Digital Number:
Generic term for pixel values. It is used to describe pixel values that have not yet been calibrated into physically meaningful units.
Radiance (Watt/m2):
Amount of radiation coming out from an area.
DN can be converted into radiance values using the below equation
$Radiance = Gain ✖ DN + Bias$
Check this formula : Radiance = Bias +DN Gain
Basically, these digital numbers are converted into energy.
UTM Zone 45N and WGS 84
WGS 84 stands for World Geodetic System of 1984 whereas UTM Zone stands for Universal Transverse Mercator (UTM) Projection zone.
WGS is a geographic coordinate system and UTM is a projected coordinate system.
Geographic coordinate systems are based on a spheroid and utilize angular units(i.e. degree).Projected coordinate system are based on 2 plane and utilize units (i.e. Feet, meter etc.)
IHS and RGB
IHS is a commonly used remote sensing image fusion method.
I - Intensity, H - Hue, S - Saturation
I - represent spatial resolution of the image
H and S - represent the spectral resolution of the image
RGB means Red, Green, Blue band of remote sensing images. Those are separate spectral bands where spectral reflectance signature of the target is seene stored.
Digitization:
Digitization is linked with spatial resolution. Higher the spatial resolution more closer to reality.
Digitization is done in the lower mode of resolution as in the case of a land set which has 30m of resolution.
Quantization:
Based on Bits (radiometric resolution)
If we increase the number of bits we increase the values
Generally 8-10 bits. Increasing the bits means increasing the quantization curve closer to the real image.

Stagnant and turbulent water bodies can be discriminated in an aerial photo by texture.
Clear water absorbs relatively less energy having wavelength shorter than 0.6 micrometer, high transmittance is typically high in the blue and green portion of the spectrum. As the turbidity of the water changes transmittance (because of the presence of the organic and inorganic material) and reflectance changes dramatically.
Water inside sinkholes can be considered as surface exposure of groundwater
Sinkholes are formed by the collapse of the surface layer of earth. If water is visible inside the sinkhole then it can be considered that it has hit the water table and groundwater has been exposed.
Sun synchronous satellites are preferable for storm tracking.
geosynchronous satellites are used for weather prediction. Sun synchronous satellites are at an altitude of 700-800km from the surface of the earth, and revolve from North to the south pole of the earth.
Geostationary satellites are at a height of 36000 Km from the earth and can cover more than 50% of the earth view and are used for weather prediction.
With change in band combination, spectral signature will also change.
With change in band combination color changes but the spectral signature/curves remain the same. Since spectral curves are the plot of reflectance % of a specific wavelength which will be constant irrespective of any band combination.
BIL Format
Band interleaved by line data stores pixel information band by band for each line or row of the image.
For example, given a three-band image all three bands of data are written for row 1, all three bands of data are written for row 2, and so on, until the total number of rows in the image is reached.
BIP Format kk
Band Interleaved by Pixel by pixel the data for each pixel is written band by band. For example, with the same three-band image, the data for bands 1, 2, and 3 are written for the first pixel in column 1; the data for bands 1,2, and 3 are written for the first pixel in column 2; and so on.
BSQ Format
Band sequential format stores information for the image one band at a time.
In other words, data for all the pixels for band 1 is stored first, then data for all pixels for band 2, and so on.
BIP Format is appropriate for whisk broom camera : TRUE

BIP STANDS FOR BAND INTERLEAVED Pixel SINCE BIP SCANS PIXEL WISE

In BIP format every row will have a complete pixel (RGB) data in it. Push broom camera is relevant for BIP data since it scans one complete row in a single motion. Whisk broom is appropriate for BIL format of data.

Scale and spatial resolution is same and constant for a digital image

Scale:

The ratio of distance on an image or map, to actual ground distance is referred to as scale.

Spatial resolution is a measure of the area or size of the smallest dimension on the Earth's surface over which an independent measurement can be made by the sensor.

Digital Image consists of an array of pixels. Each pixel contains information about a small area on the land surface, which is considered a single object.

True color composite for Hyperion satellite image is 3-2-1

Hyperspectral scanner records more than 100 bands to achieve true color in RGB 3-2-1 is the correct band combination. 31-20-10

Highway without any visible junction is good GCP choice for georeferencing

Highway without any visible junction is not a good GCP since the road is a faulty one and the government will destroy the road because they cause accidents. It is not a permanent structure which is a requisite for GCP.

