

The Advantages of a Scientific IDE

SciPy 2013

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The Spyder Project

June 26 2013

Outline

- 1 Introduction
- 2 Easing IPython
- 3 Sharing with Matlab
- 4 Getting closer to Mathematica
- 5 Conclusions

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Who am I?

@ccordoba12

- MSc from National University of Colombia
- Heavy Mathematica user and developer for 6 years
- C++ programmer for 3 years
- Python user since 2006
- Spyder contributor since 2010

The Spyder IDE



- Created by **Pierre Raybaut**
- Started in **2009**
- **30000** LOC
- Multiplatform
 - Developed with **Qt**
 - **Native** Mac App
 - Great support on **Windows**: Python(x,y) / WinPython
- Next version will have support for **Python 3**

Why a scientific IDE?



- If IPython is **great**
- A great way to **evaluate** and **document** your code
- **Nicer** if it'd be:
 - Less dependent on the **command-line**
 - **Easier** to configure
 - More **integrated** with other tools
- **Also** to gain **wider adoption**
 - Compete with the big M's: **Matlab** and **Mathematica**

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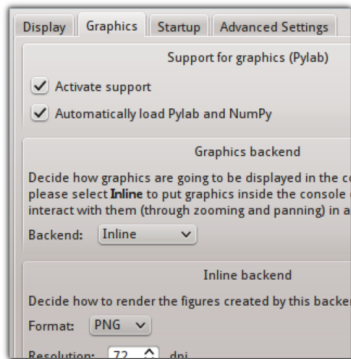
Configuration

```

84 #-----
85 # IPythonWidget configuration
86 #-----
87
88 # A FrontendWidget for an IPython kernel.
89
90 # IPythonWidget will inherit config from:
91 # ConsoleWidget
92
93 # The type of completer to use. Valid val
94 #
95 # 'plain' : Show the available complet
96 #         Below the editing area.
97 # 'droplist': Show the completion in a dr
98 #         by the arrow keys, and from
99 #         completion by pressing Retu
100 # 'ncurses' : Show the completion as a te
101 #         'tab' and arrow keys.
102 # c.IPythonWidget.gui_completer = 'ncurs
103
104 # Whether to process ANSI escape codes.
105 # c.IPythonWidget.ansi_codes = True

```

- Edit **plain-text** files
- **Lots** of options
- Only apply on **restart**



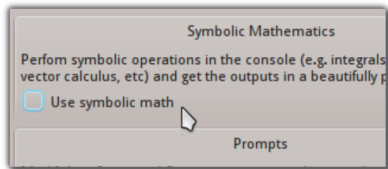
- Set through our **GUI**
- **Fewer** but more relevant options
- Apply on **new** consoles

Sympy

IPython

- `ipython create`
`profile sympy`
- `ipython qtconsole`
`--profile sympy`

Spyder

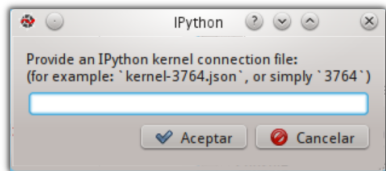


Connection to external kernels

IPython

- `ipython --existing`
- `%qtconsole`

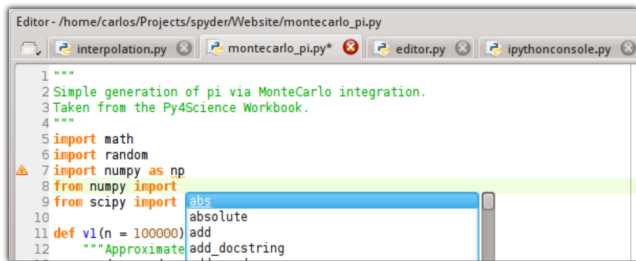
Spyder



Outline

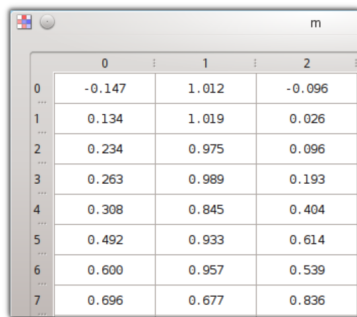
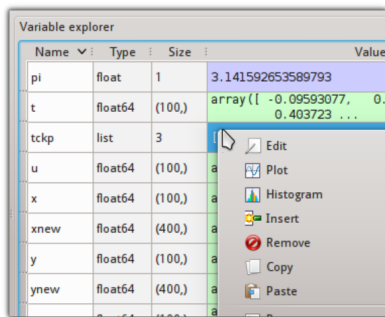
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An integrated Editor



