

Artificial Intelligence

Fundamental with Python



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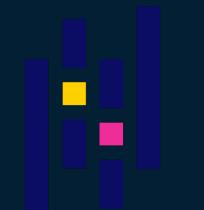
Setup works environment

Setup works environment

Installing and configuring

Artificial Intelligence Tools of use

- Prerequisite
- Python
- Numpy
- Pandas
- Matplotlib
- Scikit-Learn
- Keras
- Tensorflow
- Anaconda
- Weka*



pandas

matplotlib



IP[y]:

statsmodels



K Keras



Prerequisite

Basic requirements



OpenJDK

Computer specification

- A Computer
 - **Windows or MacOS or Linux operating system**
 - **64bits**
- **JDK8 or OpenJDK8**
 - <https://openjdk.java.net/>
 - `java -version`

Python

Python is an interpreted high-level general-purpose programming language.



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```
# Python 3: Fibonacci series up to n
>>> def fib(n):
>>>     a, b = 0, 1
>>>     while a < n:
>>>         print(a, end=' ')
>>>         a, b = b, a+b
>>>     print()
>>> fib(1000)
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610
987
```



Functions Defined

The core of extensible programming is defining functions. Python allows mandatory and optional arguments, keyword arguments, and even arbitrary argument lists. [More about defining functions in Python 3](#)

