

THE SCIPY WEB AND DOCUMENTATION TOOLS

JARROD MILLMAN

HELEN WILLS NEUROSCIENCE INSTITUTE

UNIVERSITY OF CALIFORNIA, BERKELEY

PREREQUISITES

- EVERYTHING I SHOW TODAY ONLY REQUIRED THE FOLLOWING ON MY MAC OS X LAPTOP:
 - ENTHOUGHT PYTHON DISTRIBUTION (EPD)
 - XCODE (JUST NEED MAKE)
 - GRAPHVIZ (FOR DEPENDENCY DIAGRAMS)
- LINUX & WINDOWS SHOULD BE SIMILAR

OUTLINE

- MOTIVATION
- RESTRUCTURED TEXT (REST)
- PYDOCWEB
- SPHINX
 - SAMPLEDOC
- CONCLUSION

MOTIVATION

- DOCUMENTATION IS IMPORTANT!
- WRITING DOCUMENTATION NEEDS TO BE ENJOYABLE
- PLEASE COME HELP!!!

DESIDERATUM

- A GOOD DOCUMENTATION TOOL SHOULD
 - BE EASY TO USE
 - READABLE IN PLAIN TEXT FORMAT, BUT PRODUCE BEAUTIFUL HTML & PDF
 - LET YOU USE THE EDITORS & TOOLS YOU PREFER
 - FACILITATE COLLABORATION

UNSATISFACTORY SOLUTIONS

- LATEX
- LYX
- WORD PROCESSORS
- WIKIS

RESTRICTED TEXT (REST)

- MARK DOWN LANGUAGE
- PART OF DOCUTILS
- WRITTEN BY DAVID GOODGER

REST FORMATTING TEXT

Formatting Text

italics

****bold****

``monospace``

code blocks::

```
import numpy as np
x = np.random.rand(12)
```

REST HEADINGS

Heading 1

=====

Heading 2

Heading 3

~~~~~

Heading 4

^^^^^

# REST LISTS

---

Lists

=====

Bullet points

-----

This is a subsection making bullet points

- \* point A
- \* point B
- \* point C

Enumerated points

-----

This is a subsection making numbered points

- #. point A
- #. point B
- #. point C

# REST TABLES

---

## Simple tables

-----

```
=====      =====
Heading 1    Heading 2
=====      =====
entry(1,1)  entry(1,2)
entry(2,1)  entry(2,2)
=====      =====
```

## Fancy tables

-----

