Classification of images by taking signatures from google earth

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Steps involved in the classification of images by taking signatures from Google earth

- Creating the location and the mapset for the data.
- Importing the data to the location and mapset.
- Creating false color composite.
- Obtaining signatures from Google earth.
- Importing those vector files into another vector location.
- Project those vector files into the current location.
- Building of polylines.
- Digitizing the vector map.
- Converting the vector maps to raster maps.
- Patching the raster map to obtain the training data.
- Creating a group.
- Generating the signature file.
- Classifying the image using the signature file.
- Generating error matrix.

1)Creating the location and the mapset for the data:

- Various grass commands are used for carrying out various operations in grass.
- Initially a location and mapset is to be created for holding the data in grass.
- A location is some geographic extent of interest that contains data sets that must all be in the same coordinate system.
- Every location has a permanent directory which stores some basic information about the whole location.
- A mapset is a geographical subset. Every grass session runs under a particular mapset.
- The required location and the mapset is created by running the **grass –text** command in the terminal.

- On entering the **GRASS –TEXT** command ,the following details will be asked for the creation of location and mapset:

  - Initially it will ask for the location name.
  - LOCATION: enter the name of the location.
  - Coordinate System:
    A. X,Y
    B. Lat-long
    C. UTM
    D. Other projection
  - >C (UTM System)
  - One line description for location: <enter anything>
  - Geodetic datum: wgs84
  - Ellipsoid name: wgs84
  - South hemisphere? : n (no)
  - Enter Zone: 43

- Define default region: It is to set default region using
  - north_edge
  - south_edge
  - west_edge
  - east_edge.
  - grid resolution
- MAPSET: name of the mapset
- DATABASE: /home/……(give the path where the location is to be created)

2) Importing the data to the location and mapset:

- The data is imported to the corresponding location and mapset by using the **r.in.gdal** command.
- The corresponding raster data will now reside in that location and the mapset.
- All the 7 bands are to be imported into the location and the mapset.
- If any line errors was found, it could be corrected using the shell script in the **r.mapcalculator** command.

3) Creation of the FCC image from the data:

- **i.landsat.rgb** helps in the auto balancing of the colors for landsat images.
- The band 4 is set to red channel and band 3 to green and band 2 to blue channel.
- The red, green and the blue map layers are combined into a single layer to form a false color composite image image by the command **r.composite.**

4)Obtaining signatures:

- The signatures are obtained from Google earth by drawing the polygons in the required areas.
- These signatures are then saved as a vector file with .kml extension.
- The signatures of each category is saved in a separate vector file.

5)Importing vector files:

- A new location and mapset is created for the vector files apart from the current working location.

- The created vector files are then imported to that location using the command **v.in.ogr.**

7)Building of polylines:

- The polylines are built from the lines or boundaries in the vector map by using **v.build.polylines.**

9)Converting to raster maps:

- The digitized vector maps are converted to raster maps by using **v.to.rast**.
- The vector maps of each category are digitized separately by properly mentioning the category and layer number.

10)Patching the raster maps:

- The raster maps of all the category are patched together to obtain the training data.
- This patching process can be done by **r.patch.**

11)Creating group:

- **I.GROUP** is used to create ,edit ,lists the groups and subgroups of imagery file.
- The selected bands are included in the group(all bands except 6TH band).
- Any operations like i.maxlik, i.gensig etc. are carried out on those bands which are included in the group.
- After the creation of the group the region is set to the false color composite image by using **g.region.**

12)Generating signature file:

- The signature file is to be created for doing classification.
- The signature file is created by using the training data which was created by patching the raster maps.(raster maps obtained from the digitized vector maps.)
- This signature file can be generated by using the command **i.gensig.**
- For generating the signature file there is a need of mentioning the names of group and subgroup.

13)Classification:

- The generated signature file is used in classification of the data.
- The supervised classification is done (maximum likelihood).
- The classification is done by using **I.MAXLIK.**
- The classified image will have the different categories and the each category is assigned a color by using **D.COLORS.**
- For using D.COLORS the monitor is to be set first and is done by using **D.MON** command.