Other Packages for Vector Analysis

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Overview

1. Scipy
2. PySAL
3. CGAL
4. SymPy

Scipy

Scipy

- SciPy, or **Sci**entific **Py**thon is two things:
  - a python package containing many tools for scientific computation and data analysis
  - an ecosystem of scentific computing packages for python, including numpy, IPython, Matplotlib, SymPy, and pandas
- SciPy has many tools of potential utility to the GIS professional
- Docs are of fairly high quality
- Good interfacing with numpy
  - broad support
  - FAST

PySAL

PySAL

- PySAL is the **Py**thon **S**patial **A**nalysis **L**ibrary
    - Made by the same folks that made GeoDa, if you are into spatial statistics
- Indeed spatial statistics and spatial econometrics seem to be the primary focus but also includes geometry operations
- Docs are hit-or-miss
- Also includes support for reading/writing geospatial data
- Interface to work with Shapely

CGAL

CGAL

- CGAL is a C++ library for computational geometry
  - Very feature packed and capable of performing advanced analysis
  - Has some algorithms I have not found in other libraries
- Problem: it is a C++ library (like GDAL)
  - Python supported through auto-generated bindings lacking good documentation
- There if you need it, but probably not the best choice for most things

SymPy

SymPy

- SymPy is part of the SciPy ecosystem
- SymPy is **Sym**bolic **Py**thon: a computer algebra system for python
- Includes a geometry module that allows operations using points, line, polygons, and other such geometries
- Not so much a GIS library, but perhaps useful
    - Also used in some examples about computational geometry, so it is good to be familiar with it if you are interested in that sort of thing