraging.

Keywords: Dental radiograph; Forensic odontology; Human identification; Image segmentation