**DAILY ASSESSMENT FORMAT**

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| **Date:** | **30/06/2020** | **Name:** | **Namratha S Hipparagi** |
| **Course:** | **IIRS Outreach Program on Satellite Photogrammetry** | **USN:** | **4AL16EC040** |
| **Topic:** | **Concepts of Stereophotogrammetry** | **Semester & Section:** | **8th A** |
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| **AFTERNOON SESSION DETAILS** |
| **Image of session** |
| **Report:**  **Steroscopy**  Stereoscopy, sometimes called stereoscopic imaging, is a technique used to enable a three dimensional effect, adding an illusion of depth to a flat image. A stereoscope facilitates the stereoviewing process by looking at the left image with the left eye and the right image with the right eye.  Stereoscopy is the production of the illusion of depth in a [photograph](https://en.wikipedia.org/wiki/Photograph), [movie](https://en.wikipedia.org/wiki/Film), or other two-dimensional image by the presentation of a slightly different image to each [eye](https://en.wikipedia.org/wiki/Human_eye), which adds the first of these cues ([stereopsis](https://en.wikipedia.org/wiki/Stereopsis)). The two images are then combined in the brain to give the [perception](https://en.wikipedia.org/wiki/Depth_perception) of depth. Because all points in the image produced by stereoscopy focus at the same plane regardless of their depth in the original scene, the second cue, focus, is not duplicated and therefore the illusion of depth is incomplete. There are also mainly two effects of stereoscopy that are unnatural for human vision: the mismatch between convergence and accommodation, caused by the difference between an object's perceived position in front of or behind the display or screen and the real origin of that light; and possible crosstalk between the eyes, caused by imperfect image separation in some methods of stereoscopy.  Although the term "3D" is ubiquitously used, the presentation of dual 2D images is distinctly different from displaying an image in [three full dimensions](https://en.wikipedia.org/wiki/Three-dimensional_space). The most notable difference is that, in the case of "3D" displays, the observer's head and eye movement do not change the information received about the 3-dimensional objects being viewed. [Holographic displays](https://en.wikipedia.org/wiki/Holographic_display) and [volumetric display](https://en.wikipedia.org/wiki/Volumetric_display) do not have this limitation. Just as it is not possible to recreate a full 3-dimensional sound field with just two stereophonic speakers, it is an overstatement to call dual 2D images "3D". The accurate term "stereoscopic" is more cumbersome than the common misnomer "3D", which has been entrenched by many decades of unquestioned misuse. Although most stereoscopic displays do not qualify as real 3D display, all real 3D displays are also stereoscopic displays because they meet the lower criteria also.  Most [3D displays](https://en.wikipedia.org/wiki/3D_display) use this stereoscopic method to convey images. It was first invented by [Sir Charles Wheatstone](https://en.wikipedia.org/wiki/Sir_Charles_Wheatstone) in 1838, and improved by Sir [David Brewster](https://en.wikipedia.org/wiki/David_Brewster) who made the first portable 3D viewing device. **Visual requirements** Anatomically, there are 3 levels of [binocular vision](https://en.wikipedia.org/wiki/Binocular_vision) required to view stereo images:   1. Simultaneous perception 2. Fusion (binocular 'single' vision) 3. [Stereopsis](https://en.wikipedia.org/wiki/Stereopsis)   These functions develop in early childhood. Some people who have [strabismus](https://en.wikipedia.org/wiki/Strabismus) disrupt the development of stereopsis, however [orthoptics](https://en.wikipedia.org/wiki/Orthoptics) treatment can be used to improve [binocular vision](https://en.wikipedia.org/wiki/Binocular_vision). A person's [stereoacuity](https://en.wikipedia.org/wiki/Stereoscopic_acuity)[[15]](https://en.wikipedia.org/wiki/Stereoscopy#cite_note-:1-15) determines the minimum image disparity they can perceive as depth. It is believed that approximately 12% of people are unable to properly see 3D images, due to a variety of medical conditions.[[16]](https://en.wikipedia.org/wiki/Stereoscopy#cite_note-16)[[17]](https://en.wikipedia.org/wiki/Stereoscopy#cite_note-17) According to another experiment up to 30% of people have very weak stereoscopic vision preventing them from depth perception based on stereo disparity. This nullifies or greatly decreases immersion effects of stereo to them.[[18]](https://en.wikipedia.org/wiki/Stereoscopy#cite_note-18)  Stereoscopic viewing may be artificially created by the viewer's brain, as demonstrated with the [Van Hare Effect](https://en.wikipedia.org/wiki/Van_Hare_Effect), where the brain perceives stereo images even when the paired photographs are identical. This "false dimensionality" results from the developed stereoacuity in the brain, allowing the viewer to fill in depth information even when few if any 3D cues are actually available in the paired images.  **Requirements of Stereoscopic Photography**  If instead of looking at the original scene, we observe photos of that scene taken from two different viewpoints, we can under suitable conditions, obtain a three dimensional impression from the two dimensional photos. This impression may be very similar to the impression given by the original scene, but in practice this is rarely so. In order to produce a spatial model, the two photographs of a scene must fulfill certain condition:  • Both photographs must cover same scene, with 60% overlap.  • Time of exposure of both photographs must be same.  • The scale of the two photographs should be approximately the same. Difference up to 15% may be successfully accommodated. For continuous observation and measurements, differences greater than 5% may be disadvantageous.  • The brightness of both the photographs should be similar.  • Base height ratio must have an appropriate value. Normally the ‘B/Z’ or Base height ratio is upto 2.0. Ideal is not known but is probably near to 0.25.  **GCP requirement**  Good Clinical Practice (GCP) is a set of internationally recognised ethical and scientific quality requirements that must be followed when designing, conducting, recording and reporting clinical trials that involve people. A non-therapeutic trial (i.e. a trial in which there is no anticipated direct clinical benefit to the subject), should be conducted in subjects who personally give consent and who sign and date the written informed consent form.  **Collinearity condition**  Conditions of Collinearity of Three Points. In general, three points A, B and C are collinear if the sum of the lengths of any two line segments among AB, BC and CA is equal to the length of the remaining line segment, that is, either AB + BC = AC or AC +CB = AB or BA + AC = BC.  Collinearity, as illustrated in 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 photogrammetrist. |