Ureka

http://ssb.stsci.edu/ureka/

Space Telescope Science Institute

GEMINI OBSERVATORY
Exploring the Universe, Sharing its Wonders

A distribution of Python and IRAF software for astronomy

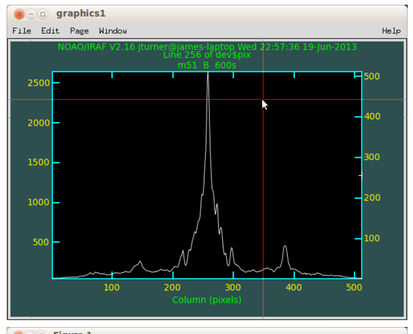
Priorities & status

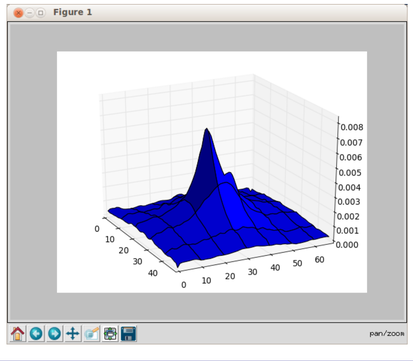
- Straightforward installation for ordinary users.
- Avoid requiring administrative privileges or support.
- Provide complete dependencies for running the AURA observatories' data processing software and popular scientific Python tools.
- Minimal dependence on OS libraries.
- Avoid interference with other software on the user's machine.
- Basic support for adding optional software and overriding package versions.
- Focus on providing a viable solution for everyone, rather than satisfying every installation preference.

Since our SciPy 2012 presentation, we have replaced Sage with our own collection of libraries and Python packages (solving associated complications and improving the package set), updated IRAF to v2.16 (plus bug fixes to support our software), rebased Ureka variants on virtualenv and released a public beta early this month.

Implementation

- Installation and user environment managed by Bourne shell and Python scripts.
- Variants based on virtualenv + additional files defining IRAF packages & C libraries.
- Shared libraries loaded via binary RPATHs, without using LD_LIBRARY_PATH.
  - Ureka provides install_name_tool on OSX & patchelf on Linux for path relocation.
- Minor IRAF modifications for non-root install and to support variants.
- Multi-platform continuous integration system for co-ordinating builds & testing across the observatories.
- Basic set of built-in tests (ur_test command).





Usage

Installation:

A shell script for installation (available at the above URL – select 1.0beta5) detects the user's platform, downloads and unpacks the appropriate tarball, configures the installation to run under the chosen path and defines "ur_setup" and "ur_forget" commands.

Invocation:

Issuing "ur_setup" configures the user's environment to find Ureka's packages, eg.:

```
> ur_setup
> ds9 &
> pyraf
```

An optional argument (eg. "ur_setup test") specifies a user-named variant, containing optional packages that override their core versions (if any). The variant is initially created by passing a "-n" flag ("ur_setup -n test"). It is also possible to choose between multiple entire installations of Ureka with a second argument.

The command "ur_forget" temporarily removes all references to Ureka from the user's environment, ensuring that other software (including other copies of Ureka) will run without conflicts.

Optional add-ons:

Once Ureka is available, a "ur_install" command allows optional Ureka add-ons to be included, eg. new STScI or Gemini packages (once available). The user can also install Python packages into a variant with "python setup.py" or "pip", as usual.

Relocation:

If the Ureka directory needs to be moved after initial installation, "ur_normalize" reconfigures it to run under the new path.

Selected packages

Ureka 1.0beta5 comes with ~90 packages, including the following key components and their compiled dependencies:

AstroPy	0.2.2
Cython	0.15.1
DS9	7.0.2
Gemini IRAF	1.12 beta2
IPython	0.13
IRAF	2.16
Matplotlib	1.1.0
Numpy	1.6.2
PIL	1.1.7
Python	2.7.3
SciPy	0.10.1
STScI Python	2.14
STSDAS/TABLES	3.16
SymPy	0.7.1
X11IRAF	2.0 beta

Most commonly-available IRAF packages are included. We're open to suggestions for additions and may add some popular Python packages in the final release.

Demo/questions?

James, Emma & Mark are available this week to answer questions and help you install Ureka on your laptop!

See the documentation at the above URL for additional information.

Ureka is licensed under each package's original terms, plus BSD for our work.

James E.H. Turner[1] (jturner@gemini.edu), Christine Slocum[2], Mark Sienkiewicz[2], Perry Greenfield[2], Emma Hogan[1] & Mark Simpson[1]

[1] Gemini Observatory, Casilla 603, La Serena, Chile; [2] Space Telescope Science Institute, 3700 San Martin Drive, Baltimore