Machine Learning Lab

Master of Science in Signal Theory and Communications

TRACK: Signal Processing and Machine Learning for Big Data

Departamento de Señales, Sistemas y Radiocomunicaciones
E.T.S. Ingenieros de Telecomunicación
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What is Python?

- Python is a widely used general-purpose, high level programming language.
- It was initially designed by Guido van Rossum in 1991 and developed by Python Software Foundation.
- It was mainly developed for emphasis on code readability, and its syntax allows programmers to express concepts in fewer lines of code.
- Python is a programming language that lets you work quickly and integrate systems more efficiently.
- There are two major Python versions- **Python 2 and Python 3. Both are quite different**.

What is Python?

Python Software Foundation
https://www.python.org/doc/essays/blurb/

- Python is an interpreted, object-oriented, high-level programming language with dynamic semantics.
- … very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together.
- Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance.
- Python supports modules and packages, which encourages program modularity and code reuse. https://pypi.org/

Python Introduction

- The language and its use: shell, script, program

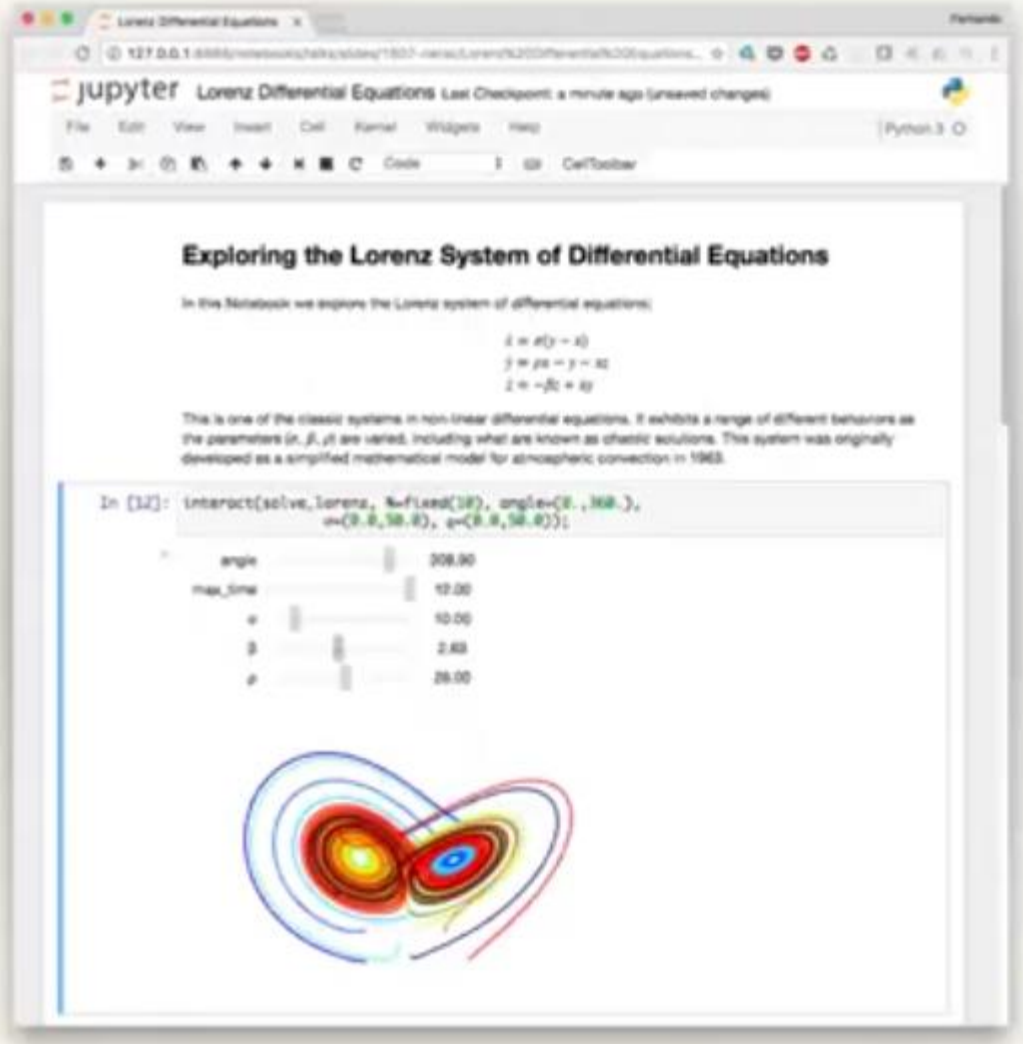
https://campus.datacamp.com/courses/intro-to-python-for-data-science/chapter-1-python-basics?ex=6

