Python Interface to Madagascar

Sergey Fomel, The University of Texas at Austin

Madagascar is an open-source software package for multidimensional data analysis and "reproducible computational experiments," as its mission is to provide:
- a convenient and powerful environment
- a convenient technology for transferring researchers working with digital image and data processing in geophysics and related fields.

Technology developed using the Madagascar platform management system is transferred to the forms of recorded processing histories, which become "computational records" to be verified, exchanged, and modified by users of the system.

In Python, Madagascar has had 7,500 commits made by 57 contributors representing 17/4/24 lines of code. It is mostly written in C with an average number of source code comments.

Since its first public release in 2006, Madagascar has been adopted by a number of users in industry and academia, mostly imaging researchers working with seismic imaging and geophysical data analysis. The Madagascar design is general and can be applied in principle to other applications that deal with unifying large-scale multidimensional data.

The current Madagascar distribution contains 922 filter programs (mostly written in C), 131 reproducible papers (Latex), 2,422 reproducible figures (Postscript), and 93 computational recipes (Python/Scons).

Madagascar uses Python mostly through Scons, a Python-based build system. Madagascar uses Scons for building, managing and processing the Madgiscr project's reproducible documents, scientific publications that track computational results with the data and software code. To reproduce them, Scons configuration files (.Sconsbuild scripts) serve as both computational recipes for users and regression tests for developers.

Example Python code:

```python
# Import Madagascar modules
import mg

# Read data
data = mg.read("data/014000民主生活.txt")

# Display data
mg.plot2d(data, title="Livedata")

# Compute correlation
correlation = mg.correlation(data[0], data[1])

# Display correlation
mg.plot2d(correlation, title="Correlation")
```

For more information, see http://www.ohloh.net/profile/madagascar

School and Workshop in Beijing 2011
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To learn more about Madagascar, visit http://www.seis.ethz.ch/madagascar or attend the 2011 Madagascar School and Workshop in Austin, TX, on Friday-Saturday July 28-29.