[1](#) [2](#) [3](#) [4](#) [5](#)

Python is a programming language that lets you work quickly and integrate systems more effectively. [» Learn More](#)

Get Started

Whether you're new to programming or an experienced

Download

Python source code and installers are available for download for all

Docs

Documentation for Python's standard library, along with tutorials

Jobs

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[Download Python 3.10.1](#)

Looking for Python with a different OS? Python for [Windows](#), [Linux/UNIX](#), [macOS](#), [Other](#)

Want to help test development versions of Python? [Prereleases](#), [Docker images](#)

Looking for Python 2.7? See below for specific releases

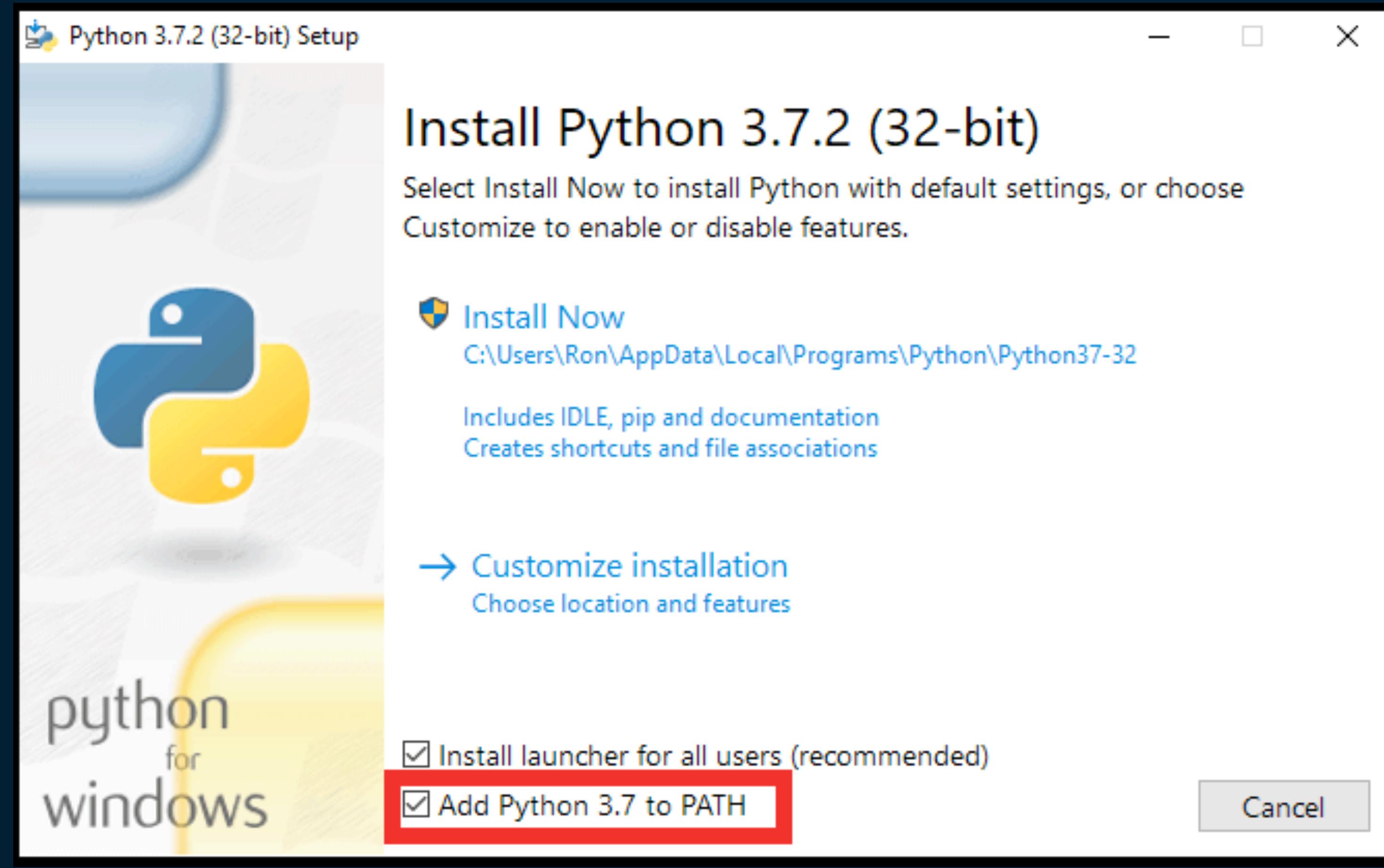


Active Python Releases
For more information visit the Python Developer's Guide.

Python version	Maintenance status	First released	End of support	Release schedule

Download and install python 3

Download python 3 at python.org/downloads/ and install



Add Python 3.x to PATH

Make sure you select the option *Add Python to PATH*



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Find, install and publish Python packages with the Python Package Index

Search projects



