About page

Education

Mesa State: Associate of Applied Science

Metropolitan State

University of Colorado- Denver

Memberships

URISA

ASPRS

Southern Colorado Surveyors

Licenses

FAA Part 107

Work history

Management skills

Given a set of tools, I can get a job done.

GIS-CDOT Operations

This project mapped the location of Noxious Weeds that grow within the right-of-way that is maintained by the Colorado Department of Transportation. The datasets used to determine these locations contained data regarding many species of flora, not all of which require abatement. This data was compiled by different people over a period of time and was very inconsistent. Collating and organizing the tabular data was the primary challenge of this project.

*Skills used:* Tabular joins, data creation from selection, calculating statistics and queries by location and attribute.

GIS-Accessibility

The Americans with Disabilities Act requires that cities identify and address sidewalk conditions within their boundaries. This project analyzed data within Denver city limits to determine the topology of the sidewalk network and the prevalence of various sidewalk widths.

This resulted in a sidewalk availability score which was aggregated by Census block and could be used to identify areas that potentially run afoul of the ADA.

*Skills used:* ArcGIS Pro functions including: Database creation/ population, reprojection of datasets, geoprocessing to identify right-of-ways including clipping, dissolving and buffering of features, spatial joins, calculating statistics, creating new datasets from pertinent information and cartographic presentation.

Remote Sensing- Sentinal-2 Data

At the time, the European Space Agency had recently began disseminating remotely sensed data from the Sentinel-2 satellite and this project examined the parallels with the data collected by the long-running NASA LandSAT missions. The sensor onboard the Sentinel satellite collects data at different wavelengths (bands) than the LandSAT sensor and I sought to identify and combine the bands to create analogous products. These images included Natural Color, Near Infrared, and the Tasseled Cap Transform (shown above).*Skills used:* Introduction to ERDAS Imagine software, Clipping imagery to an area of interest, creating "stacks" of imagery to display imagery in different ways and band math to derive information from data.

Remote Sensing- Multitemporal study

Classifying and monitoring the amount and vigor of vegetative growth is one aspect of effective land and hydrological management that the Tasseled Cap Transformation (TCT) and Normalized Difference Vegetation Index (NDVI) contribute greatly to. This report used both of these tools to examine LandSAT-8 data over one growing season and conclude that both the TCT and NDVI provide complementary products for identifying, quantifying, and classifying data.

*Skills used:* Convert Digital Numbers (DN) to top of atmosphere reflectance values, perform Dark Object Subtraction atmospheric correction, create Tasseled Cap and NDVI products and perform statistical analysis.

Lidar

The above image was created for my Geomatics class and involved georeferencing and classifying LiDAR data in the open-source program Cloud Compare. The image depicts a football stadium with a river in the background.

Currently I am taking a class on LiDAR and this image is of the point cloud generated by a tripod mounted terrestrial scanner. The yellow triangles represent the locations the scans were acquired from and the color gradient applied to the points indicates height in meters.

*Skills used:* Import, register, and classify airborne and terrestrial LiDAR data using Cloud Compare and Trimble RealWorks software.

CAD

For this project I employed AutoCAD Map to complete mapping and design work for a small telecommunications company with projects in Arizona and Texas. I utilized medium resolution satellite imagery to digitize existing infrastructure along the proposed installation corridor. The CAD data I provided was used to identify poles that overhead fiber optic lines would be installed on as well as areas that would require underground installation. This information was used extensively during the planning/ design phase and when negotiating crossing agreements with landowners. I was acting as an independent contractor and still own my full commercial copy of AutoCAD Map.

*Skills used:* Customer relations, digitizing from imagery, AutoCAD Model space/ Paper space layouts, and telecommunications design principals.

Web Mapping

*Skills used:*

UAV

This project was spearheaded by Jupiter Unmanned as part of the UAV class taught by their CEO, Jeff Cozart. As students we did the pertinent preflight reconnaissance, prepared flight plans in UgCS and processed the data that was collected in the field. The field data included corrected RTK survey-grade control points (GCP) as well as the data acquired by the DJI Inspire Drone. The results incorporated the GCPs to produce georeferenced imagery as well as a Digital Surface Model.

*Skills used:* Universal Ground Control (UgCS) flight programming software, Pix4d photogrammetry software, Global Mapper imagery software.

GPS

This project was undertaken to identify the workflow and processes associated with gathering topographical information. GPS points were collected in a grid pattern across the Area of Interest and the Digital Surface Model shown above was generated using the different interpolation methods available in ArcGIS.

*Skills used:* Data collection with Trimble equipment, creation of data dictionaries, objective comparison of surface interpolation methods, and presentation of results.

Other projects

Databases:

The above image shows the result of a mapping exercise that was undertaken using open-source software and, with the exception of the cartographic output, executed entirely within the PostgreSQL environment using PostGIS/Open Geospatial Consortium (OGC) commands. This project relied on an abstract computing environment to execute commands that the effects of were not immediately observable.

*Skills used:* Employed SQL/OGC commands to create a local database, populate this database with vector data, re-project datasets to a common EPSG value, create buffer zones along line vector data and identify points within buffer zones. Used QGIS to create cartographic products.

Brook Trout:

As part of an internship I completed in 2010 at the Finger Lakes Land Trust in Ithaca, NY I examined historical records, conducted interviews and compiled information pertaining to areas within the Land Trust's holdings that potentially harbored native Brook Trout.

*Skills used:* Research of historical and domain specific nature. Geoprocessing in the ArcMAP environment including buffering and intersecting of vector layers.