

- A note about yesterday's robotics: Even if you are **not** an SME student, we will find a way through the SME Virtual Network to get you involved.
- There is a list for long-term SME Virtual Network projects (many of which will use Python heavily if not completely). **Any** SME student or professional can be project lead if they want. The repo is here: <http://bit.ly/2Flc0xG>.
- There is a new Jupyter project that was just released in beta – JupyterLab (an “enhancement” of Jupyter Notebooks). We will look at that option. A pretty good blog post on JupyterLab is here: <http://bit.ly/2odWyoI>.
- If you have any feedback on how to improve this workshop or future workshops in the future, feel free to leave a comment on GitHub here: <http://bit.ly/2FdmxCZ>. (You can also use the other feedback methods also).

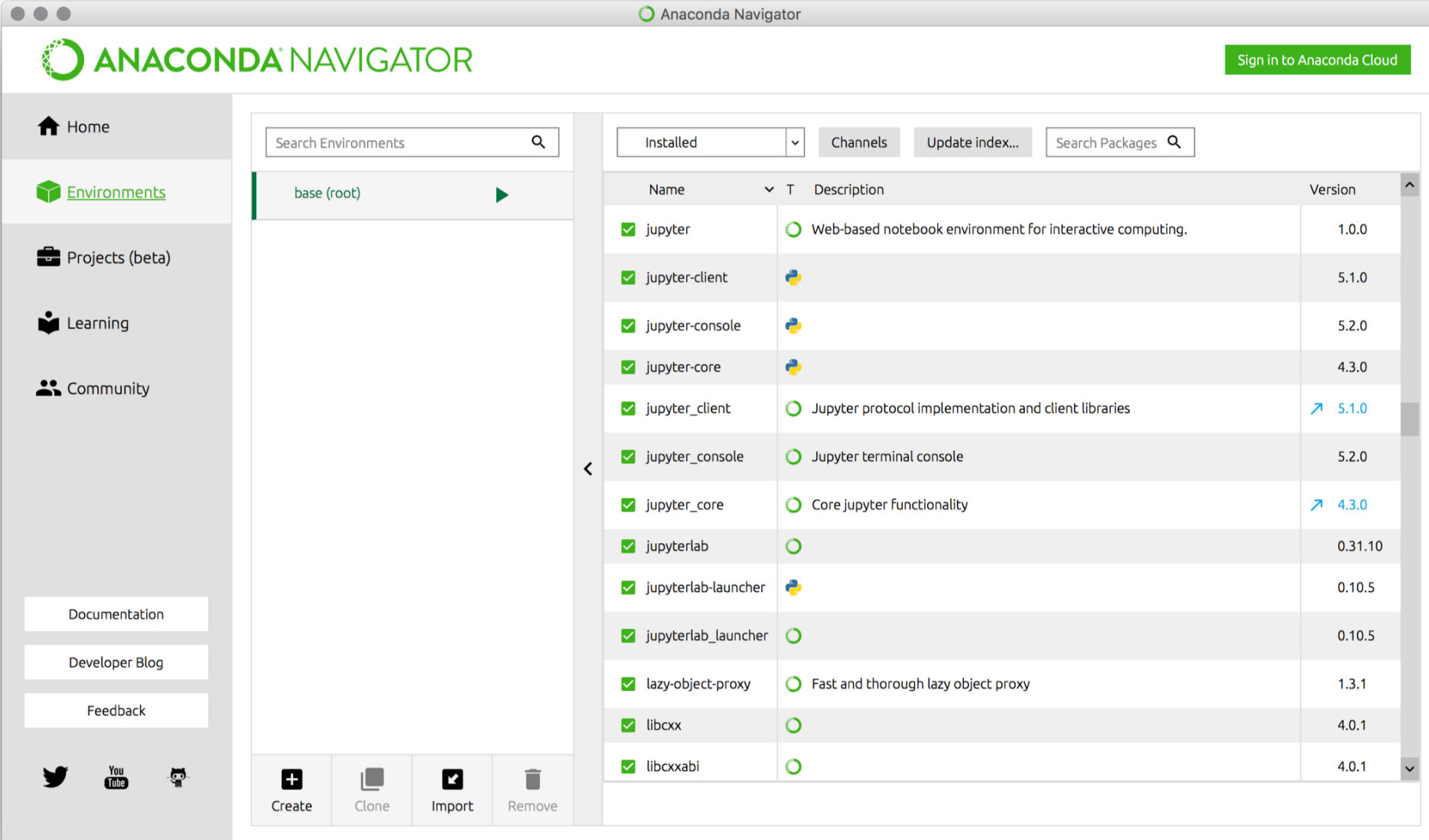
All SME Virtual Network projects will support **beginner friendly** labels on issues.

