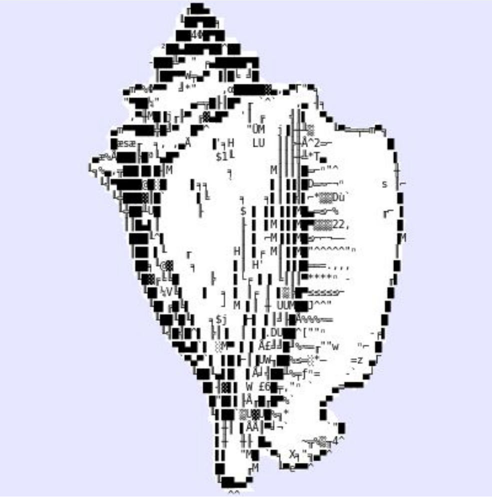

xonsh

Make Python Your Shell

Anthony Scopatz
HubPy
2015-11-12

whoami

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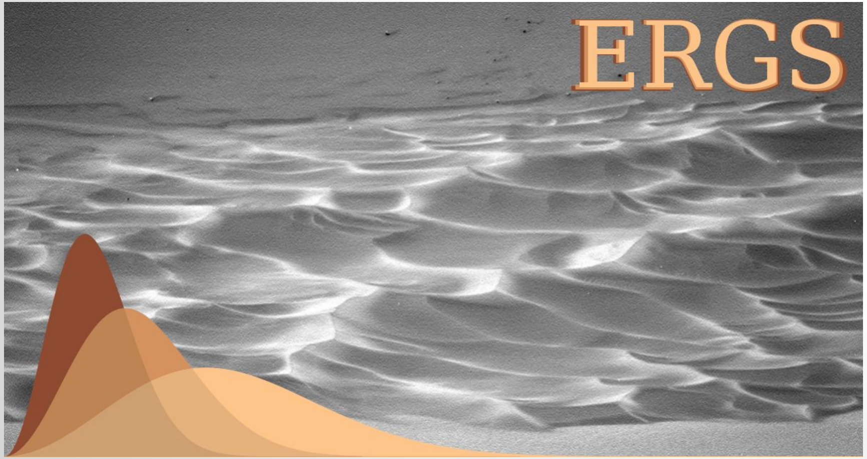
- Python Software Foundation Fellow
- Former Numfocus Board Member
- ERGS - http://www.ergs.sc.edu



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Open Code, Better Science

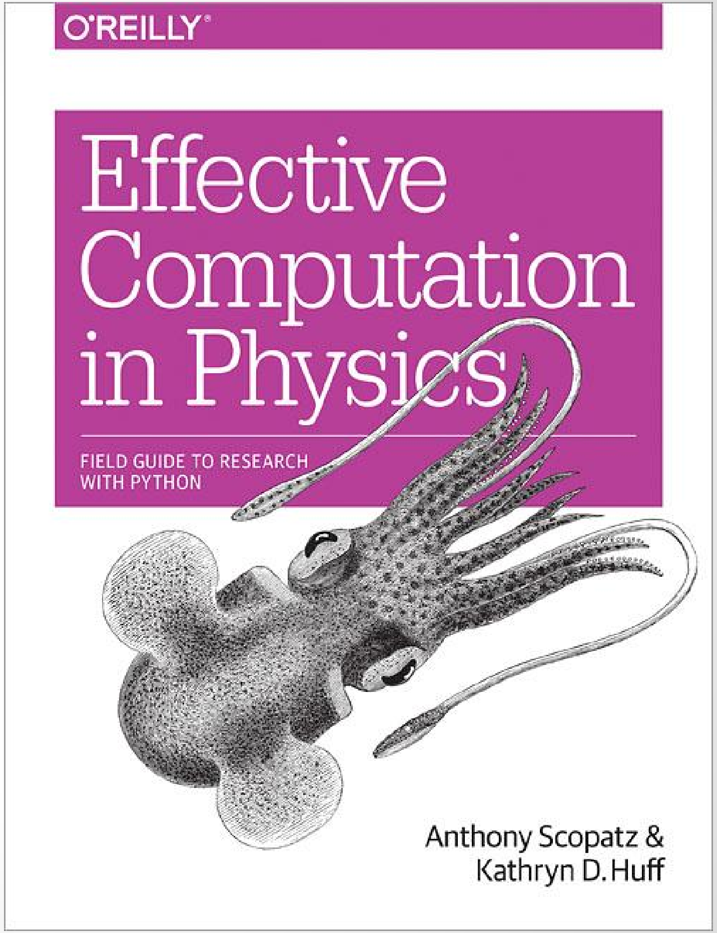
what is xonsh

Features include:

- Naturally typed environment variables
- Inherits the environment from BASH
- Uses BASH completion for subprocess commands
- Regular expression filename globbing
- Its own PLY-based lexer and parser
- xonsh code parses into a Python AST
- You can do all the normal Python things, like arithmetic and importing
- Captured and uncaptured subprocesses
- Pipes, redirection, and non-blocking subprocess syntax support
- Help and superhelp with ? and ??
- Command aliasing
- Optional fish-like, prompt-toolkit based interface
- Rich history
- Color prompts
- Low system overhead

http://xonsh.org

but why



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FIELD GUIDE TO RESEARCH WITH PYTHON

Anthony Scopatz & Kathryn D. Huff

stages

- conceptualization, `best(python, bash)`

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- conceptualization, `best(python, bash)`
- investigation into particulars
- moral compulsion to act

- anger
- regret
- acceptance

quotes

“Just stumbled across xonsh by @scopatz -- holy cow it's amazing. I've never been so happy to rewrite a .rc file” - @gilforsyth

“I've tweeted about Xonsh before, and finally spent a day using it exclusively. I must have it on ALL PLATFORMS now.” - @wbuthod

“@pathogenomenick @btnaughton @lexnederbragt the dark wizardry of @scopatz :-) check out xonsh.org” -@biochemistries

syntactical hipstery tour

how does it work

Traditional language phases

- lexer (ply)
- parser (ply)
- syntax tree transformation (xonsh)
- compiler (python)
- execution (python)

lexer

This is trickier than you'd think, because Python is not whitespace sensitive inside of expressions, but subprocess commands are:

```
$ ls -l
$ ls - l
$ ls-l
```

parser

Uses yacc to assemble a xonsh AST built out of only Python AST nodes.

Let’s xonsh use Python’s `exec()` & `eval()`.

BASH-isms are translated into calls to functions that are shoved into `builtins`.

syntax tree transformation

To help resolve ambiguity, `ls -l`, xonsh safely *attempts* a context sensitive parsing.

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If the leftmost name is not found in the Python context and the line can be parsed in subprocess mode, the line is wrapped in `$[]`.

syntax tree transformation

To help resolve ambiguity, `ls -l`, xonsh safely *attempts* a context sensitive parsing.

If the leftmost name is not found in the Python context and the line can be parsed in subprocess mode, the line is wrapped in `$[]`.

Totally avoidable via `$(ls -l)` and `$[ls -`

compile & exec

These happen through the normal Python builtins. Nothing special.

dark wizardry

install - http://xonsh.org

conda:

```
$ conda install -c scopatz xonsh
```

pip:

```
$ pip install xonsh
```

source: Download the source from github (zip file), then run the following from the source directory,

```
$ python setup.py install
```

and others!

contribution welcome!

questions?