```
+-----+-----+
| Heading 1 | Heading 2 |
+=====+=====+
| entry(1,1) | entry(1,2) |
+-----+-----+
| entry(2,1) | entry(2,2) |
+-----+-----+
```

# REST LINKS

---

<http://docutils.sourceforge.net/docs/user/rst/quickstart.html>

<http://docutils.sourceforge.net/docs/user/rst/quickref.html>

# PYTHON DOCSTRINGS

---

- PYTHON DOCUMENTATION STRINGS (DOCSTRINGS) EXTEND THE NOTION OF CODE COMMENTS
- CONVENIENT WAY TO ASSOCIATE DOCUMENTATION WITH MODULES, FUNCTIONS, CLASSES, AND METHODS
- JUST INCLUDE A STRING AS THE FIRST STATEMENT IN AN OBJECT'S DEFINITION

# SCIPY DOCSTRING STANDARD

---

- NUMPY/SCIPY DOCSTRING'S WERE A MESS, NOW THEY ARE BETTER THAN MOST PROJECTS

<http://docs.scipy.org/numpy/Front%20Page/#style-guidelines>

<http://projects.scipy.org/numpy/browser/trunk/doc/example.py>

[http://projects.scipy.org/numpy/browser/trunk/doc/EXAMPLE\\_DOCSTRING.txt](http://projects.scipy.org/numpy/browser/trunk/doc/EXAMPLE_DOCSTRING.txt)

# THE BIRTH OF A WEB-BASED DOCUMENTATION EDITOR

---

- MARCH 2008, AT A NIPY SPRINT IN PARIS, STEFAN VAN DER WALT, FERNANDO PEREZ, AND GAEL VAROQUAUX CONCEIVED OF WEB-BASED DOCSTRING EDITOR
- THEN AT AN IPYTHON SPRINT, EMMANUELLE GOUILLART VOLUNTEERED TO CODE THE FIRST IMPLEMENTATION

# THE ORIGINAL MOINMOIN-BASED DOCUMENTATION EDITOR

---

- INITIAL IMPLEMENTATION USED MOINMOIN TO SERVE THE DOCSTRINGS AND PROPOGATE CHANGES BACK TO A BZR REPOSITORY OF THE NUMPY SOURCE
- IMPLEMENTED BY EMMANUELLE GOULLIART & PAULI VIRTANEN
- LIMITATIONS OF THIS APPROACH RAPIDLY BECAME APPARENT

# DJANGO-BASED PYDOCWEB

---

- PAULI REWROTE THE INITIAL DOC-EDITOR IN DJANGO
- PYDOCWEB, THE NEW IMPLEMENTATION, HAD ALL THE ORIGINAL FEATURES PLUS ENABLED NEW FEATURES:
  - WORKFLOW, MERGE CONTROL, ACCESS CONTROL, COMMENTS, AND STATISTICS

# PYDOCWEB LINKS

---

- NUMPY/SCIPY WEB-BASED DOC EDITOR:

<http://docs.scipy.org/>

- PYDOCWEB SOURCE CODE

<http://code.google.com/p/pydocweb>

# SPHINX

---

- OFFICIAL DOCUMENTATION TOOL OF PYTHON
- AND NUMPY, SCIPY, IPYTHON, MATPLOTLIB, MAYAVI, ...
- CONTENT IS SEARCHABLE, INDEXED, AND CROSS-REFERENCED
- BUILT ON TOP OF REST
- GENERATES HTML & PDF
- EXTENSIBLE!

# SPHINX NARRATIVE DOCUMENTATION

---

- UNLIKE PYDOC & EPYDOC, SPHINX' FOCUS IS ON NARRATIVE DOCUMENTATION—NOT FULLY AUTOMATED API AND CODE DOCUMENTATION

“One of Sphinx' goals is to coax people into writing good docs, and that unfortunately involves writing in many instances :) This is not to say that API docs don't have their value; but when I look at a new library's documentation and only see autogenerated API docs, I'm not feeling encouraged.”

– Georg Brandl, the author of Sphinx

# SPHINX AUTODOC EXTENSION

---

- BUT SPHINX' BUILT-IN EXTENSION, AUTODOC, PROVIDES DIRECTIVES TO EXTRACT AND INSERT DOCSTRINGS INTO DOCUMENTATION

# SPHINX QUICKSTART

---

```
$ sphinx-quickstart
```

```
$ make html
```

# SPHINX CONFIGURATION

---

- LET'S LOOK AT THE FOLLOWING FILES:

`conf.py`

`_static/default.css`

`_static/logo.png`

`_templates/layout.html`

# SCIPY-RELATED SPHINX EXTENSIONS

---

- AUTOGENERATED MATPLOTLIB PLOTS
- INHERITANCE DIAGRAM
- MATHEMATICAL EXPRESSIONS
- SYNTAX-HIGHLIGHTING FOR IPYTHON SESSIONS

# SAMPLEDOC

---

- MATPLOTLIB DEVELOPERS HAVE BUNDLED UP ALL THE SCIPY-RELATED EXTENSIONS TO SPHINX AND A CUSTOMIZED SPHINX SKELETON TO CREATE A COMPLETE TURNKEY FRAMEWORK FOR BUILDING SPHINX DOCUMENTATION GEARED FOR SCIENTIFIC PYTHON APPLICATIONS

# CONCLUSION: WHAT DO I WANT FROM YOU

---

- USE RESTRUCTURED TEXT, SCIPY DOCSTRING STANDARD, & SPHINX
- HELP DOCUMENT NUMPY & SCIPY—GET A NUMPY PYDOCWEB ACCOUNT AND PITCH IN!
- IMPROVE PYDOCWEB & USE IT IN OTHER PROJECTS (E.G., PYTHON STANDARD LIBRARY WOULD BE A GREAT GSOC)

# A SHORT PLEA ... WHAT ELSE DO I WANT FROM YOU

---

- PUBLISH YOUR WORK & CITE OTHERS!
- COMPUTING IN SCIENCE & ENGINEERING (CISE)
- MANY OTHER JOURNALS AND MAGAZINES...
- SCIPY.IN 2010 PROCEEDINGS
- NEED VOLUNTEERS TO MAKE THIS HAPPEN

# ANNOUNCEMENTS

---

- 2010 SCIPY US IN AUSTIN
- 2010 EUROSCIPY IN PARIS
- 2010 SCIPY.IN ??
- 2011 SPECIAL ISSUE OF CISE ON PYTHON IN SCIENCE

# THANKS

---

- PRABHU RAMACHANDRAN & FOSSEE TEAM
- VIMAL JOSEF & SPACE KERALA
- SPEAKERS
- PARTICIPANTS