You can “claim” an issue by adding a comment to the issue which contains the word **claim**.

Want a list of other “beginner-friendly” Python open-source projects?

<http://bit.ly/2Fb2KUM>

Python Virtual Environments



The screenshot displays the Anaconda Navigator application window. The title bar reads "Anaconda Navigator". The main header features the Anaconda logo and the text "ANACONDA NAVIGATOR", along with a "Sign in to Anaconda Cloud" button. The left sidebar contains navigation links: Home, Environments (selected), Projects (beta), Learning, and Community. Below these are links to Documentation, Developer Blog, and Feedback, and social media icons for Twitter, YouTube, and GitHub.

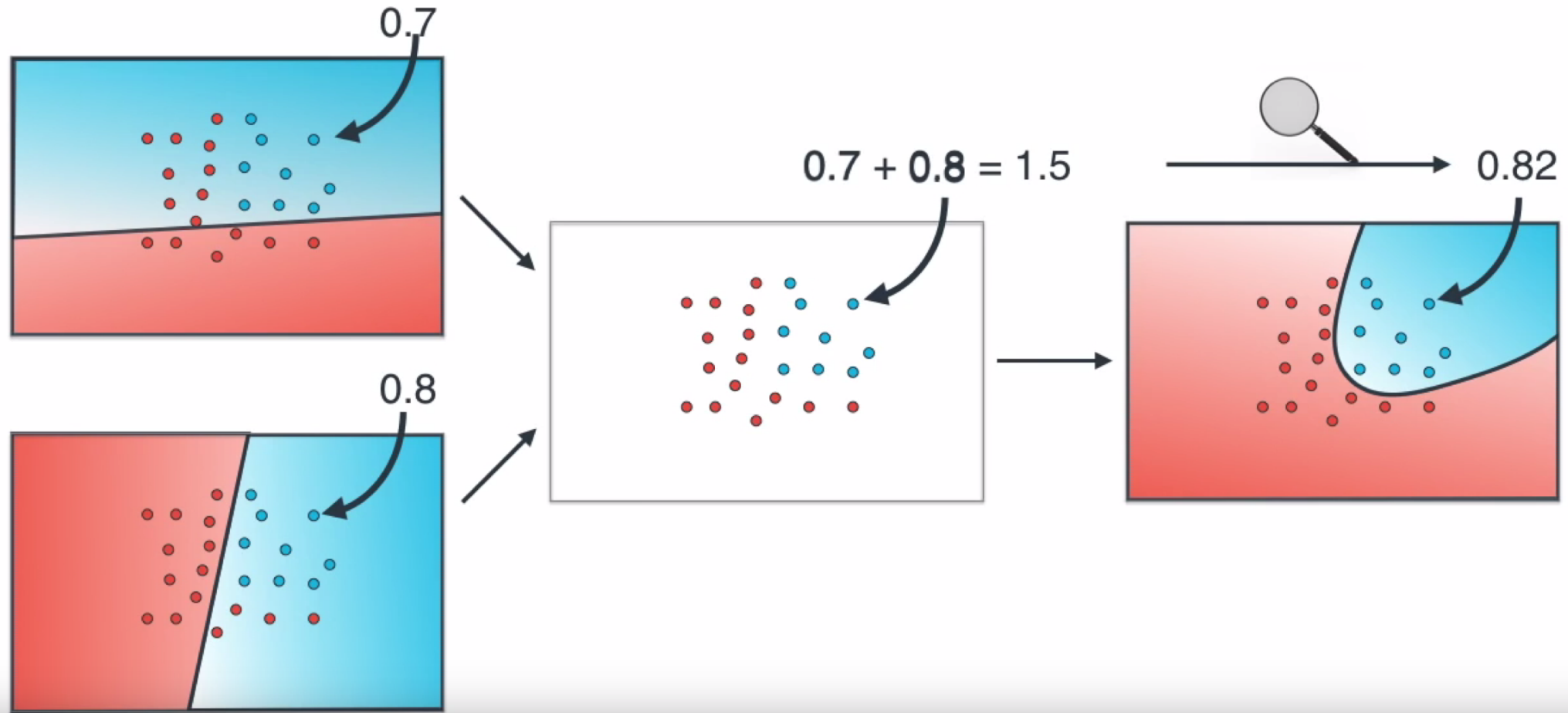
The main content area is divided into two panels. The left panel, titled "Search Environments", shows a list of environments with "base (root)" selected. The right panel, titled "Installed", shows a list of installed packages. At the top of the right panel are tabs for "Installed", "Channels", and "Update index...", along with a "Search Packages" search bar.

