

REPORT JULY 01

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Report:

Methods that allow for the objective assessment of facial form are becoming increasingly important for research in dysmorphology, genetics, orthodontics and surgical disciplines among others.

- Such methods also have the potential to enhance clinical care by facilitating surgical planning, improving outcome assessment, and aiding in syndrome delineation. Non-contact 3D surface imaging systems are rapidly replacing traditional "hands-on" anthropometry as the preferred method for capturing quantitative information about the facial soft-tissues.
- advantages: minimal invasiveness, quick capture speeds (often under one second), and the ability to archive images for subsequent analyses. In addition, a number of independent studies have demonstrated a high degree of precision and accuracy across a wide variety of 3D surface platforms.
- The safety, speed and reliability of data acquisition that these systems offer are particularly helpful when working with young children, for whom quantification of facial features can be challenging.
- The most common class of 3D surface imaging systems is based on digital stereophotogrammetric technology. These systems are capable of accurately reproducing the surface geometry of the face, and map realistic color and texture data onto the geometric shape resulting in a lifelike rendering.
- The mathematical and optical engineering principles involved in the creation of 3D photogrammetric surface images have been thoroughly described.

The primary mission goal of THE 1 is for topographic mapping at 1:50,000 scale without GCPs. In order to achieve its goal, the on orbit calibration camera parameters based on LMCCD image and EFP Multifunctional bundle adjustment are put forward and realized in ground image processing, and the initial interior and exterior orientation parameters have been further refined. Using the orientation parameters, RPCs of three line array images are generated. Based on stereo image with RPCs, the location accuracy of TH 1 is assessed systematically using many CPs from 5 testing fields. In this paper, the location performance of 1st satellite is presented without GCPs and with different number of GCPs. The results indicate that the horizontal accuracy and the vertical accuracy can fulfil for topographic mapping at 1:50,000 scale without GCPs. The location performance of the 2nd satellite is equivalent with 1st satellite, and the location performance of the 3rd satellite is ongoing evaluating systematically. In addition, a variety of products will satisfy different users in the field of

photogrammetry and remote sensing.

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- The combination of fast acquisition speed and expanded surface coverage (up to 360 degrees) offer distinct advantages over older surface imaging modalities like laser scanning. With decreasing cost, 3D stereophotogrammetric imaging systems are becoming increasingly common in clinical and research settings .

- With any new technology, a number of factors must be considered in order to achieve optimal performance.

- Though camera manufacturers provide suggestions for device setup and calibration, limited information is available on the practical issues that will inevitably confront new users of this technology.

- However, such issues can adversely impact the reliability of data collection, and consequently, influence the clinical and research study results. In

- In order to ensure optimal interpretation of the study results, all aspects of data collection should be rigorously evaluated .

- The name photogrammetry comes from two Greek words, phos 'light' and grammar 'writing'; it has been defined as the art, science and technology of obtaining reliable quantitative information about physical objects and the environment through the process of recording, measuring and interpreting images and patterns of radiant or transmitted energy derived from sensor system.