

Azure Notebooks

Gerald Goh

Technical Evangelist

Microsoft Singapore

Azure Notebooks

- Cloud-based service for building, editing, and sharing Jupyter notebooks
- Currently free; only requires a modern browser and a Microsoft ID
- Supports Python, R, and F#

<https://notebooks.azure.com/>



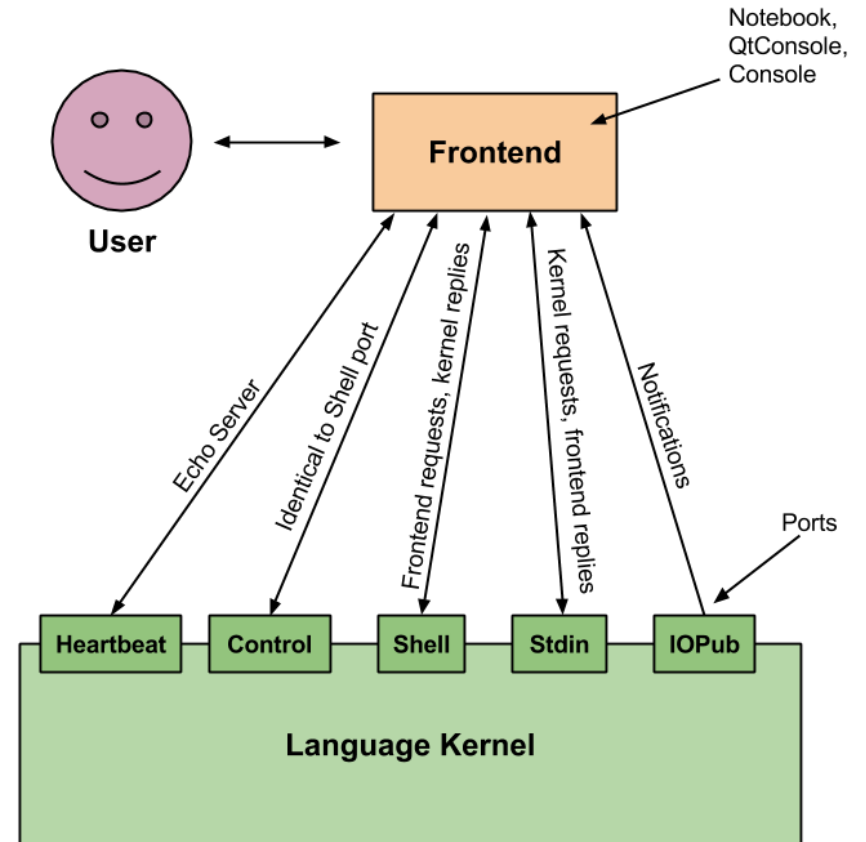
Jupyter

“The Jupyter Notebook is an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and explanatory text. ”



