Geo 157 10/22/10

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Lab 2 Part 2

a) Geocoding works by linking spatial data to map features. In ArcGIS an address locator tool is created which compares a database of addresses to GIS address resources.

1) The data sets overlay each other relatively well. One problem for overlay accuracy is the fact that new roads have been build and old roads have been demolished between the time the map raster was made and the county roads were last surveyed. Another problem is the zip codes, although UCR is in the 92507 zip code are, it is technically given the 92521 zip code which can cause confusion in identifying buildings around UCR or in identifying UCR in large data sets.

2) I think that GPS data sets are most accurate so long as the user is utilizing the GPS properly. GPS datasets must be created by marking waypoints from the ground ensuring the correct physical location is marked. Air photos are probably least accurate, particularly in the long run where human development may change as well as physical landscape.

b) attached.

c) First we created an address database with the address of UCR which we then built an address locator to pinpoint on our map utilizing the census dataset of county roads. Next we downloaded a digital airphoto to be used as a raster dataset overlayed with the county roads dataset. First we scaled this airphoto to a similar scale as the county roads by using georeferencing tools then added control points to accurately georeference the airphoto to the roads layer. Then we imported our GPS coordinates dataset and measured distances between these points both overland and following common routes. Finally we arranged these datasets into a useful map image.

d)

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| --- | --- |
| 2482322.968505 -6503581.141492 | 1896294.825769 702492.945156 |
| 15385057.455745 -5342114.337299 | 1899704.052120 702774.662437 |
| 818875.336509 -25671058.999765 | 1895804.529985 697426.362786 |
| 16905548.694784 -11487653.862035 | 1900088.075824 701139.279203 |
| 6230377.544188 -15157915.474983 | 1897267.630920 700195.277317 |
| 16896883.746481 -14599948.263379 | 1900072.818084 700307.565771 |
| 10861772.952983 -8348290.506691 | 1898490.339252 701978.042954 |
| 7821338.371840 -5327515.950311 | 1897693.027310 702788.352231 |
| 8735983.716006 -24421224.669824 | 1897900.187052 697731.887858 |
| 21999322.066790 -11482083.743093 | 1901440.368257 701107.002728 |
| 10827309.381856 -11434495.552293 | 1898488.840834 701156.310832 |

e) RMS error was 8.355

f) No major difficulties in georeferencing data. Once the scale of both the county roads and airphoto data sets were properly matched finding major intersections to place control points was not difficult.

g) Other potential datasets for further campus accuracy could be maps including place names on the UCR campus, hydrological maps for the area, and topographic maps.

h)

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| --- | --- | --- | --- |
| Beginning Point Location | Ending Point Location | Distance Measured step 7h | Distance Measured step 7i |
| University Theatre | Sproul Hall | 145m | 201m |
| Sproul Hall | Bell Tower | 165m | 221m |
| Bell Tower | H.U.B. | 83m | 100m |
| H.U.B. | Pierce Hall | 108m | 148m |

i) Unfortunately the waypoints are not particularly indicative of my day to day around campus. The rest of my group wasn’t focused on getting a good path of waypoints. As far as accuracy goes the distance from 7i is more accurate since it strictly follows human accessible paths, whereas 7h crosses over rooftops and through trees.