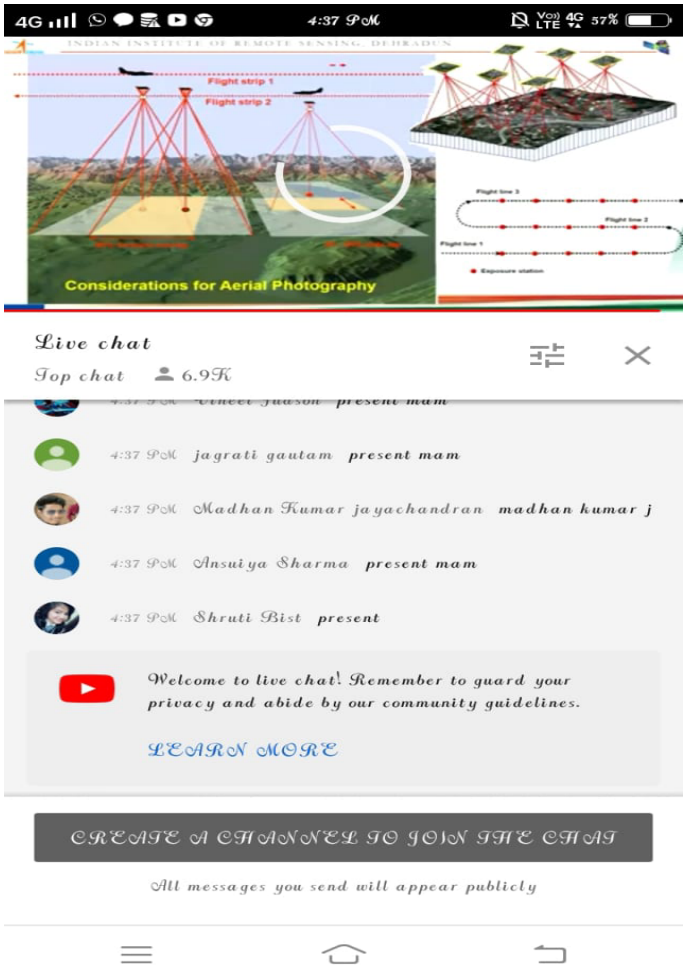
DAILY ASSESSMENT FORMAT

Date:	29/6/2020	Name:	Rajeshwari Gadagi
Course:	Satellite Photogrammetry and its Application	USN:	4AL17EC076
Topic:	Introducing photogrammetry and its concepts	Semester & Section:	6th sem B section
Github Repository:	Rajeshwari-gadagi		

FORENOON SESSION DETAILS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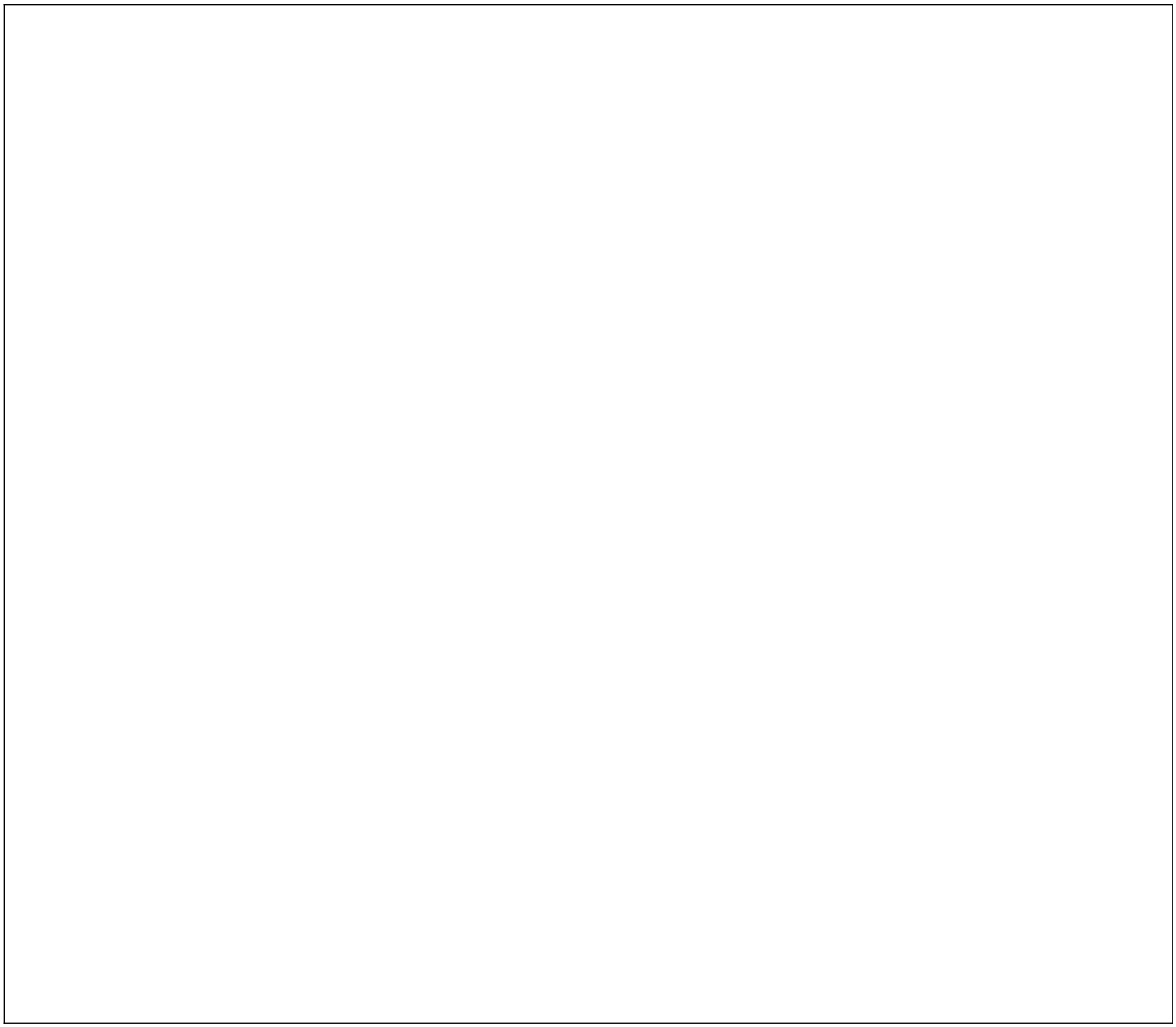


