Processing Geodata using Python and Open Source Modules

Prof. Martin Christen
FHNW – University of Applied Sciences and Arts Northwestern Switzerland
School of Architecture, Civil Engineering and Geomatics
Institute Geomatics

martin.christen@fhnw.ch
Processing Geodata using Python and Open Source Modules

Geodata?
Geographic data and information are defined in the ISO/TC 211 series of standards as data and information having an implicit or explicit association with a location relative to the Earth.

Approximately 90% of government sourced data has a location component. [https://www.iso.org/committee/54904.html](https://www.iso.org/committee/54904.html)

GIS – Geographic Information System
GIS is a system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data. Popular GIS are for example ArcGIS (ESRI) and QGIS – both can be extended by using Python.

Python?
This talk will show you the basics of manipulating, analyzing and presenting geodata using Python (in the Jupyter Notebook.)
Important Open Source Libraries / Modules

**GDAL/OGR**
Geospatial Data Abstraction Library
C/C++ with Python Bindings
Reading Vector & Raster Formats

**GEOS**
Geometry Engine Open Source
C++
Geometry processing / OpenGIS Simple Features

**Rasterio**
For raster data
Pythonic Module

**fiona**
For vector data
Pythonic Module

**shapely**
For vector data
Pythonic Module

**geopandas**
Pythonic Module
Jupyter Notebook / Sample Data for this talk

Installation


conda install shapely
conda install fiona
conda install rasterio
conda install geopandas
conda install folium -c conda-forge

*Python 3.6 required*
(3.7 doesn’t support all Modules yet)
Questions