Name	T	Description	Version
✓ jupyter	🍷	Web-based notebook environment for interactive computing.	1.0.0
✓ jupyter-client	🐍		5.1.0
✓ jupyter-console	🐍		5.2.0
✓ jupyter-core	🐍		4.3.0
✓ jupyter_client	🍷	Jupyter protocol implementation and client libraries	5.1.0
✓ jupyter_console	🍷	Jupyter terminal console	5.2.0
✓ jupyter_core	🍷	Core jupyter functionality	4.3.0
✓ jupyterlab	🍷		0.31.10
✓ jupyterlab-launcher	🐍		0.10.5
✓ jupyterlab_launcher	🍷		0.10.5
✓ lazy-object-proxy	🍷	Fast and thorough lazy object proxy	1.3.1
✓ libcxx	🍷		4.0.1
✓ libcxxabi	🍷		4.0.1

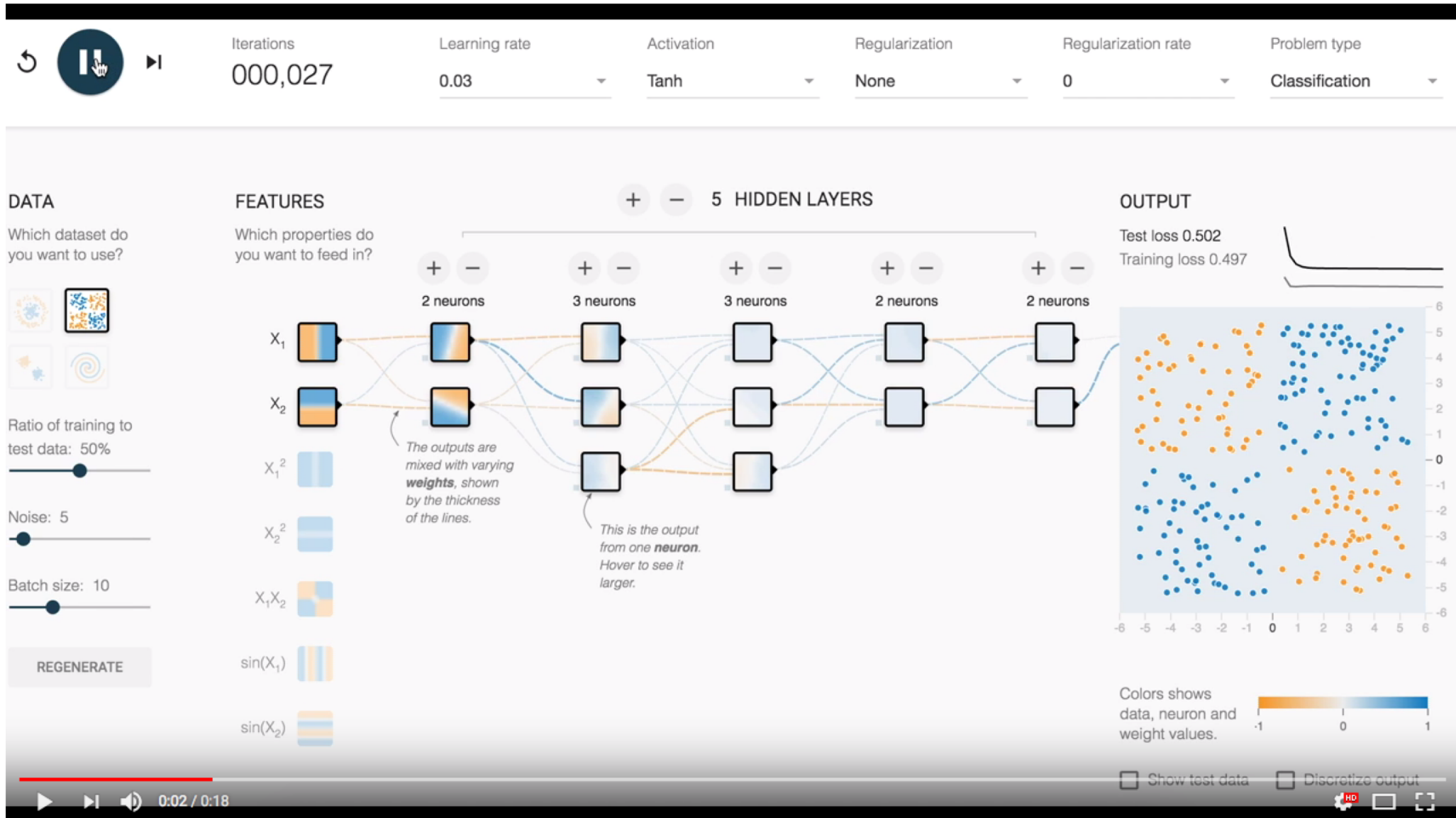
At the bottom of the right panel, there are four buttons: "Create", "Clone", "Import", and "Remove".