[Or browse projects](#)

350,360 projects

3,155,792 releases

5,436,546 files

563,998 users

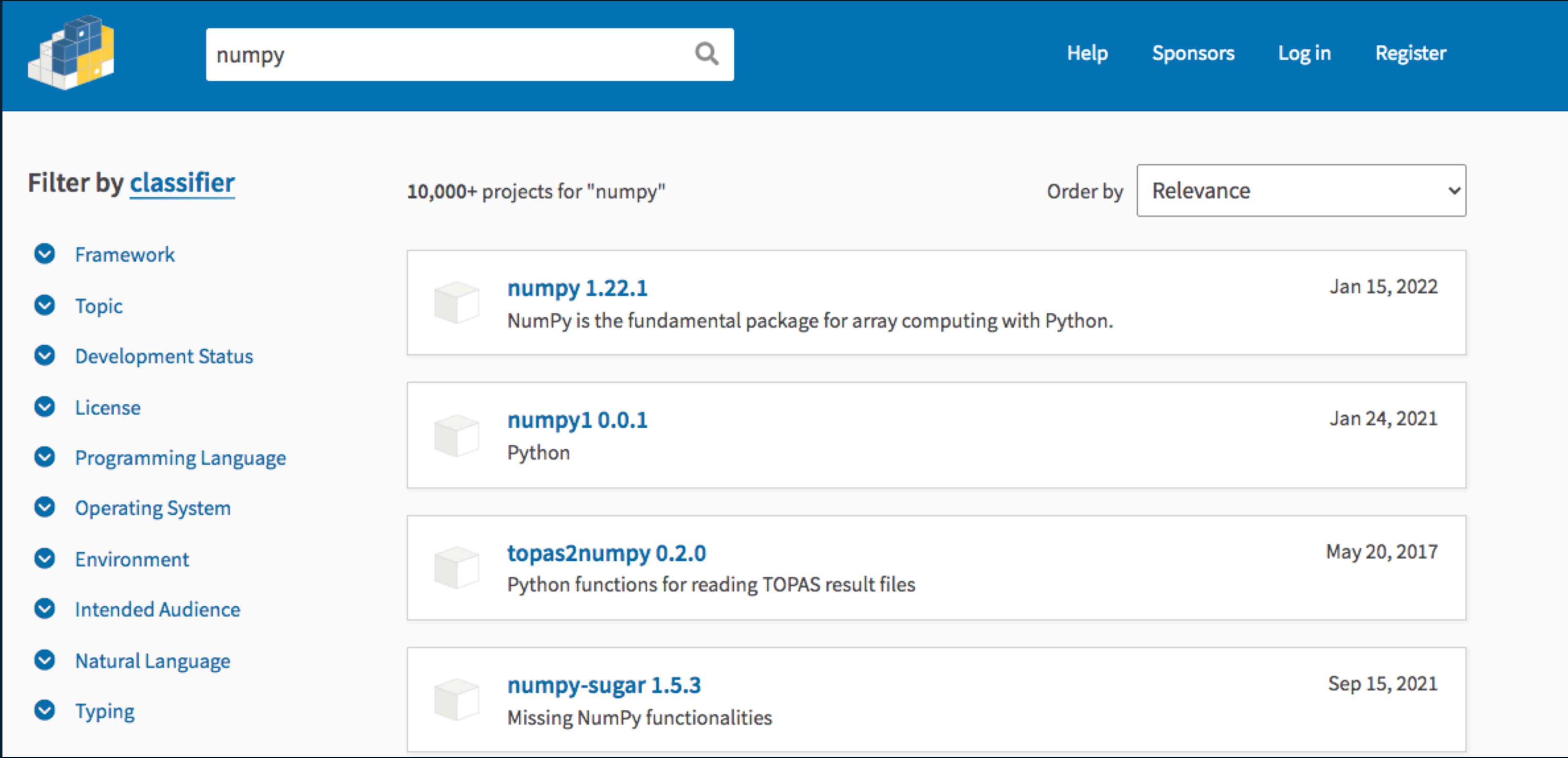


The Python Package Index (PyPI) is a repository of software for the Python programming language.

PyPI helps you find and install software developed and shared by the Python community. [Learn about installing packages ↗](#)

Package authors use PyPI to distribute their software. [Learn how to package your Python code for PyPI ↗](#)

Search python packages via [PyPI.org](#)



The screenshot shows the PyPI search interface with the query "numpy". The results page displays 10,000+ projects. The results are ordered by relevance, with the top four entries shown:

- numpy 1.22.1** - Published Jan 15, 2022. Description: NumPy is the fundamental package for array computing with Python.
- numpy1 0.0.1** - Published Jan 24, 2021. Description: Python
- topas2numpy 0.2.0** - Published May 20, 2017. Description: Python functions for reading TOPAS result files
- numpy-sugar 1.5.3** - Published Sep 15, 2021. Description: Missing NumPy functionalities

On the left, there is a sidebar titled "Filter by classifier" with dropdown menus for Framework, Topic, Development Status, License, Programming Language, Operating System, Environment, Intended Audience, Natural Language, and Typing.

