DAILY ASSESSMENT FORMAT

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Course:	**IIRS**	**USN:**	**4AL17EC063**
Topic:	**photogrammetry**	**Semester & Section:**	**6th SEM B SEC**
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FORENOON SESSION DETAILS

Image of session

Photogrammetry

Photogrammetry is the technique of acquiring measurements from photographic images, generally stereoscopic. The term photogrammetry was first used by the Prussian architect Albrecht Meydenbauer in
1867 who produced some of the earliest topographic plans and elevation drawings. The use of photogrammetry in topographic mapping is well established but in recent years the technique has been widely applied in the fields of architecture, industry, engineering, forensic, underwater, medicine, geology
and many others for the production of precise 3D survey data.

Data acquired by photogrammetric methods is an integral part of the data input to both geographical information systems (GIS) and computer aided design (CAD). Indeed it has a role in any area where accurate spatial data is required.

Remote Sensing

Remote Sensing is a closely aligned technology to photogrammetry in that it also collects information from
imagery. The term is derived from the fact that information about objects and features is collected without
coming into contact with them. Where remote sensing differs from photogrammetry is in the type of information collected, which tends to be based on differences in colour, so land use and land cover is a primary output of remote sensing processing. Remote sensing was originally developed to exploit the large
number of colour bands in satellite imagery to create 2D data primarily for GIS. Nowadays remote sensing
tools are used with all types of imagery to assist in 2D data collection and derivation, such as slope. Software tools today tend to embrace a much wider range of image technologies such as image mosaicing,
3D visualisation, GIS, radar as well as softcopy photogrammetry

Photogrammetry is more accurate in the x and y direction while range data are generally more accurate in the z direction[citation needed]. This range data can be supplied by techniques like LiDAR, laser scanners (using time of flight, triangulation or interferometry), white-light digitizers and any other technique that scans an area and returns x, y, z coordinates for multiple discrete points (commonly called "point clouds"). Photos can clearly define the edges of buildings when the point cloud footprint can not. It is beneficial to incorporate the advantages of both systems and integrate them to create a better product. A 3D visualization can be created by georeferencing the aerial photos and LiDAR data in the same reference frame, orthorectifying the aerial photos, and then draping the orthorectified images on top of the LiDAR grid. It is also possible to create digital terrain models and thus 3D visualisations using pairs (or multiples) of aerial photographs or satellite (e.g. SPOT satellite imagery). Techniques such as adaptive least squares stereo matching are then used to produce a dense array of correspondences which are transformed through a camera model to produce a dense array of x, y, z data which can be used to produce digital terrain model and orthoimage products. Systems which use these techniques, e.g. the ITG system, were developed in the 1980s and 1990s but have since been supplanted by LiDAR and radar-based approaches, although these techniques may still be useful in deriving elevation models from old aerial photographs or satellite images. Applications Edit Play media Video of a 3D model of Horatio Nelson bust in Monmouth Museum, produced using photogrammetry Play media Gibraltar 1 Neanderthal skull 3D wireframe model, created with 123d Catch Photogrammetry is used in fields such as topographic mapping, architecture, engineering, manufacturing, quality control, police investigation, cultural heritage, and geology. Archaeologists use it to quickly produce plans of large or complex sites, and meteorologists use it to determine the wind speed of tornados when objective weather data cannot be obtained.Photograph of person using controller to explore a 3D Photogrammetry experience, Future Cities by DERIVE, recreating Tokyo. It is also used to combine live action with computer-generated imagery in movies post-production; The Matrix is a good example of the use of photogrammetry in film (details are given in the DVD extras). Photogrammetry was used extensively to create photorealistic environmental assets for video games including The Vanishing of Ethan Carter as well as EA DICE's Star Wars Battlefront.[13] The main character of the game Hellblade: Senua's Sacrifice was derived from photogrammetric motioncapture models taken of actress Melina Juergens.[14] Photogrammetry is also commonly employed in collision engineering, especially with automobiles. When litigation for accidents occurs and engineers need to determine the exact deformation present in the vehicle, it is common for several years to have passed and the only evidence that remains is accident scene photographs taken by the police. Photogrammetry is used to determine how much the car in question was deformed, which relates to the amount of energy required to produce that deformation. The energy can then be used to determine important information about the crash (such as the velocity at time of impact). Mapping Edit Learn more This article contains too many quotations for an encyclopedic entry. Photomapping is the process of making a map with "cartographic enhancements"[15] that have been drawn from a photomosaic[16] that is "a composite photographic image of the ground" or more precisely as a controlled photomosaic where "individual photographs are rectified for tilt and brought to a common scale (at least at certain control points)." Rectification of imagery is generally achieved by "fitting the projected images of each photograph to a set of four control points whose positions have been derived from an existing map or from ground measurements. When these rectified, scaled photographs are positioned on a grid of control points, a good correspondence can be achieved between them through skillful trimming and fitting and the use of the areas around the principal point where the relief displacements (which cannot be removed) are at a minimum."[15] "It is quite reasonable to conclude that some form of photomap will become the standard general map of the future." go on to suggest[who?] that, "photomapping would appear to be the only way to take reasonable advantage" of future data sources like high altitude aircraft and satellite imagery. The highest resolution aerial photomaps on GoogleEarth are approximately 2.5 cm (0.98 in) spatial resolution images. The highest resolution photomap of ortho images was made in Hungary in 2012 with a 0.5 cm (0.20 in) spatial resolution.