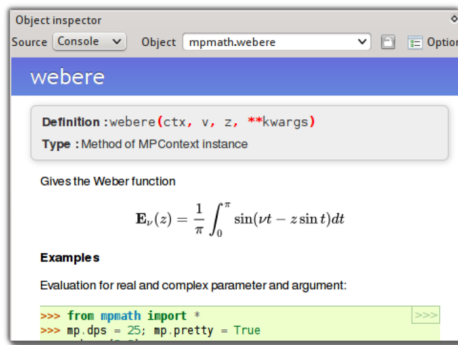
- Great **code completion** (on imports too) \Rightarrow **Ctrl** + **Space**
- Flags **errors** and **warnings**
- **Connected** to IPython **consoles** for **evaluation** \Rightarrow **F5** / **F9**
- Quick access to **docs** \Rightarrow **Ctrl** + **I**
- **Go to definition** \Rightarrow **Ctrl** + **Left click** + name

Variable Explorer



- **Inspect** variables defined in **each console**
- **Check** and **edit** their contents **graphically**
- **More facilities:** plot, copy, remove variables, etc.

Interactive help



- **Read** docstrings in **rich text** (with Sphinx)
- **Copy/paste doctests** to the Editor or Console
- **Show math** (with MathJax)

Debugging



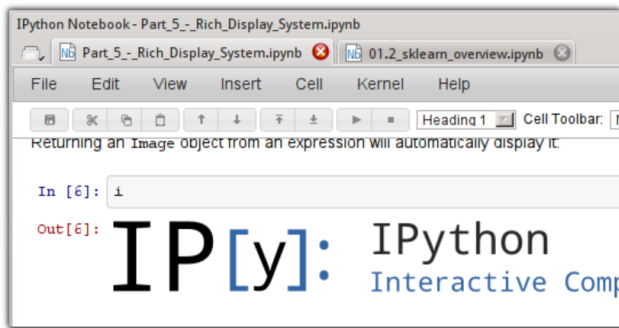
Breakpoints			
File	Line	Condition	
interpolation.py	19		
montecarlo_pi.py	30		
montecarlo_pi.py	44		

- **Debug toolbar** with step over, step into, continue, etc
- **Set breakpoints** in the Editor
- **Synced** with the Console
- **Check** all your **current breakpoints**

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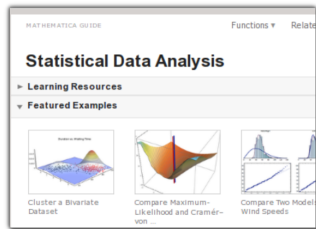
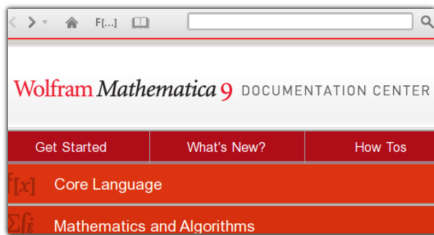
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Notebook plugin



- Provide a **desktop friendly** version of it
- **Connected** to our other **plugins**
- We already have a **prototype**
 - Waiting for multi-directory support to be merged

Documentation Center



- Add important **tutorials/intros**, like SciPy lectures
- **Guides** to Spyder and IPython
- **Search** in docstrings (with Whoosh)
- **Auto-linking** to `docs.python.org`

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What are the advantages?

- Find all in one place
 - Because **“Your train of thought is sacred”** (A. Raskin)
 - But in a **light-weight** environment
- Use a friendly app
 - With **minimal** effort
 - Built for **scientists**
- Easy entry point to use **Scientific Python**
 - For **undergrads**
 - For your **colleagues**

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Demo

Time for a live demo

Thank You

Questions?