

HW4 – Orthorectification – assigned Tues. 7-Apr., due Thur. 16-Apr

- Orthorectify the Lafayette Quickbird image using the parameters supplied in qbpar.txt at GSD of 2.5m. Use the 4x pyramid level, use bilinear interpolation. Submit as *.jpg.
- Use your own code or anything in qbcode.zip to evaluate qb-condition equation. Iterate to find line and sample. Get approximate line and sample by constructing 6-parameter transformation between (phi,lambda) and (l,s).
- GCP data is in gcp.txt. Get DEM and 4x downsampled image at
- <ftp://ftp.ecn.purdue.edu/bethel/dem.zip> (contains ned_68106839.bil)
- ftp://ftp.ecn.purdue.edu/bethel/dg8_4.jpg
- use $h=H+N$, where local $N=-33.67$. Base the rectified image on UTM, zone 16, with $\text{min}X=501400\text{m}$, $\text{max}X=518800$, $\text{min}Y=4464300$, $\text{max}Y=4482500$.
- Make an ESRI world file *.jgw, an ascii text file with 6 numbers: +GSD, 0, 0, -GSD, UL-X, UL-Y, base of filename same as image file. I will need writeup plus these 2 digital files.

I will check the result by importing into ArcGIS and checking coordinates of a few features (you may do the same to verify that it is ok !)

Fill in with gray if outside input image limits.

Useful code snippets:

```
A=imread('filename.jpg');
```

```
iminfo('filename.jpg');
```

```
imwrite(A,'filename.jpg','JPEG');
```

```
B=zeros(2000,2000,'uint8'); % it's monochrome, no RGB
```

Recall steps: (1) pixel XY to phi,lambda, (2) interpolate H, (3) convert to h, (4) approximate (l,s) by 6-par, (5) (phi,lambda,h) to (l,s) by iterative newton method, (6) divide by downsample factor, (7) interpolate gray value, (8) put into blank pixel, (9) next pixel

Suggest starting soon. Last minute panic effort will fail.