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Engineers for Exploration

**Mapping Surveyed Quadrats**

# INTRODUCTION

## PREREQUISITES

* all\_polysquare.py
* .csv datasheet
* QGIS 2.18+

## NOTES

**Introduction**

Researchers take samples and measurements in the field with 2x2m plots, quadrats. By collecting GPS coordinates (latitude and longitude), these quadrats can be re-portrayed digitally onto QGIS with a python script. When the plots are aligned with their models, we can collect and compare data from the models that corresponds with the field data. This will determine the accuracy of the remote sensing data relative to its ground truth.

However, inaccuracies can lie with variance in GPS signal, DEM tilt, and mis-alignment of quadrat direction. These errors can reduce the precision of modeling the predicted and actual surveyed areas and can sometimes even be seen in the orthomosaic model. Usually, canopy height is a parameter collected through this method of data collection and the range of error by the plotted quadrat can be assumed to be insignificant by the small variance in height. Post-processing typically still reveals a strong correlation between estimated and actual values, depicting the accuracy of the model.

To start, move the desired .csv document to be extracted in the same directory as the python script.

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## Creating the polygon shapefile

To create the shapefile that contains the surveyed quadrats, you will have to run all\_polysquare.py as a file. Different operating systems require different processes to run python scripts which will be described.

**Windows:**

Open command prompt, navigate to the directory containing the script and .csv file, and pass the full path of the program to the Python interpreter. For example:

C:\Python27\python.exe C:\Users\Username\Desktop\all\_polysquare.py

After the script is finished running, a file named “polygon.shp” (along with others) should be stored in a created directory named “Shapefiles” in the current working directory.

**Mac/Linux:**

Open terminal, navigate to the directory containing the script and .csv file. First, give executable permissions then pass the name of the program to the Python interpreter. For example:

chmod +x my\_python\_script.py

python all\_polysquare.py

You will be prompted to input the name of a file, and make sure to type the exact name of the desired data sheet to be processed. After the script is finished running, a file named “polygon.shp” (along with others) should be stored in a created directory named “Shapefiles” in the current working directory.

**Viewing the quadrats**

To visualize where the plotted quadrats are, open the .shp file via QGIS. For better reference, it is recommended to add this file as a vector file in QGIS in a working project with the corresponding DEMs and orthomosaics. To do this, first open QGIS.

Select Layer -> Add Layer -> Add Vector Layer and check that the Source Type is file.

In Dataset, select Browse and find the polygon.shp file in the correct directory.

Select Open, and the polygon layer should show up in the the Layers Panel.

To view a specific quadrat, right click the Polygon icon in the Layers Panel and select Open Attribute Table.

Right click on a specific cell to zoom to that particular feature on the map.

All other quadrats stored in the data sheet are visible on the map and are contained in the polygon shapefile.

# REFERENCES

Running a python script:

https://www.pythoncentral.io/execute-python-script-file-shell/

Using the QGIS Attribute table:

https://docs.qgis.org/2.18/en/docs/user\_manual/working\_with\_vector/attribute\_table.html