TensorFlow Playground

Neural Network



TensorFlow Playground

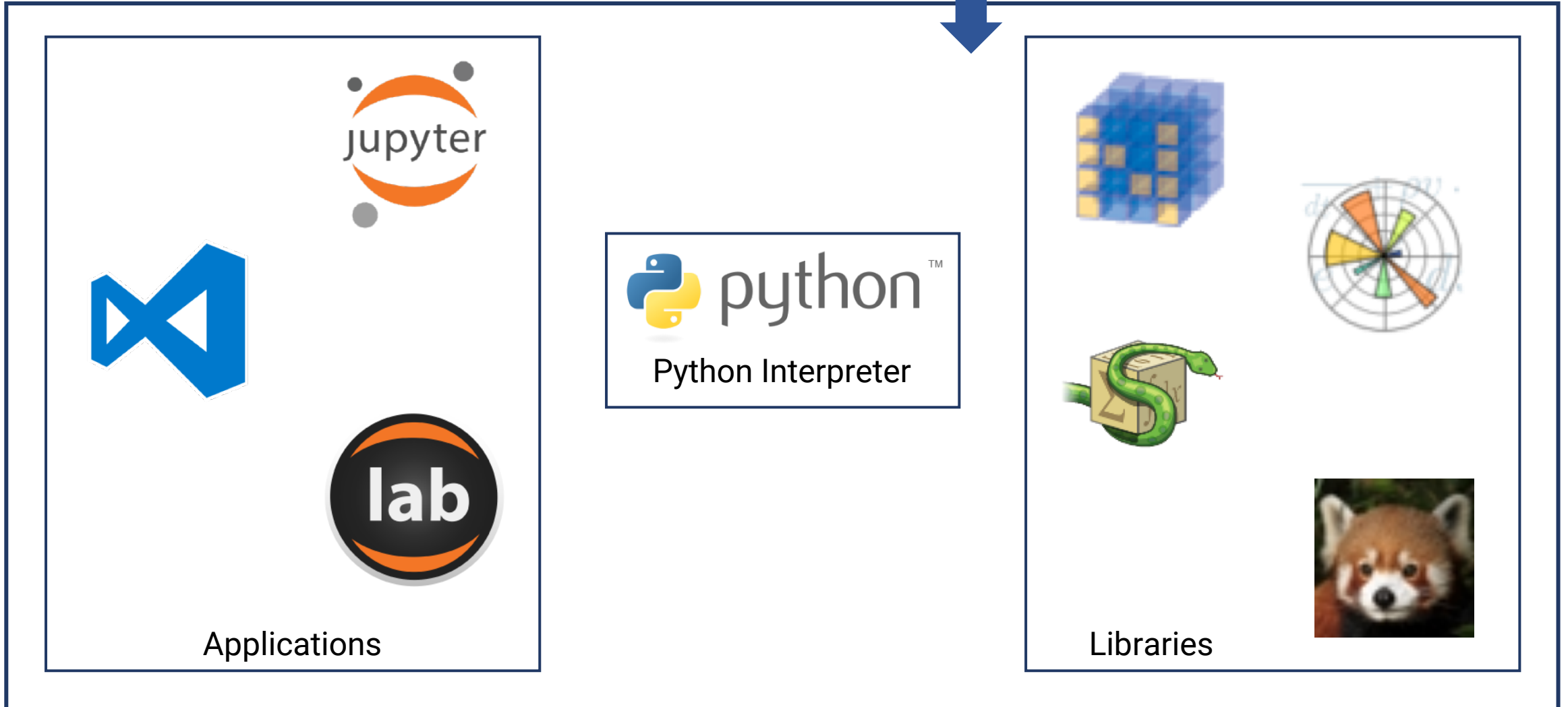


Anaconda Ecosystem