For example search numpy



Search projects



Help

Sponsors

Log in

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numpy 1.22.1



Latest version

pip install numpy

Released: Jan 15, 2022

NumPy is the fundamental package for array computing with Python.

Navigation

Project description

Release history

Download files

Project description

It provides:

- a powerful N-dimensional array object
- sophisticated (broadcasting) functions
- tools for integrating C/C++ and Fortran code
- useful linear algebra, Fourier transform, and random number capabilities

Then use pip to install the package
pip install numpy

Python

Installing and configuring

1. `python --version`
2. `python -m pip --version`

Anaconda

A distribution of the Python and R programming languages for scientific computing, that aims to simplify package management and deployment.



Anaconda



- These packages come with Anaconda
Numpy, Pandas, Matplotlib, SciPy, Statsmodel, IPython, Jupyter, etc.

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Your data science toolkit

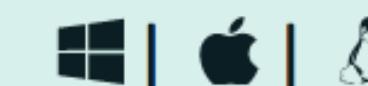
With over 25 million users worldwide, the open-source Individual Edition (Distribution) is the easiest way to perform Python/R data science and machine learning on a single machine. Developed for solo practitioners, it is the toolkit that equips you to work with thousands of open-source packages and libraries.

Anaconda Individual Edition

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For MacOS

Python 3.9 • 64-Bit Graphical Installer • 515 MB

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Your data science toolkit

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Anaconda Individual Edition

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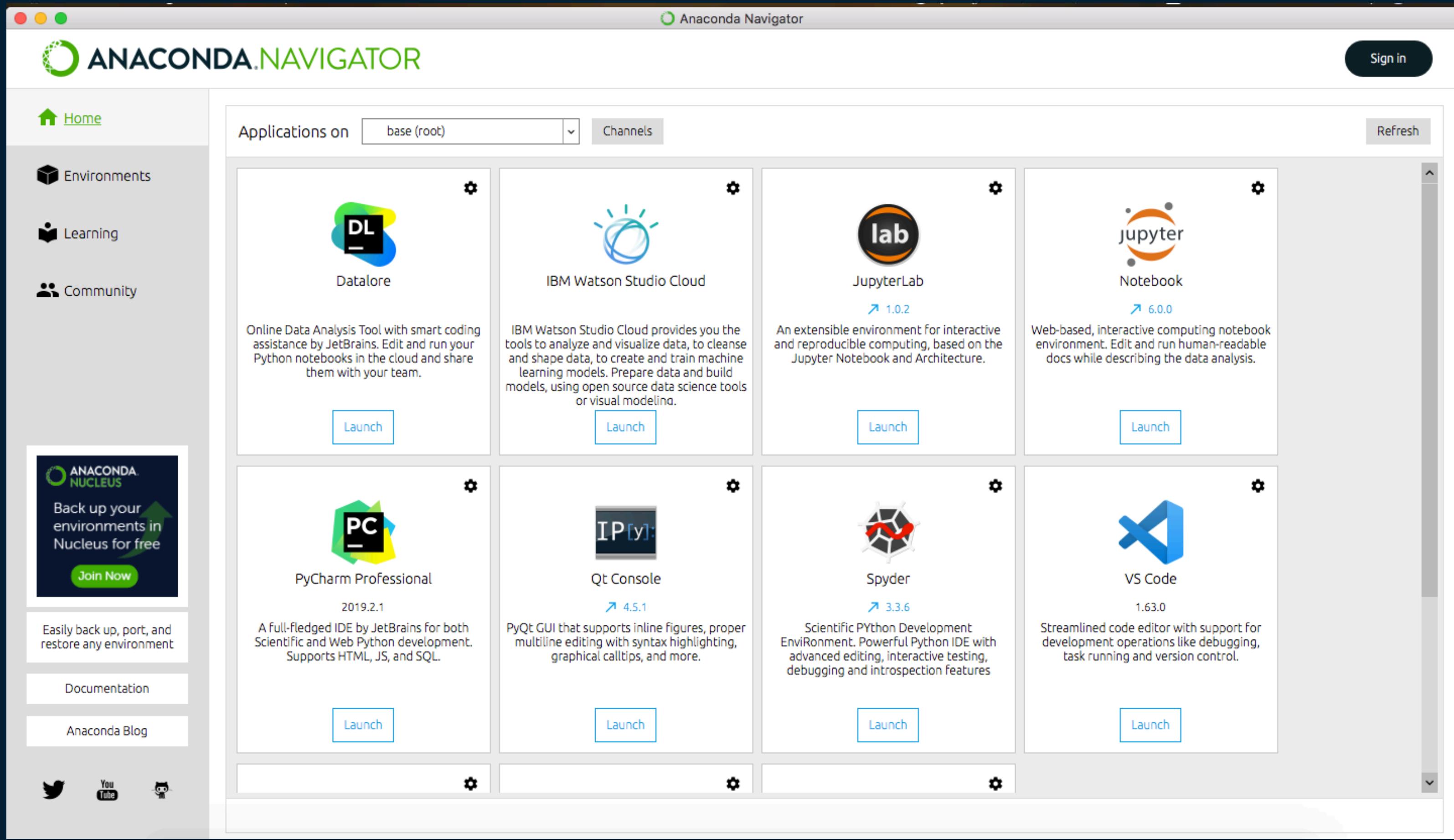
For MacOS

Python 3.9 • 64-Bit Graphical Installer • 515 MB

[Get Additional Installers](#)

Download and install

<https://www.anaconda.com/products/individual>



Anaconda Navigator

Use the Anaconda Navigator to launch Spyder, Jupyter Notebook, install and update packages, or open a command-line terminal.

Editor / IDE

Use to **edit**, **compile** and **run** programming source code

Editor / IDE

- Jupyter
- IPython
- Spyder IDE
- Visual Studio Code
- PyCharm

IP[y]:



spyder

Jupyter

