
Subject: IDL kernel for IPython/Jupyter Notebooks
Posted by [lstagner89](#) on Tue, 05 Aug 2014 09:30:35 GMT
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Hello,

In recent weeks, the IPython team has decided to split the IPython project into two separate projects. The language agnostic portions of IPython i.e. the console, qtconsole, and notebook will become Project Jupyter. The python specific parts of IPython will still be called IPython but will be a language kernel for Jupyter. Here is a link to the [announcement](<https://www.youtube.com/watch?v=JDrhn0-r9Eg&t=4m10s>).

In preparation of this split, wrapper kernels were introduced into the current development version of IPython as an easy way to make language kernels. Using this new feature I made an IDL/GDL kernel.

The kernel has basic functionality such as inline plots but there is room for improvement.

I would appreciate testers since I did not have IDL available when I made the kernel.

I would also appreciate contributors to help improve the kernel.

I hope this will be a useful tool for the IDL community.

Regards,
Luke Stagner

Source: https://github.com/lstagner/idl_kernel

Demo Notebook: http://nbviewer.ipython.org/github/lstagner/idl_kernel/blob/master/demo.ipynb

Wrapper Kernels: <http://ipython.org/ipython-doc/dev/development/wrapperkernels.html>

Subject: Re: IDL kernel for IPython/Jupyter Notebooks
Posted by [Fabzi](#) on Tue, 05 Aug 2014 10:57:59 GMT
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Hi Luke,

this looks terrific! I'll try it when possible.

Cheers,

Fabien

Subject: Re: IDL kernel for IPython/Jupyter Notebooks
Posted by [Michael Galloy](#) on Tue, 05 Aug 2014 17:53:31 GMT
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On 8/5/14, 3:30 AM, Luke Stagner wrote:

> Hello,
>
> In recent weeks, the IPython team has decided to split the IPython
> project into two separate projects. The language agnostic portions of
> IPython i.e. the console, qtconsole, and notebook will become Project
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> Regards, Luke Stagner
>
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> Source: https://github.com/lstagner/idl_kernel
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> Demo Notebook:
> http://nbviewer.ipython.org/github/lstagner/idl_kernel/blob/master/demo.ipynb
>
> Wrapper Kernels:
> <http://ipython.org/ipython-doc/dev/development/wrapperkernels.html>
>

Awesome! I got this working with IDL 8.3 and using the current Anaconda Python distribution. In addition to `idl_kernel`, I had to install:

IPython 3.0-dev (get from <https://github.com/ipython/ipython>)
pexpect 3.3 (download from <https://pypi.python.org/pypi/pexpect>)
jsonpinter (easy_install)
jsonschema (easy_install)

It is working for my basic examples. There are three small issues I see so far:

1. There are a few error messages at the command line where I launched IPython.
2. It prints debug type messages like

```
.run /var/folders/3l/5497218j7x99gbh9xdh8fn500000gp/T/tmppbCisE
```

in the notebook after I execute a command.

3. I see a red flash before inline graphics appear in the notebook.

Mike

--

Michael Galloy

www.michaelgalloy.com

Modern IDL: A Guide to IDL Programming (<http://modernidl.idldev.com>)

Research Mathematician

Tech-X Corporation

Subject: Re: IDL kernel for IPython/Jupyter Notebooks
Posted by [lstagner89](#) on Tue, 05 Aug 2014 19:14:01 GMT
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Thanks Mike,

- > 1. There are a few error messages at the command line where I
>
> launched IPython.

I believe these are IPython errors. I expect they will be fixed before the 3.0 release

- > 2. It prints debug type messages like
>
> .run /var/folders/3l/5497218j7x99gbh9xdh8fn500000gp/T/tmppbCisE
>
> in the notebook after I execute a command.

What the kernel does is that it writes the contents of a cell into a temporary file and then runs it. This allows the kernel to compile functions and procedures. I do not have the debug messages though since I have the kernel set !quiet=1. I'm not sure why you see it.

- > 3. I see a red flash before inline graphics appear in the notebook.

This is actually an IDL graphics window popping up and then being destroyed. In the kernel a png

of the plot is produced and is then sent to the notebook. I tried writing the png directly but it caused some issues.

1. Plot colors were not correct

I am not sure what caused this. It may have been a shortcoming of GDL

2. The ability to compile functions and procedures were lost.

Expressions needed to produce the png were written to the file before the cell input which is not allowed if the cell contains procedures. This could be solved by parsing the cell input and writing the procedures to the temporary file first or perhaps by using multiple execute statements

Inline plotting is an area that needs improvement. In addition to the issues I mentioned, if there are multiple plots in a cell then only the last one will be displayed (the rest will be in graphics window).

-Luke

Subject: Re: IDL kernel for IPython/Jupyter Notebooks
Posted by [Pierre V.](#) on Thu, 14 Aug 2014 00:56:35 GMT
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>> 3. I see a red flash before inline graphics appear in the notebook.

>

>

> This is actually an IDL graphics window popping up and then being destroyed. In the kernel a png of the plot is produced and is then sent to the notebook. I tried writing the png directly but it caused some issues.

>

Have you thought of using the function call 'w = window(/buffer)'? This should give you the same results, but no window popping up.

Subject: Re: IDL kernel for IPython/Jupyter Notebooks
Posted by [ltagner89](#) on Thu, 14 Aug 2014 09:54:24 GMT
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Thanks for the info. At the moment however I am trying to keep everything backwards compatible with the last version of IDL i.e. 7.0 . When version 9.0 comes out I may use your solution.

I think I may be able to solve the problem using pixmaps. Any suggestions on how to effectively do this would be welcome.

-Luke

On Wednesday, August 13, 2014 5:56:35 PM UTC-7, pierre.v...@gmail.com wrote:

>>> 3. I see a red flash before inline graphics appear in the notebook.

>

>>

>

>>

>

>> This is actually an IDL graphics window popping up and then being destroyed. In the kernel a png of the plot is produced and is then sent to the notebook. I tried writing the png directly but it caused some issues.

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>>

>

>

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> Have you thought of using the function call 'w = window(/buffer)'? This should give you the same results, but no window popping up.

Subject: Re: IDL kernel for IPython/Jupyter Notebooks

Posted by [Michael Galloy](#) on Thu, 14 Aug 2014 14:21:06 GMT

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On 8/14/14, 3:54 am, Luke Stagner wrote:

> Thanks for the info. At the moment however I am trying to keep
> everything backwards compatible with the last version of IDL i.e. 7.0
> . When version 9.0 comes out I may use your solution.

>

> I think I may be able to solve the problem using pixmaps. Any
> suggestions on how to effectively do this would be welcome.

Very easy. Use "window, /pixmap" to create and tvrd to get contents of window into an array that you could write into an image file.

Mike

--

Michael Galloy

www.michaelgalloy.com

Modern IDL: A Guide to IDL Programming (<http://modernidl.idldev.com>)

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