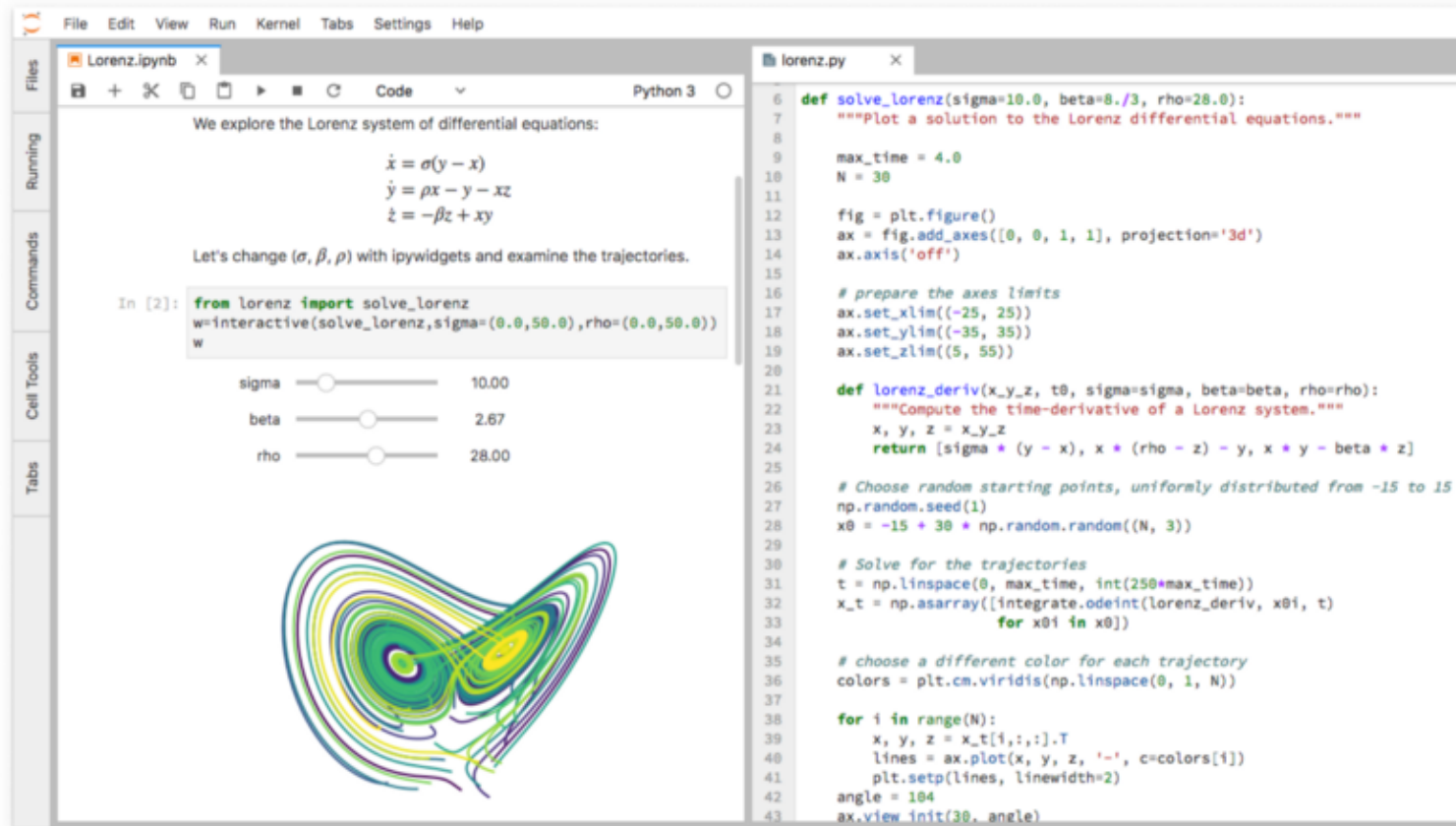
[Anaconda Cloud](#)

```
conda install -c <channel> <package name>
```