Project Jupyter is a non-profit, open-source project, born out of the IPython Project in 2014 as it evolved to support **interactive data science and scientific computing** across all programming languages.





Institutional Partners

Institutional Partners are organizations that support the project by employing Jupyter Steering Council members. Current Institutional Partners include:



Institutional Partner with Jupyter

Source: <https://jupyter.org/>

Currently in use at



AYASDI

Berkeley
UNIVERSITY OF CALIFORNIA

Bloomberg

BRYN MAWR
COLLEGE

CAL POLY
SAN LUIS OBISPO

CLEMSON
UNIVERSITY

COCALC

<CODE NEURO>

The Data Incubator

THE GEORGE
WASHINGTON
UNIVERSITY
WASHINGTON, DC

Google

IBM

hhmi janelia
Research Campus

Los Angeles Times

MICHIGAN STATE
UNIVERSITY

Microsoft



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University

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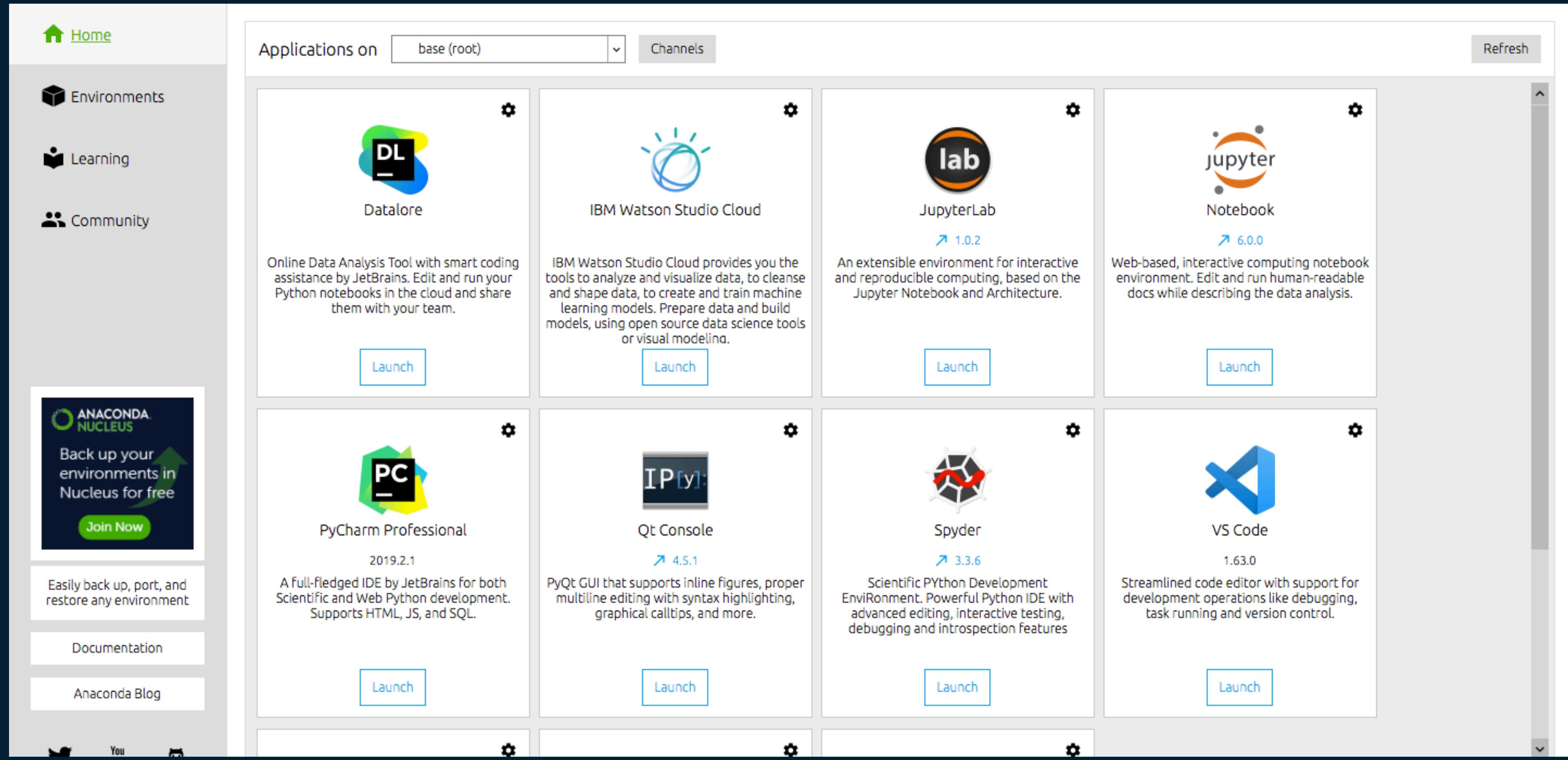
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Scientific Computing

rackspace.
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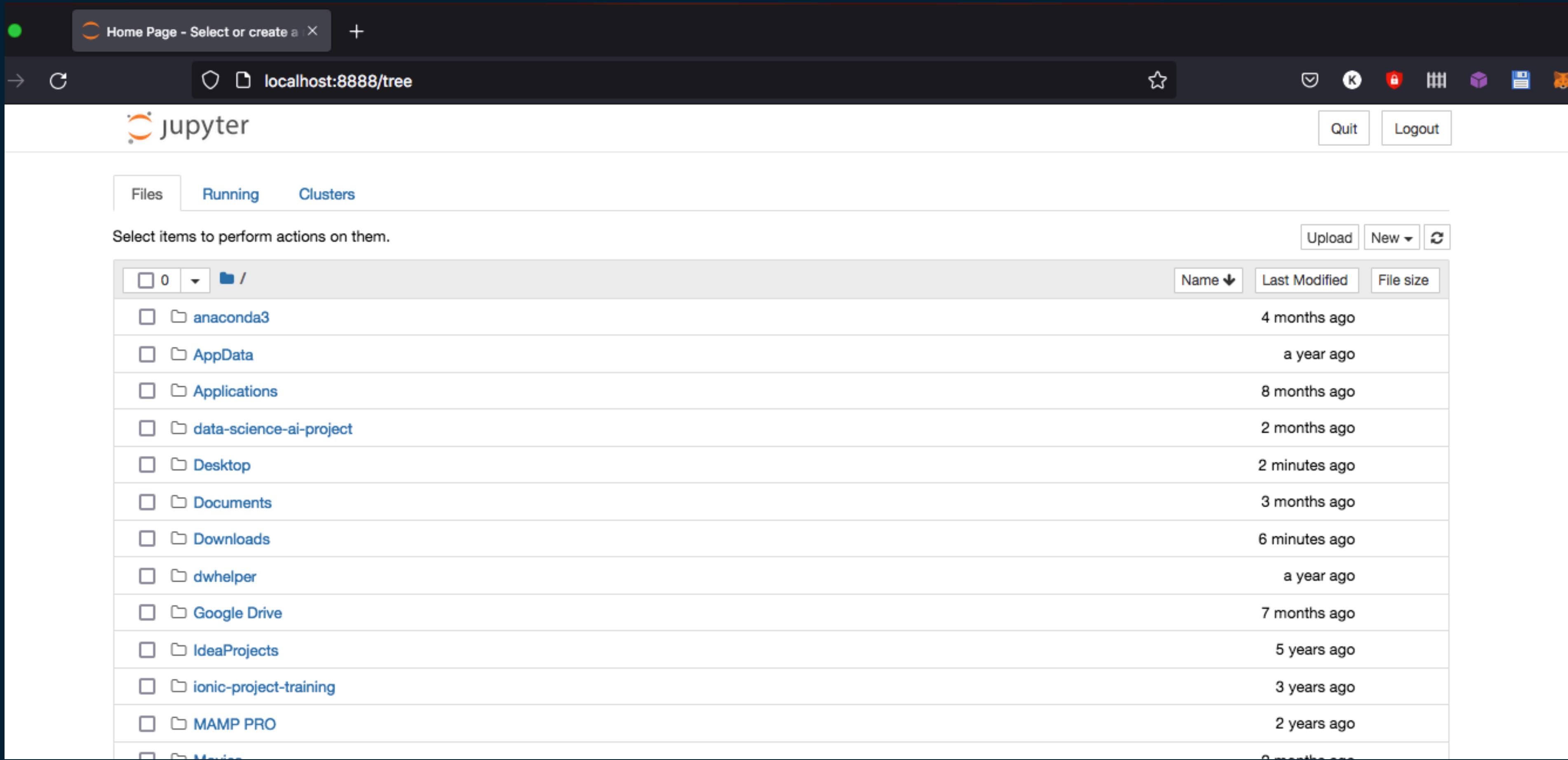
Who use Jupyter

Source: <https://jupyter.org/>



In Anaconda Navigator click **Lunch Jupyter Notebook**

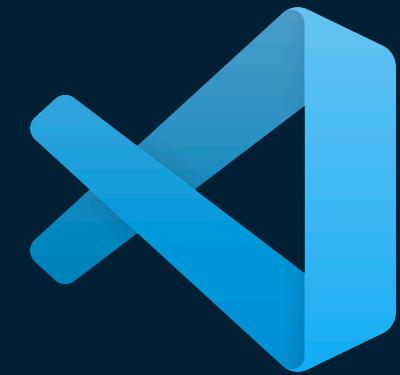
IPython, JupyterLab, Spider and VS Code



Jupyter Notebook

