Geospatial analysis in Scala

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1 Introduction

The aim of the present paper is to investigate the use of some of the existing libraries for geospatial analysis available in Scala, the Geospatial Data Abstraction Library (GDAL) and Geotrellis, for performing the main geospatial analysis tasks: manipulating vector and raster data (geoprocessing) and geostatistics. The former task will be approched using GDAL and the later using Geotrellis.

2 Geoprocessing using GDAL

Using a programming language for geospatial analysis allows you to customize your analyses instead of being limited to what the software user interface allows. This is one of the most important advantages of open source software [1]. The GDAL library is one of the open source libraries used in this work. It was written in C and C++ and has bindings for several languages (Java, Perl and Python). In order to use GDAL in Scala, you need to install GDAL and its Java bindings on your machine. For installation details you can look at the GDAL homepage http://www.gdal.org/, download GDAL and follow the instructions for building from source, which might not be an easy task, depending on your operating system. Thanks to the efforts of the UbuntuGIS team (https://wiki.ubuntu.com/UbuntuGIS), on Ubuntu, the installation process of

GDAL and its bindings is done rapidly. Firstly, you need to add the ubuntugis PPA, which offers the official stable UbuntuGIS packages, to your system (https://launchpad.net/ ubuntugis/+archive/ubuntu/ppa). This is done with the commands: sudo add-apt-repository ppa:ubuntugis/ppa
sudo apt-get update.
Next, you install GDAL on your machine with the commands (http://www.sarasafavi.com/installing-gdalogr-on-ubuntu.html , https://packages.ubuntu.com/source/trusty/gdal):
sudo apt-get install libproj-dev, gdal-bin, libgdal-dev, libgdal-doc
sudo apt-get update.
Finally, you add the Java bindings to your GDAL package:
sudo apt-get install libgdal-java.

As a note at this point, you should know that the second important package that will be used in this document, Geotrellis, works only on Linux distributions, so you should consider running Linux either in dual-boot mode along Windows or as the single operating system on your machine.

3 Geostatistics using Geotrellis

References

[1] Chris Garrard. *Geoprocessing with Python.* Manning Publications Co., Shelter Island, 2016.