Abstract

Rapid bone substitutes manufacturing is highly important due to a vast number casualties are stepped to the society as a result of mainly traffic accidents, natural disasters and civil wars. Though casualties are grouped into several categories, a considerable number of patients is fallen into the bone associated injuries. It is also notable that especially the traffic related accidents and natural disasters may occur in populated regions. Due to financial reasons all the hospitals in the developing countries cannot maintain sophisticated scanning equipments along with their software solutions. Therefore having a lightweight software solution that facilitates bone profiling will be beneficial for patients and it also helps surgeons to prepare a care plan.
depending on the disorder. However, the artificial tools that are inserted to the human body can vary upon the injury. Hence, they should be highly customizable. Though computerized 3D modeling started around two decades ago, a few tools are available to assist surgeons in such situations. The available applications and techniques have limited functionalities thus, the manufactured bone grafts may not perfectly be suited to the lesion or injury. In this paper we propose a minimally invasive procedures to model bone grafts. In which, quality control methods for noise removals and 3D data compression mechanisms are coupled to the software solution that runs even on typical personal computer systems. The end result of the 3D modeled bone can be employed to extract the cavity, clip regions of interest and even to test the manufactured bone graft before the surgical procedure. Thereby, the process of manufacturing the prosthetic and the clinical procedures will be efficient and reliable.

References


Index Terms

Computer Science

Image Processing
Keywords

Bone graft  artificial bone substitute  bone measurement