

Image Processing and Synthesis

Blood vessel Segmentation from 3-D Abdominal CT Images for Laparoscopic surgery

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The purpose of the research is to assist dentists in diagnosis of periodontitis by means of image processing of dental 3-D CT images. One of the important indexes of severity of periodontitis is the depth of alveolar bone resorption. It is clinically inspected by inserting a needle-shaped tool (probe) into periodontal pocket and 2-D X-ray. However, these methods can not entirely present the 3-D shape of the resorption. Our system not only measures the depth of alveolar bone resorption on the CT images without involving physical pain of the patients, but also provides 3-D information of alveolar bone resorption to help dentists recognize the shape of the resorption intuitively. Because the conventional methods are either 1-D (depth) or 2-D (X-ray), 3-D information given by the image processing of the CT images will greatly improve the quality of diagnosis and treatment.