2. Density slicing

Density slicing is the process in which the pixel values are sliced into different ranges and for each range a single value or color is assigned in the output image. It is also known as level slicing.

3. Thresholding

Thresholding is used to divide the input image into two classes: pixels having values less than the threshold and more than the threshold. The output image may be used for detailed analysis of each of these classes separately

Intensity-Hue-Saturation (IHS) images

An image is generally the color composite of the three basic colors red, blue and green. Any color in the image is obtained through a combination of the three basic colors at varying intensities.

Filtering and Fourier transform

Filtering is the process by which the tonal variations in an image, in selected ranges or frequencies of the pixel values, are enhanced or suppressed. Or in other words, filtering is the process that selectively enhances or suppresses particular wavelengths or pixel DN values within an image.

Two widely used approaches to digitally filter images are convolution filtering in the spatial domain and Fourier analysis in the frequency domain.

Fourier transform: The Fourier Transform is an important image processing tool which is used to decompose an image into its sine and cosine components. The output of the transformation represents the image in the *Fourier* or frequency domain, while the input image is the spatial domain equivalent. In the Fourier domain image, each point represents a particular frequency contained in the spatial domain image.

The Fourier Transform is used in a wide range of applications, such as image analysis, image filtering, image reconstruction and image compression.

image interpretation Standard image interpretation keys like shadow, tone, texture, color, size, pattern and association were used for onscreen identification of the degraded land areas

What is Geo referencing?

Georeferencing means that the internal coordinate system of a digital map or aerial photo can be related to a ground system of geographic coordinates.

What are the different steps of georeferencing?

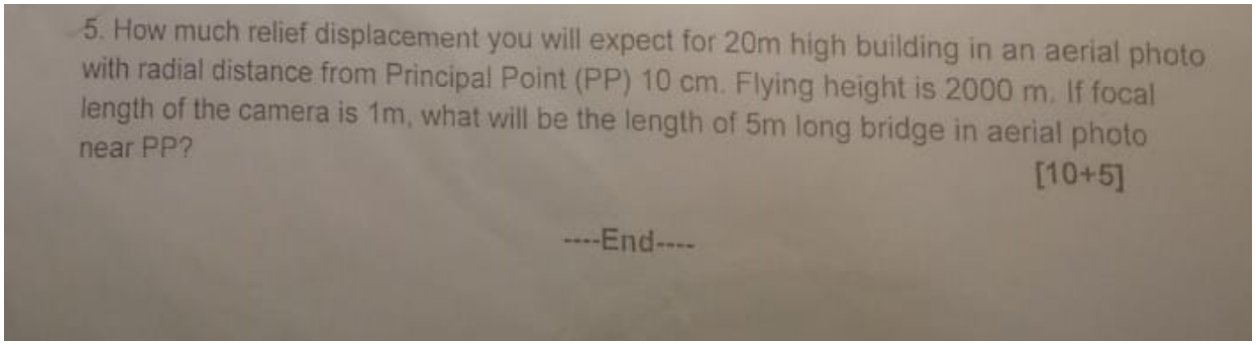
1. Selection of Master and Slave Image
2. Identification of projection and geodetic system in slave image
3. Selection of GCP from master & slave images
4. Polynomial model building and RMSE calculation
5. Coordinate transformation
6. Grid/spatial resolution determination
7. Resampling

Maximum length of road =10*(500^2 + 500^2) ^½ = 7000 mt. = 7 km.

How many pixels required for representing the same road in Landsat satellite image

=7000m / 30m (Ye sahii hai, mera answer galat tha) ok ved!! :)

= 234 pixel


5. How much relief displacement you will expect for 20m high building in an aerial photo with radial distance from Principal Point (PP) 10 cm. Flying height is 2000 m. If focal length of the camera is 1m, what will be the length of 5m long bridge in aerial photo near PP?

[10+5]

----End----

d (relief displacement) = r*h/H

H - Flying Height 2000m

r - radial distance to top of object 10/100 = 0.1m

h - height of the object 20m

d = 0.1*20/2000 = 0.0001m = 0.1cm

Scale = focal length/Height of the object ⅕ = 0.2

Scale = photo distance/ground distance

Photo distance/ground distance = focal length/Height of the plane

Photo distance = ground distance* focal length/Height of the plane

5*1/2000 = 0.0025