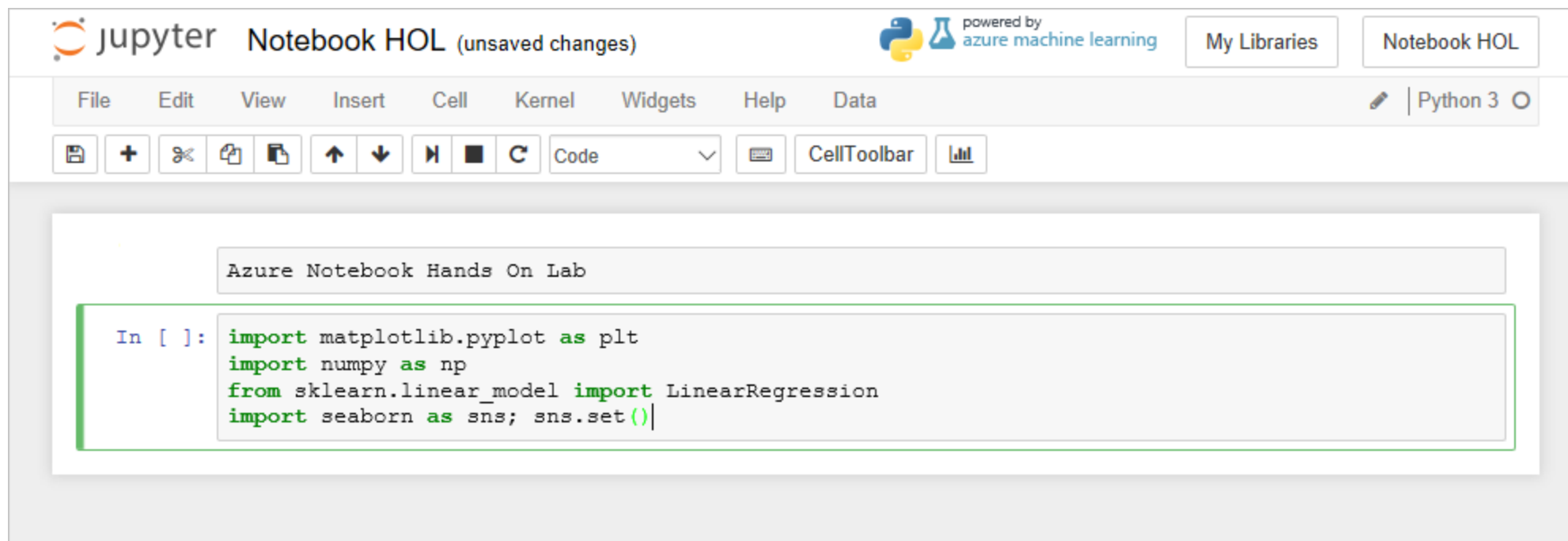
IPython

- Jupyter is a web front end for IPython
- IPython has a language “kernel” which provides an execution environment for whatever language is being used
- State (such as variable values) is maintained between requests



Notebooks

- Notebooks are composed of cells
 - Markdown cells contain text (headings, notes, etc.)
 - Code cells contain executable code



The screenshot displays the Jupyter Notebook interface. At the top, the title bar shows "jupyter Notebook HOL (unsaved changes)" and "powered by azure machine learning". Below the title bar is a menu bar with options: File, Edit, View, Insert, Cell, Kernel, Widgets, Help, Data. A toolbar below the menu bar contains icons for file operations, cell navigation, and execution. The main content area shows a code cell with the following Python code:

```
Azure Notebook Hands On Lab

In [ ]: import matplotlib.pyplot as plt
import numpy as np
from sklearn.linear_model import LinearRegression
import seaborn as sns; sns.set()
```

Markdown

- Markdown gets its name from being the opposite of markup, which tends to be very verbose and involve lots of tags
- Markdown uses symbols instead of tags to format text
- Markdown is a popular format for documentation

Text using Markdown syntax	Text viewed in a browser
<pre># Heading</pre>	Heading
<pre>## Sub-heading</pre>	Sub-heading
<pre>### Another deeper heading</pre>	Another deeper heading
<pre>Paragraphs are separated by a blank line.</pre>	Paragraphs are separated by a blank line.
<pre>Two spaces at the end of a line leave a line break.</pre>	Two spaces at the end of a line leave a line break.
<pre>Text attributes <code>_italic_</code>, <code>*italic*</code>, <code>__bold__</code>, <code>**bold**</code>, <code>`monospace`</code>.</pre>	Text attributes <i>italic</i> , <i>italic</i> , bold , bold , <code>monospace</code> .
<pre>Horizontal rule: ---</pre>	Horizontal rule:
<pre>Bullet list: * apples * oranges * pears</pre>	Bullet list: <ul style="list-style-type: none">• apples• oranges• pears
<pre>Numbered list: 1. apples 2. oranges 3. pears</pre>	Numbered list: <ol style="list-style-type: none">1. apples2. oranges3. pears
<pre>A [link](http://example.com).</pre>	A link .

<https://github.com/adam-p/markdown-here/wiki/Markdown-Cheatsheet>

The R Programming Language

- R is a statistical programming language
- R is interpreted, so it facilitates interactive programming
- The R ecosystem contains numerous open-source packages for statistical manipulation and visualization



<https://www.r-project.org/>

The F# Programming Language

- F# is primarily a functional programming language
- Functional programs focus on algorithms rather than on modifying states
- This focus on algorithms allows the developer to focus on results and data structures



