Dental Imaging and Processing Techiques

Thematic Session within VipIMAGE2011

III ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing

Olhão, Algarve, Portugal, 12-14 October 2011

www.fe.up.pt/~vipimage ; www.fe.up.pt/~vipimage/conference/thematic_sessions.html

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SPEMD
SOCIEDADE PORTUGUESA DE ESTOMATOLOGIA E MEDICINA DENTÁRIA

Description

Evolution of dental imagiology and computerized technologies (based on Digital Images Processing, Pattern Recognition and Artificial Intelligence techniques) applied to Dentistry has increased over the last years. Many companies have developed hardware and software based on new imaging hardware and new image processing techniques, that can be applied in any field of Dentistry, from Implantology, to Oral Surgery, Periodontology, Prosthodontics, or Orthodontics.

In the radiology field, the cone-beam CT scans (CBCT) are the latest advance, and many dental practices are using them in order to plan, for example, a prosthetic rehabilitation supported by dental implants. This hardware/softwares generate DICOM files that can be easily exported to dental implants planning softwares or any other dicom viewer and, in this way, calculate Hounsfield Units, measure distances and dimensions of different structures, and even plan the fixed prosthetic rehabilitations that will be performed. In this way, it is possible to optimize the diagnosis and the treatment planning.

Besides radiology, images processing techniques have also advanced with optical/laser scannings of dental preparations for fixed prosthodontics, with immediately 3D reconstruction, CAD (computer aided design) and CAM (computer aided manufacturing) rehabilitations. Nowdays, many dentists and dental technicians are already using CAD-CAM systems to design and machine dental structures. This interaction between engineering techniques and dental procedures is essential in the modern dental practice.

However, the studies on this technologies applied to Dentistry are still scarce. More studies are necessary concerning the evaluation of the usability, integration and functionality in the clinical dental practice. Also, it is important to study and develop engineering / dental informatics methods and techniques, in order to evaluate and optimize the clinical treatments. These CAD-CAM dental systems allow the design and the machining of dental structures, but cannot perform (yet) stress analysis and optimization, which is easily achieved with engineering softwares.

Topics of interest include (but are not restricted to):

- Dental Radiology
- Intra-oral and Extra-oral scanning techniques of dental preparations
- Computer aided design of dental restorations
- Computer aided manufacturing of indirect restorations
- Image processing techniques related to evaluation of oral structures.
- Dental clinical decision support systems
- Stress analysis techniques and optimization of oral rehabilitations

Publications

The **book of proceedings will be published by Taylor & Francis Group**. The organizers will encourage the submission of extended versions of the accepted papers to related International Journals; in particular for special issues dedicated to the conference.

SPRINGER will publish a book with 20 invited extended works from the most important ones presented in conference.

Important dates

• **Submission of extended abstracts: April 20, 2011**

• Authors Notification: May 15, 2011

• Lectures and Final Papers: June 15, 2011

Awards

"Best paper award" and "best student paper award" are going to be given to the author(s) of two papers presented at the conference, selected by the Organizing Committee based on the best combined marks from the Scientific Committee and Session Chairs.

Organizers

André Correia

Curricular Units of: Removable Prosthodontics; Dental Informatics and Informatics and New Technologies applied to Dentistry.

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