**DAILY ASSESSMENT FORMAT**

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| **Date:** | **01/07/2020** | **Name:** | **Nayanashree** |
| **Course:** | **IIRS Outreach Program on Satellite Photogrammetry** | **USN:** | **4AL16EC042** |
| **Topic:** | **Concepts of Satellite Photogrammetry** | **Semester & Section:** | **8th A** |
| **Github Repository:** | **Nayana\_online** |  |  |

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| **FORENOON SESSION DETAILS** |
| **Image of session** |
| **Report**  **SATELLITE PHOTOGRAMMETRY:**  Science, Technology and Art of making precise measurements on images Produced by spaceborne imaging sensors to derive reliable topographic information of the viewed planetary surface.  **BRANCHES OF PHOTOGRAMMETRY**   * Based on platform * Ground Based UAV/drone based * Aerial Photogrammetry * Satellite Photogrammetry   **BASED ON PROCESSING TECHNIQUES:**   * Analogue Photogrammetry * Analytical Photogrammetry * Digital Photogrammetry  |  |  |  |  | | --- | --- | --- | --- | |  | **Analog** | **Analytical** | **Digital** | | **Input** | Hard copy (phototographs) | Hard copy | Digital | | **Processing** | Manual (Optical or mechanical instruments) | Using computers | Digital processing | | **Output** | Hard copy (topographic maps) | May be both hardcopy and digital | Digital |   **DIGITAL PHOTOGRAMMETRY**   * Digital photogrammetry is applied to digital images that are stored and processed on a computer * Digital photogrammetry is sometimes called softcopy photogrammetry * The output products are in digital form, such as digital maps, DEMs, and digital orthophotos saved on computer storage media   **STANDARD REQUIREMENTS:**   * Handling Image Display * Measurement   Recording Pixel Coordinates   * Determination of Orientations   Inner Orientation including including Calibration parameters  Relative and absolute orientations, Bundle Adjustment –   * Transformations * Image Processing Functions   Image Matching  Edge Detection   * Digital Rectification * Visualization   **OPEN SOURCE SOFTWARE ENABLING PHOTOGRAMMETRIC PROCESSING:**   * ILWIS(Integrated Land and Water Information System) - * stereoscopy, anaglyph and photogrammetry tools * E-foto * OSSIM: Open Source Software Image Map   **ADVANTAGES OF IMAGING FROM SPACE**:  Synoptic view  Large swath, repeativity  Constant scale, near orthonormal projection  Negligible internal distortions  Stable radiometry  Formalities associated with aerial photography and flight arrangement arc avoided here  **STEREO IMAGING & TOPOGRAPHIC MAPPING**   * Stereo satellite images are captured * consecutively by a single satellite along the same orbit within a few seconds * by the same satellite (or different satellites) from different orbits in different dates * The base-to-height (B/H) ratio should be close to 1 for high-quality stereo model with high elevation accuracy. * Optimum base to height ratio is 0.6 to 1.0 * Atmospheric effects (refraction, optical thickness) become more significant at higher look angles * Light rays in a bundle defined by the sensor are almost parallel- lessening the importance of the satellite's position * The inclination angles of the cameras onboard the satellite become the critical data. * Inclination is the angle between a vertical on the ground at the center of the scene and a light ray from the exposure station * This angle defines the degree of off-nadir viewing when the scene was recorded * The cameras can be tilted in increments of a minimum of 0.6 to a maximum of 27 degrees to the east (negative inclination) or west (positive inclination) * A stereo scene is achieved when two images of the same area are acquired on different days from different orbits, one taken East of the other. For this to occur, there must be significant differences in the inclination recorded angles   **INCLINATION ANGLE OF A STEREO SCENE**  **Nadir- Off nadir:**  **Nadir** : Point directly below the camera.  **Off-nadir** : Any point that is not directly beneath the satellite, but is off to an angle (that is, East or West of the nadir) |