

REPORT JUNE 30

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Course:	Satellite Photogrammetry and its Applications	USN:	4AL18EC400
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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 system 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 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 set up 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

- 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 gramma '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 systems.

Photogrammetric analysis may be applied to one photograph, or may use high speed photography and remote sensing to detect, measure and record complex 2D and 3D motion

fields by feeding measurements and imagery analysis into computational models in an attempt to successively estimate, with increasing accuracy, the actual, 3D relative motions. From its beginning with the stereoplotters used to plot contour lines on topographic maps,

it now has a very wide range of uses such as sonar, radar, and lidar. Close Range photogrammetry refers to the collection of photography from a lesser distance than traditional aerial (or orbital) photogrammetry. Photogrammetric analysis may be applied to one photograph, or

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