<http://fsharp.org//>

Python

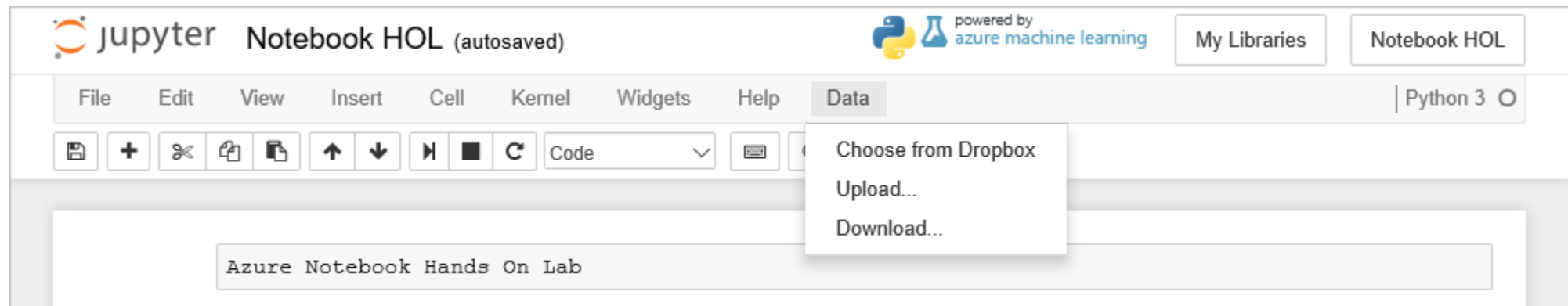
- Python is a multipurpose programming language that is widely used in data science
- Its simplicity makes it a popular choice for entry-level programming courses and also for data scientists



<https://www.python.org/>

Getting Data In and Out

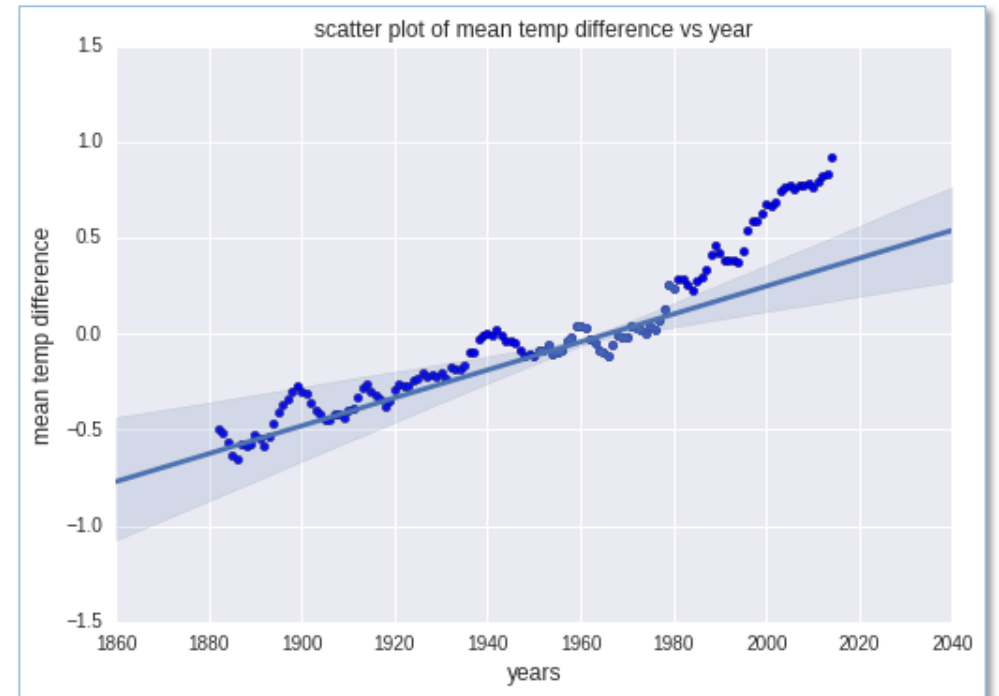
- Data can be uploaded to Azure Notebooks through the Data menu, and then loaded into memory using function calls
- Data can also be downloaded or supplied through DropBox