After Lunch in Jupyter Notebook, the Web Browser window will appear

Visual Studion Code



Jupyter Extension for Visual Studio Code

- Jupyter
- Jupyter Notebook Renderers

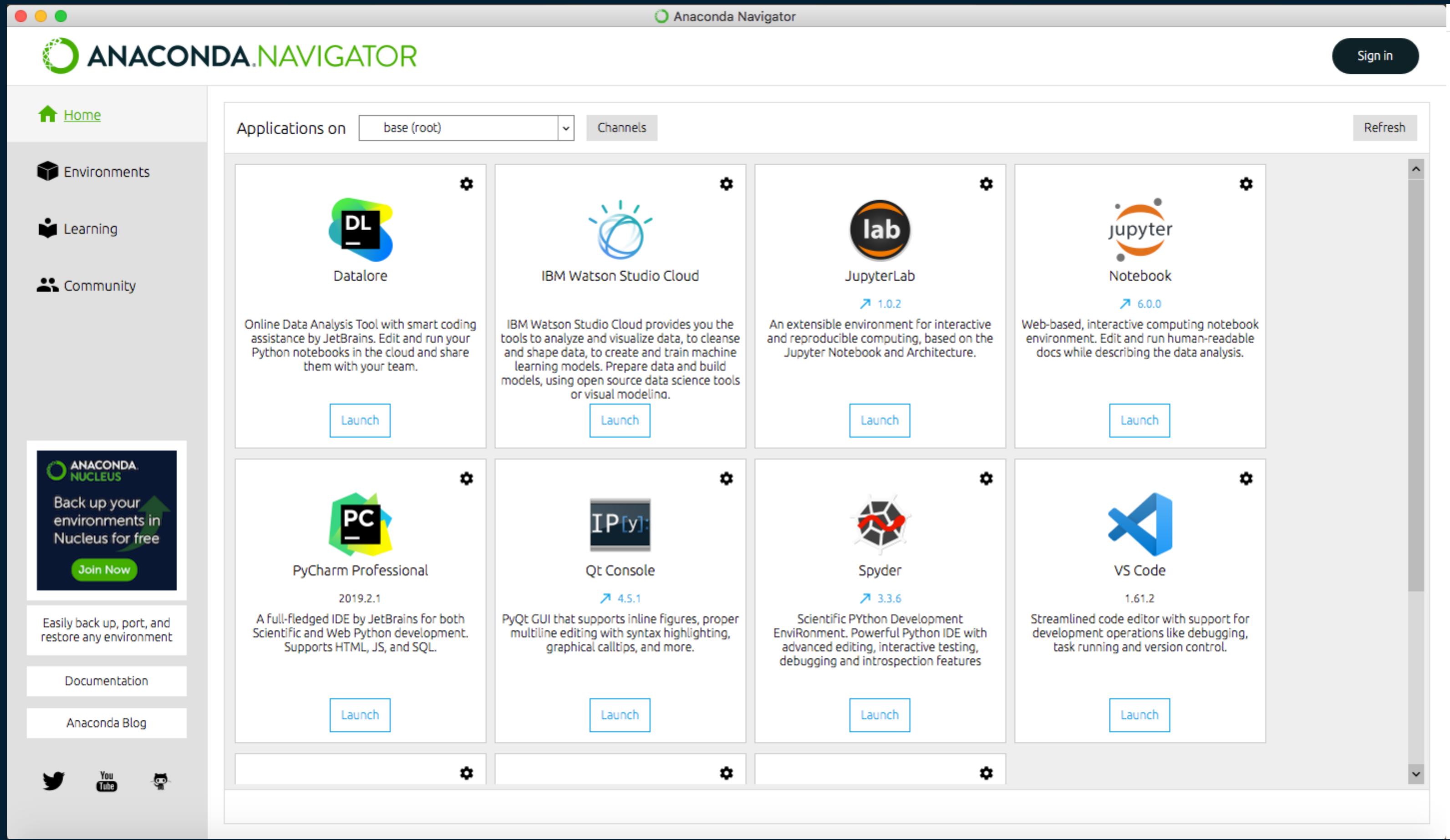
AI/ML Software Platform

Anaconda, Python, Pandas, NumPy, Matplotlib, Scikit-learn

Weka

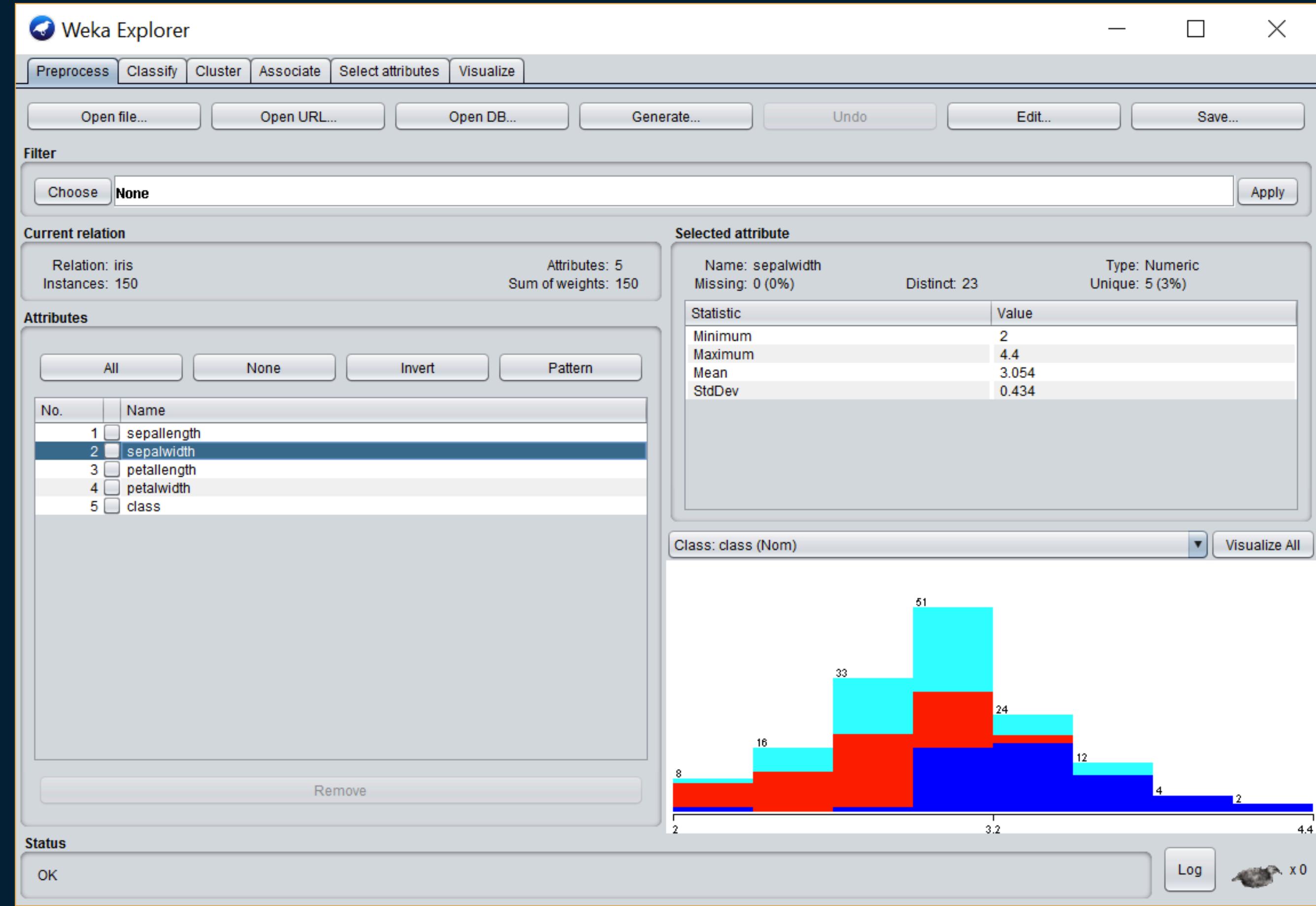
RapidMiner





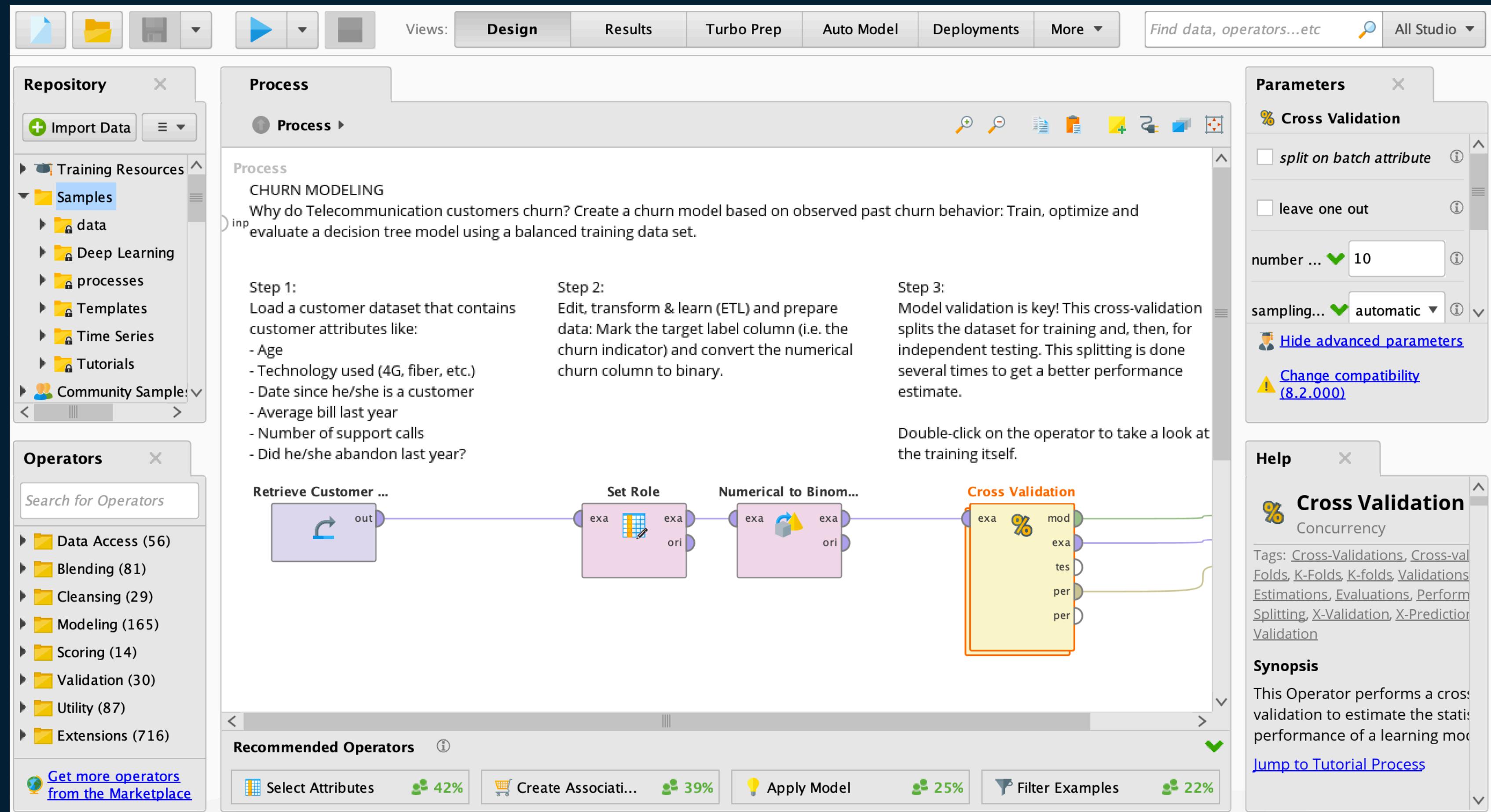
Anaconda

A distribution of the Python and R programming languages for scientific computing, that aims to simplify package management and deployment.



Weka

Weka is a collection of machine learning algorithms for data mining tasks. It contains tools for data preparation, classification, regression, clustering, association rules mining, and visualization.



RapidMiner Studio

RapidMiner is a data science software platform that provides an integrated environment for data preparation, machine learning, deep learning, text mining, and predictive analytics.

Version Control



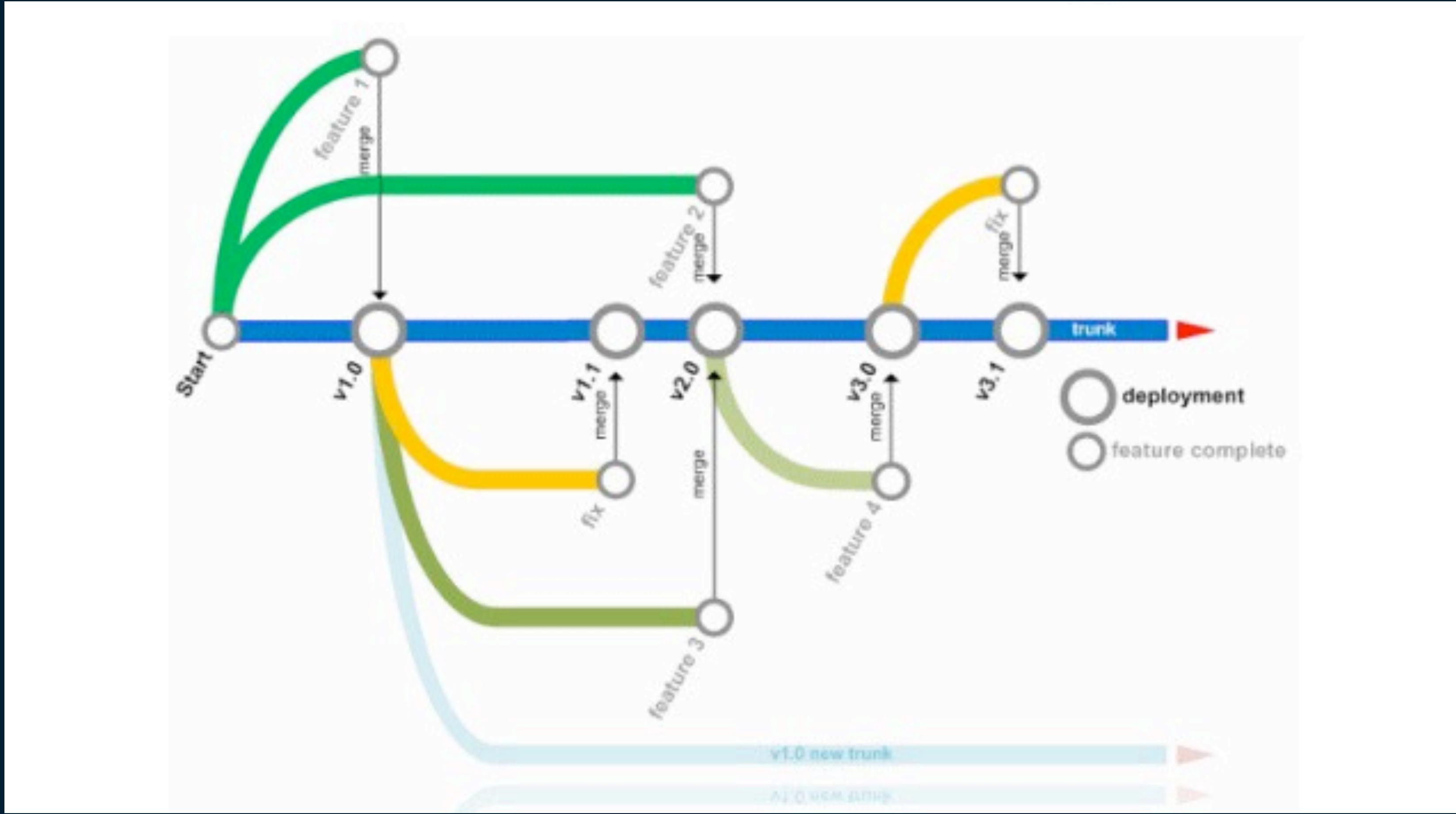
Version Control

Git is software for **tracking changes** in any set of files, usually used for **coordinating work** among programmers **collaboratively** developing source code during software development.





