Image Alignment in Radiographic Imaging

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Technology description

A researcher at UT Health San Antonio has developed a unique, patented data registration device and methods to facilitate alignment of two or more digital radiographic images. The technology is particularly useful in Cone Beam CT (CBCT) or dental radiography to align and compare digital images after acquisition of the images, thus reducing inconvenience to the patient, allowing quantitative comparison and facilitating digital subtraction radiography (DSR).
Background:
Improvements in digital dental imaging have facilitated DSR for early disease detection, measurement of disease progression, diagnosis of dental caries and periodontal diseases and detection of alveolar bone changes. DSR is also useful in evaluating treatment outcomes and examination of bone changes during implant healing. Despite advances in digital imaging and radiography, acquiring multiple radiographic images ? over time and across multiple patient visits ? that are comparable remains a challenge. Various techniques have been proposed, including selection of anatomic landmarks, attaching cumbersome and often painful positioning devices to the patient, and aligning imaging equipment to a precise position relative to a bite plate or other targeting device. Such techniques often result in patient discomfort, delay in performing a CBCT scan or other procedure, and sub-optimal alignment of images for quantitative comparison or digital subtraction.

Application area

The patented dental imaging registration device includes one or more radiopaque markers constructed of a pliable material to conform to a patient?s dental impression, thus facilitating alignment of multiple images taken over time. The patient need not be positioned in the same location relative to the imaging equipment. The radiopaque markers are designed to allow for precise alignment of CBCT or radiography images to facilitate quantitative comparison, including digital subtraction. The patent covers registration devices and methods for aligning and comparing two or more images of a subject.

Institution

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