Visualizing Data

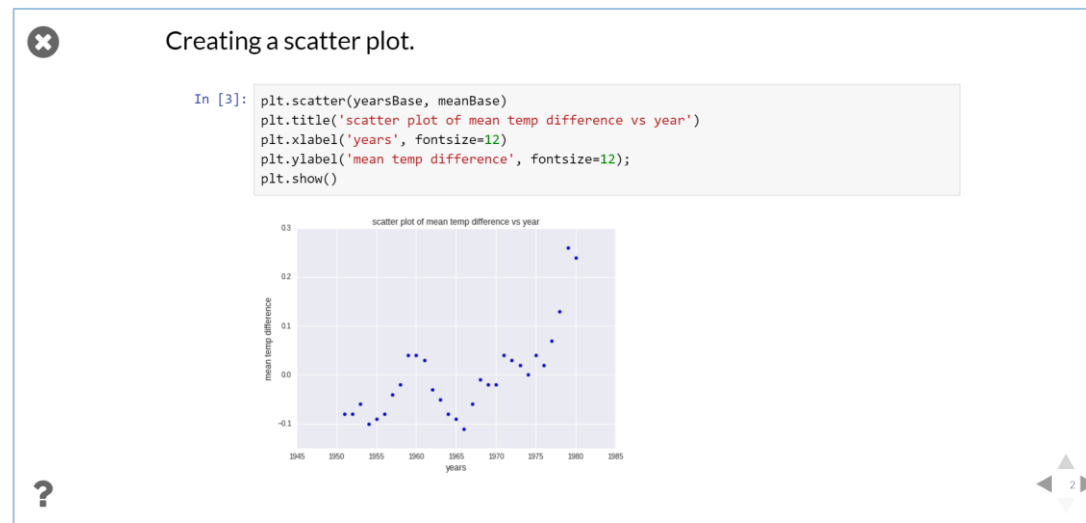
- Popular packages such as Matplotlib and Seaborn make visualizations easy and are fully supported in Azure Notebooks

```
plt.scatter(years, mean)
plt.title('scatter plot of mean temp difference vs year')
plt.xlabel('years', fontsize=12)
plt.ylabel('mean temp difference', fontsize=12);
sns.regplot(yearsBase, meanBase)
plt.show()
```



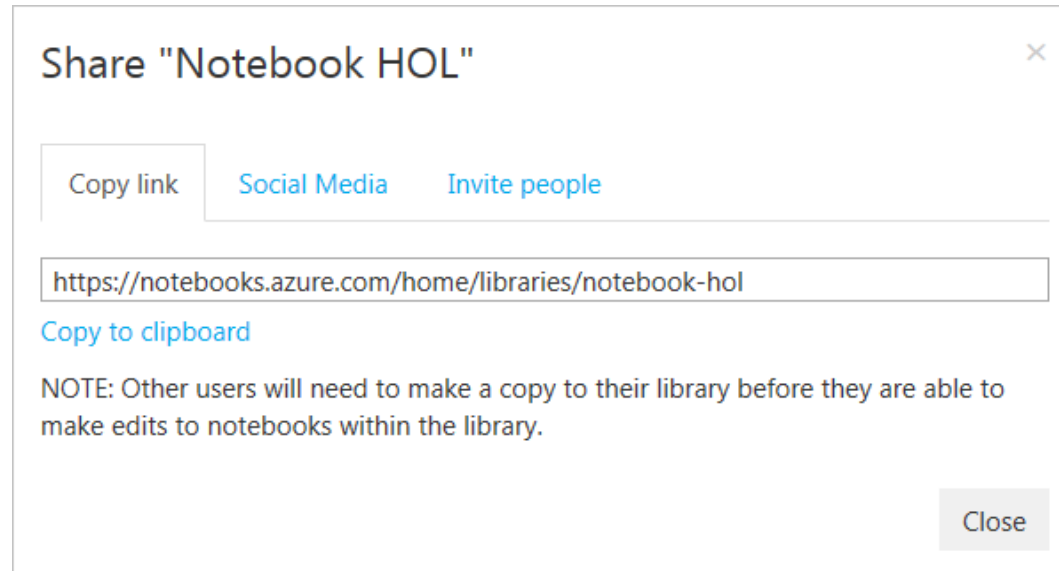
Slideshows

- Slideshows are easily created from Azure Notebooks
- Designate a behavior for each cell (e.g., slide or fragment) and click a button to enter slideshow mode



Sharing Notebooks

- Notebooks can be shared via URL, social media, or e-mail
- Great for collaboration or simply sharing results





© 2016 Microsoft Corporation. All rights reserved. Microsoft, Windows, Windows Vista and other product names are or may be registered trademarks and/or trademarks in the U.S. and/or other countries. The information herein is for informational purposes only and represents the current view of Microsoft Corporation as of the date of this presentation. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information provided after the date of this presentation. MICROSOFT MAKES NO WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AS TO THE INFORMATION IN THIS PRESENTATION.