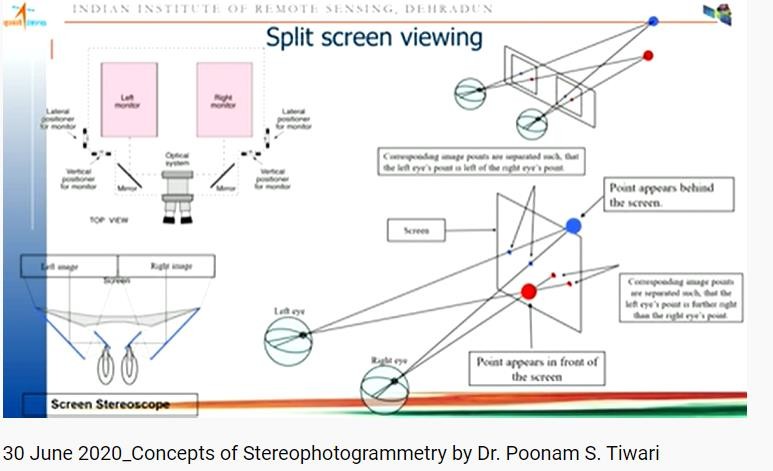
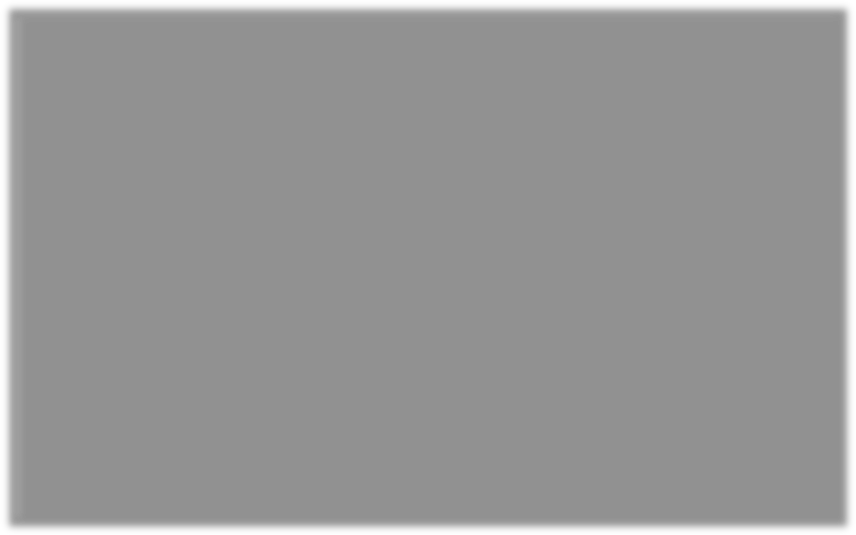
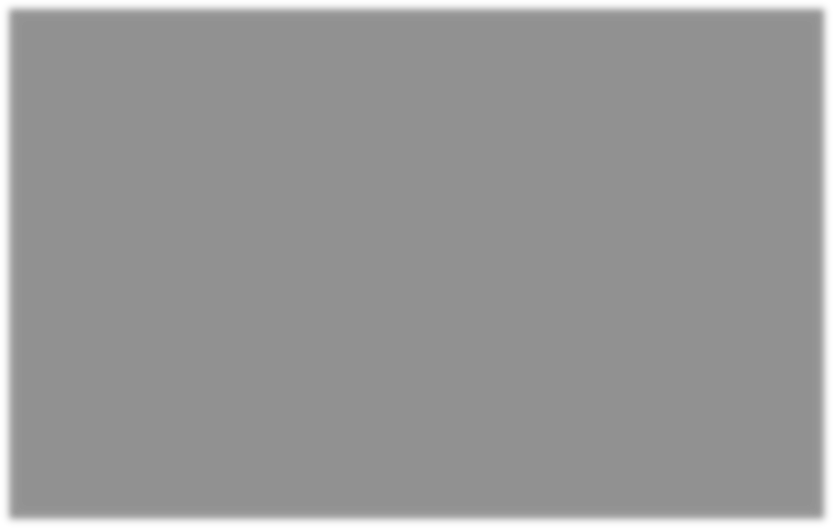
**DAILY ASSESSMENT**