Anaconda



JupyterLab




Install JupyterLab into your Anaconda install:
`conda install -c conda-forge jupyterlab`

The actual Anaconda Cloud entry is here:

<http://bit.ly/2Facu5r>

JupyterLab

Applications on base (root) Channels




jupyterlab

0.31.10

An extensible environment for interactive and reproducible computing, based on the Jupyter Notebook and Architecture.

Launch




notebook

[↗ 5.0.0](#)

Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis.



Launch



PyQt

mult

Google Colaboratory

 Hello, Colaboratory 

File Edit View Insert Runtime Tools Help

CODE TEXT CELL CELL COPY TO DRIVE DISCARD CHANGES

CONNECTED EDITING

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For more information:

SECTION

Welcome to Colaboratory!

Colaboratory is a Google research project created to help disseminate machine learning education and research. It's a Jupyter notebook environment that requires no setup to use and runs entirely in the cloud.

Colaboratory notebooks are stored in [Google Drive](#) and can be shared just as you would with Google Docs or Sheets. Colaboratory is free to use.

For more information, see our [FAQ](#).

GPU Support (NEW!)

Colab now supports running TensorFlow computations on a GPU. Simply select "GPU" in the Accelerator drop-down in Notebook Settings (either through the Edit menu or the command palette at cmd/ctrl-shift-P).

```
import tensorflow as tf
tf.test.gpu_device_name()

'/device:GPU:0'
```

Python 3

Colab now supports both Python2 and Python3 for code execution.

- When creating a new notebook, you'll have the choice between Python 2 and Python 3.
- You can also change the language associated with a notebook; this information will be written into the `.ipynb` file itself, and thus will be preserved for future sessions.

```
[ ] import sys
print('Hello, Colaboratory from Python {}'.format(sys.version_info[0]))
```

Hello, Colaboratory from Python 3!

TensorFlow execution

Colaboratory allows you to execute TensorFlow code in your browser with a single click. The example below adds two matrices.

$$\begin{bmatrix} 1. & 1. & 1. \\ 1. & 1. & 1. \end{bmatrix} + \begin{bmatrix} 1. & 2. & 3. \\ 4. & 5. & 6. \end{bmatrix} = \begin{bmatrix} 2. & 3. & 4. \\ 5. & 6. & 7. \end{bmatrix}$$

```
[ ] import tensorflow as tf
import numpy as np

with tf.Session():
    input1 = tf.constant(1.0, shape=[2, 3])
    input2 = tf.constant(np.reshape(np.arange(1.0, 7.0, dtype=np.float32), (2, 3)))
    output = tf.add(input1, input2)
    result = output.eval()
```

Today's Agenda

- A brief look at the new [JupyterLab](#) browser-based IDE.
- A quick look at the 'Model a CNC Machine Tool' sample:
<http://bit.ly/2GZTBPe>
- REST API Example in Django
(<https://www.djangoproject.com>). A really good library for this is [Django REST Framework](#).

IIoT Fundamentals and Applications

(Public Webinar)

Tuesday, March 20, 2018

11:00 am CST (12:00 pm EST)

<http://bit.ly/2oEX9Qe>

Tuesday, March 20, 2018

6:00 pm CST (7:00 pm EST)

<http://bit.ly/2oOrNpH>

Python Fundamentals for Engineers and Manufacturers

(SME members-only Workshop)

Wednesday, March 28, 2018 through Friday, March 30, 2018

11:00 am CST (12:00 pm EST) each day

<http://bit.ly/2oOT8l3>

How to Get Your Product Manufactured

(Public Webinar)

Tuesday, April 17, 2018

6:00 pm CST (7:00 pm EST)

<http://bit.ly/2oHmuct>

Introduction to Machine Vision

(Public Webinar)

Tuesday, May 15, 2018

11:00 am CST (12:00 pm EST)

<http://bit.ly/2H3kqBY>

Tuesday, May 15, 2018

6:00 pm CST (7:00 pm EST)

<http://bit.ly/2CVYYN3>