Report-

Photogrammetry and Remote sensing Department, established in 1966 is one of the oldest departments of the institute imparting professional training in the field of photogrammetry, cartography, remote sensing, and image processing to varied course participants: university teachers, academicians, govt. officials, and freshly graduated students. Initially it started with aerial data interpretation, analysis and aerial photogrammetry with a gradual transition to satellite data interpretation, analysis, satellite photogrammetry and its applications

Photogrammetry is the science and technology of obtaining reliable information about physical objects and the environment through the process of recording, measuring and interpreting photographic images and patterns of electromagnetic radiant imagery and other phenomena.

Photogrammetry appeared in the middle of the 19th century, almost simultaneously with the appearance of photography itself. The use of photographs to create topographic maps was first proposed by the French surveyor Dominique F. Arago in about 1840.

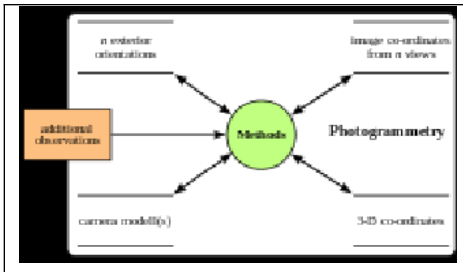
The term photogrammetry was coined by the Prussian architect Albrecht Meydenbauer, which appeared his 1867 article "Die Photometrographie.

There are many variants of photogrammetry. One example is the extraction of three-dimensional measurements from two-dimensional data (i.e. images); for example, the distance between two points that lie on a plane parallel to the photographic image plane can be determined by measuring their distance on the image, if the scale of the image is known. Another is the extraction of accurate color ranges and values representing such quantities as albedo, specular reflection, metallicity, or ambient occlusion from photographs of materials for the purposes of physically based rendering.

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 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.

Methods



Digital image capturing and photogrammetric processing includes several well defined stages, which allow the generation of 2D or 3D digital models of the object as an end product.[5] The data model on the right shows what type of information can go into and come out of photogrammetric methods.

The *3D coordinates* define the locations of object points in the 3D space. The *image coordinates* define the locations of the object points' images on the film or an electronic imaging device. The *exterior orientation*[6] of a camera defines its location in space and its view direction. The *inner orientation* defines the geometric parameters of the imaging process. This is primarily the focal length of the lens, but can also include the description of lens distortions. Further *additional observations* play an important role: With *scale bars*, basically a known distance of two points in space, or known *fix points*, the connection to the basic measuring units is created.

Each of the four main variables can be an *input* or an *output* of a photogrammetric method. Algorithms for photogrammetry typically attempt to minimize the sum of the squares of errors over the coordinates and relative displacements of the reference points. This minimization is known as bundle adjustment and is often performed using the Levenberg–Marquardt algorithm