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| --- | --- | --- | --- |
| **Date:** | **30/06/2020** | **Name:** | **Gaganashree P** |
| **Course:** | **IIRS Outreach Programme on “Satellite Photogrammetry and its Applications”** | **USN:** | **4AL15EC 024** |
| **Topic:** | **Concepts of Stereo photogrammetry** | **Semester & Section:** | **8th - A** |
| **GitHub Repository:** | **Gaganashree-P** |  |  |

|  |
| --- |
| **FORENOON SESSION DETAILS** |
| **Image of session** |

**REPORT –**

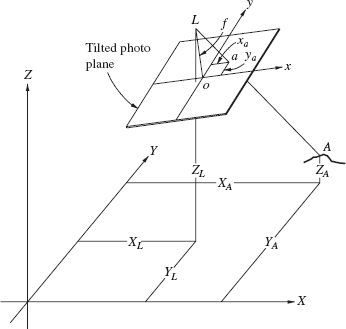
**Concept of Stereophotogrammetry:**

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.

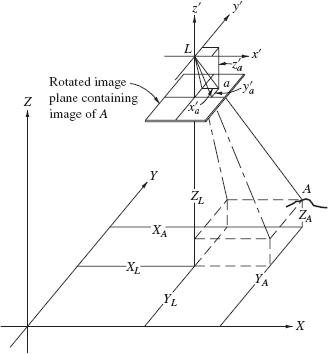
With decreasing cost, 3D stereophotogrammetric imaging systems are becoming increasingly common in clinical and research settings .With any new technology, a number of factors must be considered in order to achieve optimal performance. Though camera manufacturers provide suggestions for device set up 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 use of 3D surface imaging technology is becoming increasingly common in craniofacial clinics and research centers. Due to fast capture speeds and ease of use, 3D digital stereophotogrammetry is quickly becoming the preferred facial surface imaging modality. These systems can serve as an unparalleled tool for craniofacial surgeons, proving an objective digital archive of the patient's face without exposure to radiation. Acquiring consistent high-quality 3D facial captures requires planning and knowledge of the limitations of these devices. Currently, there are few resources available to help new users of this technology with the challenges they will inevitably confront. To address this deficit, this report will highlight a number of common issues that can interfere with the 3D capture process and offer practical solutions to optimize image quality.

Collinearity, as illustrated in Fig. below, is the condition in which the exposure station of any photograph, an object point, and its photo image all lie on a straight line. The equations expressing this condition are called the collinearity condition equations. They are perhaps the most useful of all equations to the photogrammetric.



In Fig.below, exposure station L of an aerial photo has coordinates XL, YL, and ZL with respect to the object (ground) coordinate system XYZ. Image a of object point A, shown in a rotated image plane, has image space coordinates x′a, y′a, and z′a, where the rotated image space coordinate system x′y′z′ is parallel to object space coordinate system XYZ. Initially, it is assumed that the principal point o is located at the origin of the xy photo coordinate system. A correction that compensates for this assumption is introduced at the end of the development.



Stereo pair a pair of flat perspective images of the same object obtained from different points of view. When a stereo pair is viewed in such a way that each eye sees only one of the images, a three-dimensional (stereoscopic) picture giving a sensation of depth is perceived. Stereo pairs are used to create three-dimensional images of objects in stereoscopic motion-pictures, stereo-photography, and stereoscopic television; they are also used for scientific purposes.

Stereo pairs are obtained with stereoscopic cameras, both still and motion-picture, with two television camera tubes, or with special attachments for the lenses of conventional still and motion- picture cameras. In addition, various instruments are used to obtain and study stereo pairs in stereo photogrammetric surveying.