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## Dental Analysis for Authentication by Using Fast Marching Algorithm.

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### ABSTRACT

It is very difficult to identify the person now days. It is also becoming one of the greatest issues. For this purpose the identification of individual is done through the dental biometric techniques. Since the dental characteristics of a person is distinctive ,the authentication of humans are done on the perfect manner .The main aim of the work is to authentication and recognition which is done through the information that is extracted through the dental data .There five main stages .The starting stage is the pre-processing ( i.e)the dental data is processed. The next step is the segmentation (i.e) with the pertinent part of the dental data the other process is carried out in segmentation.

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## INTRODUCTION

Now a days the dental biometric is becoming the leading technique compared to the traditional authentication systems such as passwords .Now a days the finger prints are not at the perfect level because of their incapability .At this instance the dental features are the most useful tools for identifying the human .The main aim of the dental biometric is to examine the dental database. At present the dental biometric identification is at the most appropriate rate to authenticate the human .On comparing with biometric modalities such as finger prints, iris, hand veins, the dental biometric is at the top rate. The researches have been done on those biometric modalities and finally the dental biometrics is at the top most level.

## LITERATURE REVIEW

**Anil K .Jain et.al** propound the technique based on the availability of dental images and dental records for identifying the human .This can be done using image processing and pattern recognition techniques .To get the resultant image in the perfect manner, the given image and the database image has to be matched .The contours of the teeth has been used by them for matching .In order to solve the problem of tooth contours a semi-automatic contour extraction method is involved.

**Shubhangi Jadhav et.al** propound the technique that make use of the dental radiographs .These radiographs gives the detailed knowledge about the alignment of teeth ,relative teeth, teeth shape .The requirements that are needed by dental biometrics are Ante-mortem and Post-mortem radiographs .There are three stages which include pre-processing and segmentation ,contour extraction or dental work extraction and then they helps in matching .Various techniques are involved for carrying the process of segmentation. Contour extraction can be done through active contour model [ACM] or active shape model [ASM] methods.

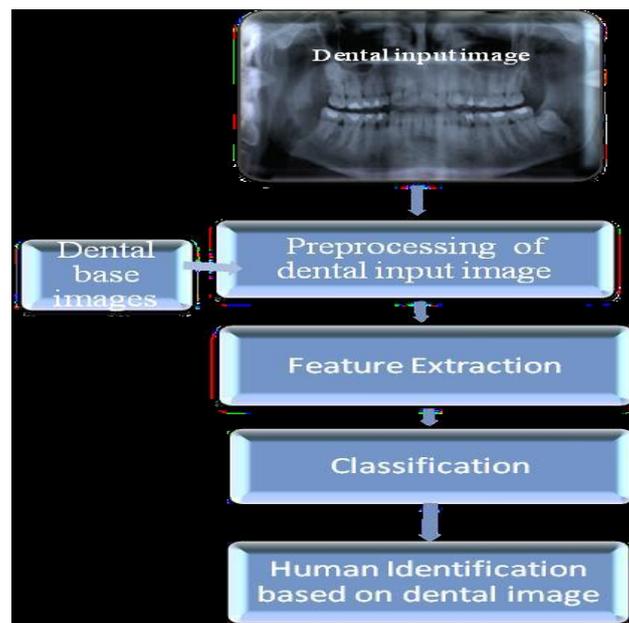


Fig1. Block diagram of Human Identification system Picture courtesy: Krutika P.Khandare et.al (2016)

**Chung Hung Kuo et. al** clarified the idea of dental work which has comparative shapes however unique introduction and position for a few bonafide dental works. This idea was clarified, just for bitewing radiograph pictures and it neglects to clarify periapical, all encompassing radiograph pictures..

**Hofer-** clarified the idea of dental biometrics for human recognizable proof in light of dental works. In this work, dental code is readied in view of position, size of dental work what's more, neighboring dental work. It helps in clarifying the idea of proposed philosophy and dental work extraction and results and exchange will examine.

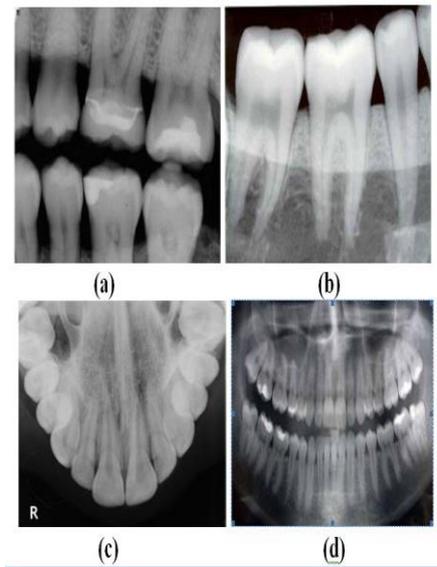


Fig2. Dental radiographs (a) Bitewing. (b) Periapical. (c) Occlusal. (d) Panoramic Picture courtesy: G. Jaffino and A. Banumathi et.al (2014)

**Jain and Chen** propound the idea of semi automatic contour method and the pattern matching was explained. The algorithm is not used when the image is much blurred. The morphological corner detection failed in handling the severely occluded dental radiographs. By the use of connected and fast connected component the shape extraction seems easier.

