**DAILY ASSESSMENT FORMAT**

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| **Date:** | **30/06/2020** | **Name:** | **Kirti B S** |
| **Course:** | **IIRS Outreach Program on Satellite Photyogrammetry and it’s Application** | **USN:** | **4AL18EC026** |
| **Topic:** | **Concepts of Stereophotogrammetry** | **Semester & Section:** | **4th sem ‘A’ section.** |
| **Github Repository:** | **Kirti BS** |  |  |

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| **FORENOON SESSION DETAILS** |
| **Image of session**  **C:\Users\hello\Pictures\Screenshots\Screenshot (298).png** |
| **In today’s session I have learnt about:**   * **Stereophotogrammetry:**   **Stereophotogrammetry involves estimating the 3D coordinates of points on an object, employing measurements made in two or more photographic images taken from different positions. The image is calculated from a collection of points obtained along an x, y, and z coordinate system.**   * **Parallax:**   **Apparent shift in the position of object due to shift in the position of observation.**   * **Depth perception:**   **It is the visual ability to perceive the world in three dimensions (3D) and the distance of an object.**   * **Methods of judging depth** * **Monoscopic method:**   **It is where only one camera is used to do sequential captures at different heights and angles from to the object**   * **Relative size of objects** * **Hidden objects** * **Shadows** * **Difference** * **Stereoscopic method:**   **It is a technique used to enable a**[**three-dimensional**](https://whatis.techtarget.com/definition/3-D-three-dimensions-or-three-dimensional)**effect, adding an illusion of depth to a flat image.**   * **Simultaneous perception** * **Fusion (binocular 'single' vision)** * [**Stereopsis**](https://en.wikipedia.org/wiki/Stereopsis) * **Three basic types of Stereoscopes:** * **Pocket** * **Mirror** * **Scanning** * **Viewing Stereophotographs in Digital Environment:**     **A display which produces an effect of depth for the viewer by the means of stereo image pairs and active or passive glasses.**   * **Basic requirements for 3D stereo-viewing:**   **Observers left eye must see the left image only of the two overlapping images. The right eye must see the corresponding part of the right image only.**   * **Methods of stereo display in digital environment:** * **Split screen view** * **Anaglyph view** * **Separation by Polarization** * **Alternating images** * **Stereoscopy or Stereovision:** * **Stereoscopy is based on Stereoscopic or binocular vision.** * **When the eyes are focused on an object the optical axes of the two eyes converge on that point intersecting at an angle called Parallactic Angle.** * **Nearer the object, greater the parallactic angle and vise-versa.** * **Split screen viewing:**   **The split window method is used to retrieve the LST based on the differential water vapor absorption in two adjacent infrared channels. This optical imaging radiometer consists of one visible channel and four infrared channels.**   * **Corresponding image points are separated such that, the left eye’s point is left of the right eye’s point. Point appears behind the screen.** * **Corresponding image points are separated such that the left eye’s point is further right than the right eye’s point. Here point appears in front of the screen.** * **Anaglyph Viewing:**   **Anaglyph 3D is the**[**stereoscopic**](https://en.wikipedia.org/wiki/Stereoscopy)**3D effect achieved by means of encoding each eye's image using filters of different (usually chromatically opposite) colors, typically**[**red**](https://en.wikipedia.org/wiki/Red)**and**[**cyan**](https://en.wikipedia.org/wiki/Cyan)**. Anaglyph 3D images contain two differently filtered colored images, one for each eye. When viewed through the "color-coded" "anaglyph glasses", each of the two images reaches the eye it's intended for, revealing an integrated**[**stereoscopic image**](https://en.wikipedia.org/wiki/Stereoscopy)**. The**[**visual cortex**](https://en.wikipedia.org/wiki/Visual_cortex)**of the brain fuses this into the perception of a three-dimensional scene or composition.**   * **Separation by polarization:**   **It is due to a combined effect.**   * **Left image shown: left Polarization, right eye sees a dark screen.** * **Right image shown: right polarization, left eye sees a dark screen.** * **Alternating images:**   **When the alternating images on the monitor screen with alternating shutters for 3D stereo-viewing are given.**   * **Left image shown: right glass black, right eyes sees nothing.** * **Right image shown: left glass black, left eyes see nothing.** * **Understanding the rotation matrix:**   **Since matrix multiplication has no effect on the zero vector (the coordinates of the origin), rotation matrices describe rotations about the origin. Rotation matrices provide an algebraic description of such rotations, and are used extensively for computations in geometry, physics, and computer graphics.**   * **Orientation of the Stereopair:**   **Recreating the same condition as existed at the time of photography.**  **Unknowns:**   * **Image coordinates.** * **Exposure station coordinates.** * **Orientation of the photographs.**   **Here the measured photo coordinates are sent to refined photo coordinates with interior orientation (no unknown solved) and then to model coordinates with relative orientation (5 unknown solved) to a ground coordinates with absolute orientation (12 unknowns solved). The refined photo coordinates can be directly dealed with ground coordinates with exterior orientation (12 unknowns solved)**   * **Interior Orientation :**   **Transform coordinates measured in the image to the camera coordinate system.**   * **Relative Orientation :**   **Relative orientation is the recovery of the position and orientation of one imaging system relative to another from correspondences among five or more ray pairs.**   * **Absolute Orientation :**   **Transform coordinates measured in the model to the terrain coordinate system.**   * **Exterior Orientation :**   **Exterior orientation (EO) is the position and orientation of the camera when the image was taken.**   * **Digitization in 3D: Measuring Capability:** * **Free hand device for moving the cursor in the XYZ direction.** * **Used for carrying photogrammetric operations.** * **Features include a mouse style trackball for the XY movements and a Z wwheel for Z movements.** * **User definable buttons are available.** |