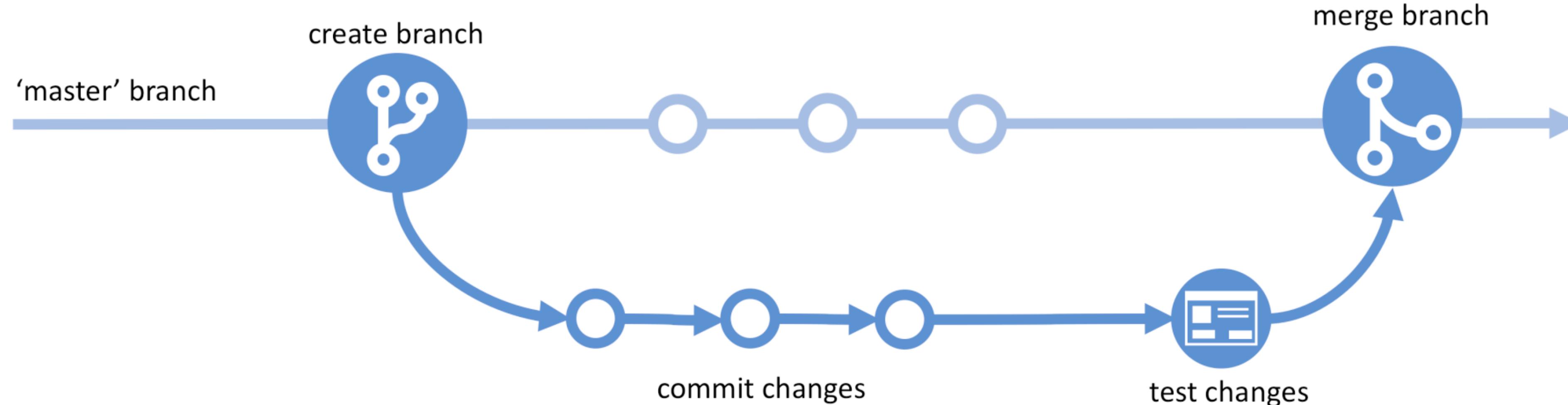
Version Control Workflow



Version Control Workflow

Version 1 -> fix bug -> add features -> version 2

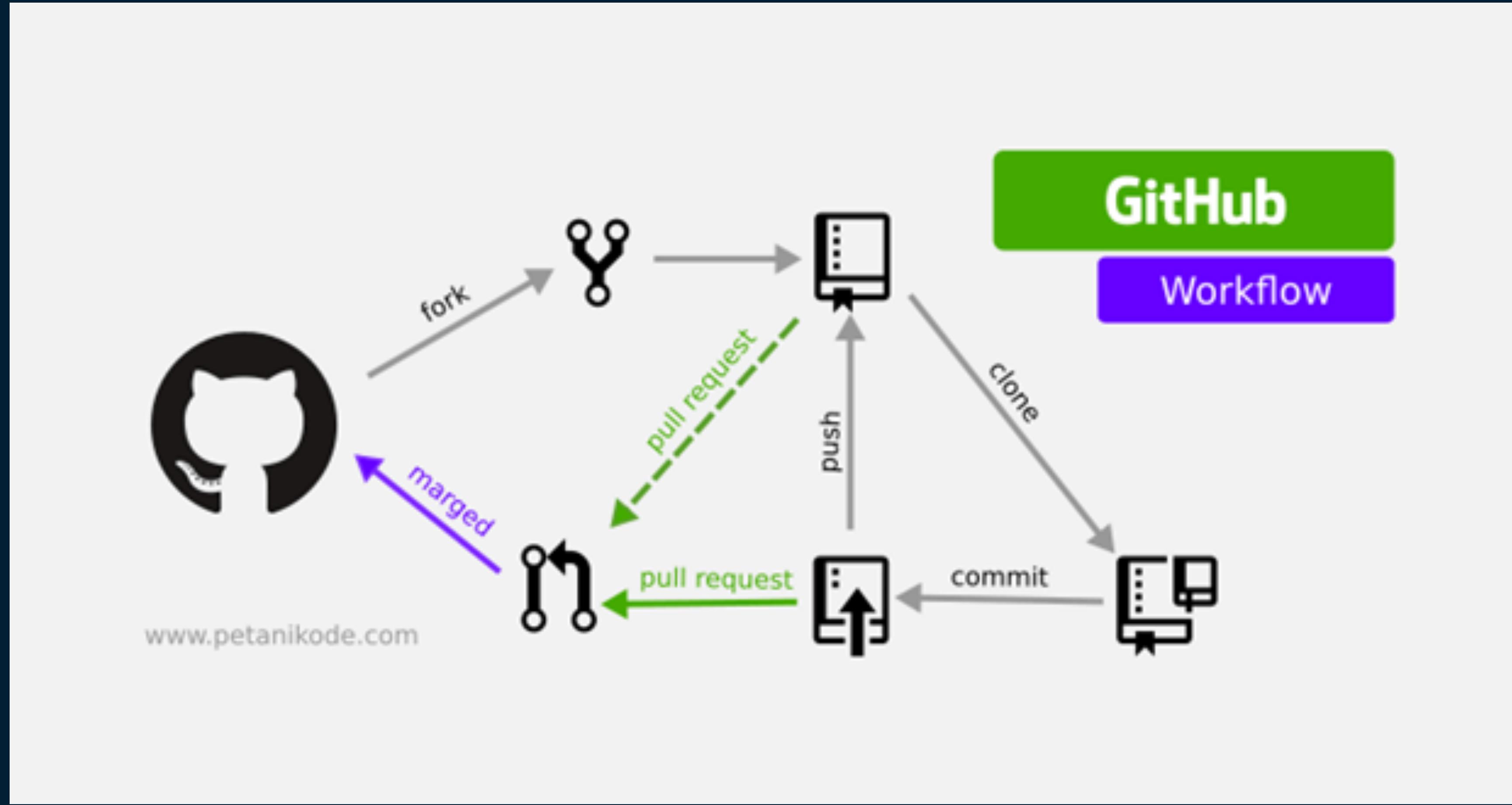
Simplified Git Flow



Copyright © 2018 Build Azure LLC

<http://buildazure.com>

Git Version Control Workflow



GitHub Workflow

Local and remote collaboratively

Version Control Software

- Git
- GitHub
- GitHub Desktop

Working with Local



Tool to manage the
repository

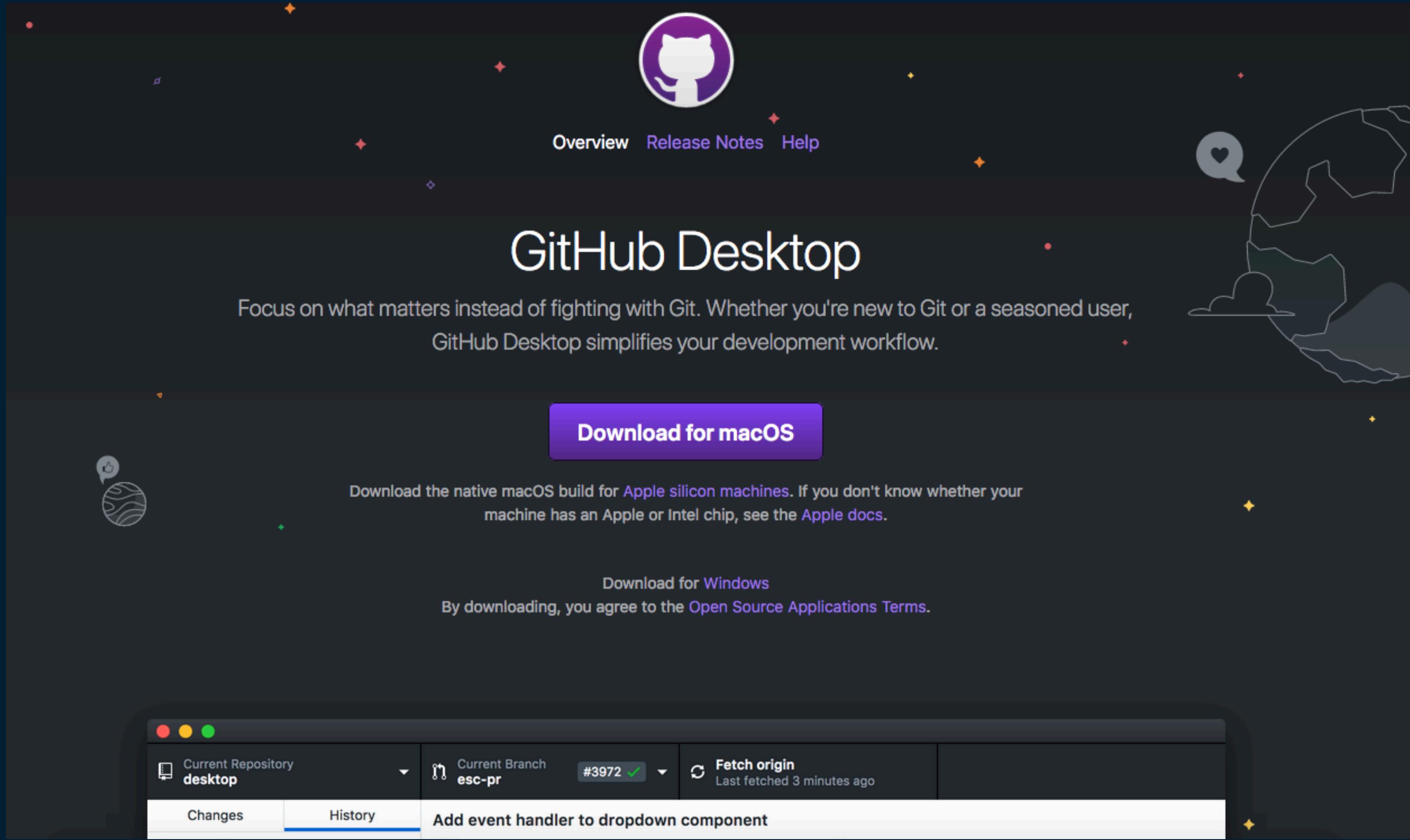
Working with Local through GUI app



Tool to manage the repository



GUI tool to manage the git and repository



GitHub Desktop

<https://desktop.github.com/>

Working with Remotes



Tool to manage the
repository



Hosting version control
repositories

GitHub Repository

- Class
 - <https://github.com/langsari/fundamentals-data-science-with-python-2021-class>
- Capstone Project
 - <https://github.com/langsari/fundamentals-data-science-with-python-2021-projects>

Weekly Open Questions

Reply through [@thefutureisdata](#)

What tools are used in AI/ML tasks?

เครื่องมืออะไรบ้างที่ใช้ในงาน Artificial Intelligence และ
Machine Learning?

Q6

Artificial Intelligence

Fundamental with Python



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