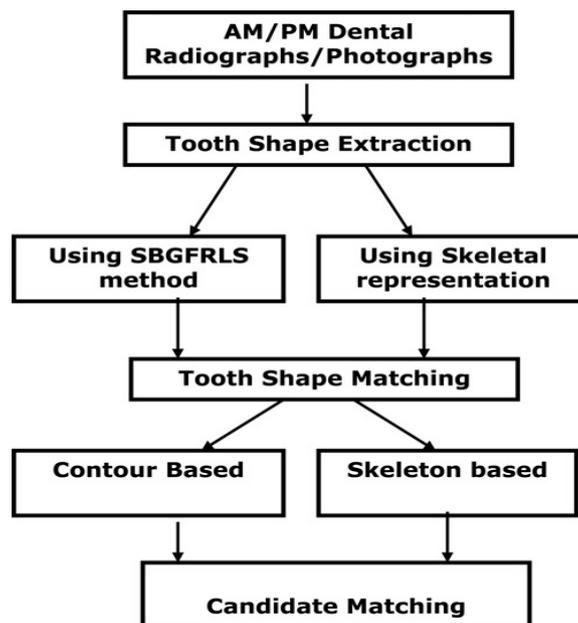
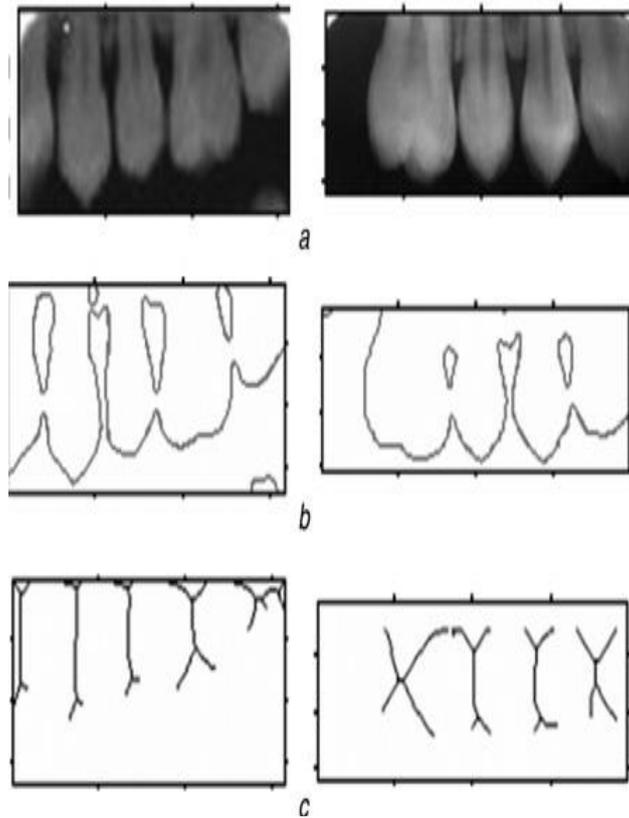


Fig3.Pipe line of the proposed method. Picture courtesy: Vijayakumari Pushparaj et.al (2013)

**Nomir and Abdel- Mottaleb** –In this paper by combining the three different matching technique the efficiency improvement can be matched .On looking at the basic manner it seems to be complex but they are efficient. Classification and numbering of teeth is supported by individual identity

**Kass et.al** proposed the active contour model have been proved at the most efficient level for segmentation of the image. The main idea that is used in the active contour is the curve must be drawn around the object that has to be detected .The level set method mainly depend upon the active contour and they helps in handling the segmentation.



**Fig4. Contour and skeletons obtained for the radiographic image Dent16**

- a Input radiographic images
- b Contours traced using SBFRLS method
- c Equivalent skeleton representation

Picture courtesy: Vijayakumari Pushparaj et.al (2013)

**David R Senn et.al** clarified the identification of person from the dental record is explained .it is explained by the well foreign dentist. It is also accepted by courts as a mean which helps in providing the identity to the individual.

#### LITERATURE SUMMARY

Dental biometrics should not only be the base of identification of a person but rather it should be treated as a confirmatory tool. For example, if the face of the person is completely damaged and its identification is not possible by face, then dental biometrics may used as confirmatory tool along with other like finger print, vein impression etc.

The level set method helps in implementing the contour tracing named SBFRLS method. This contour tracing algorithm holds good even for bitewing images with dental works. Additional information is also needed even after the matching with contour to produce a desired result. The experimental results states that the algorithm of radiographic images is suitable for photographic images.

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