- Using Shell:
  - Operations and print
  - Variables: weight, height, BMI

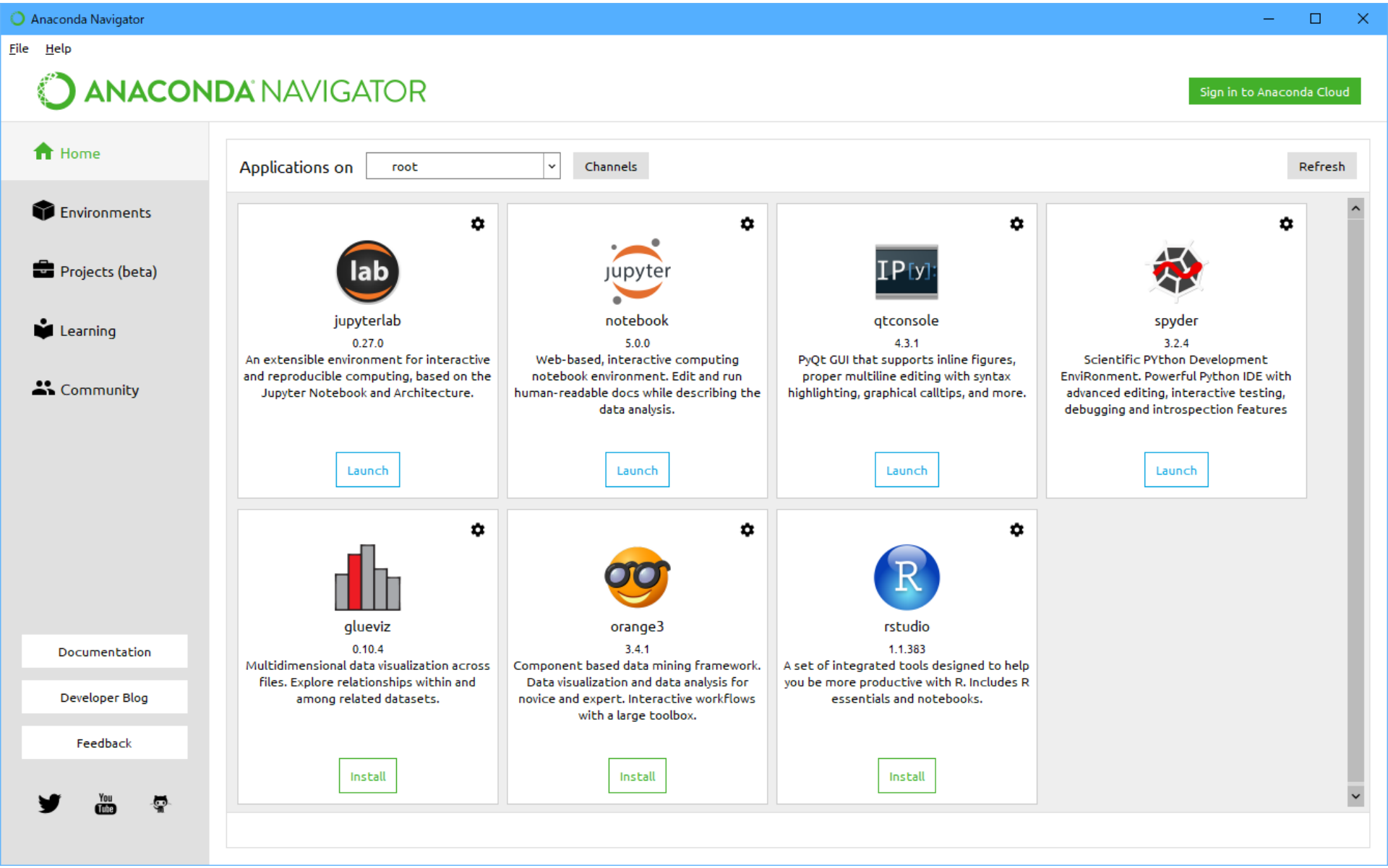
- Using .py script (test1.py)
  - Read input arguments
  - Write file
  - Read file (Configuration file : yaml, json,..)

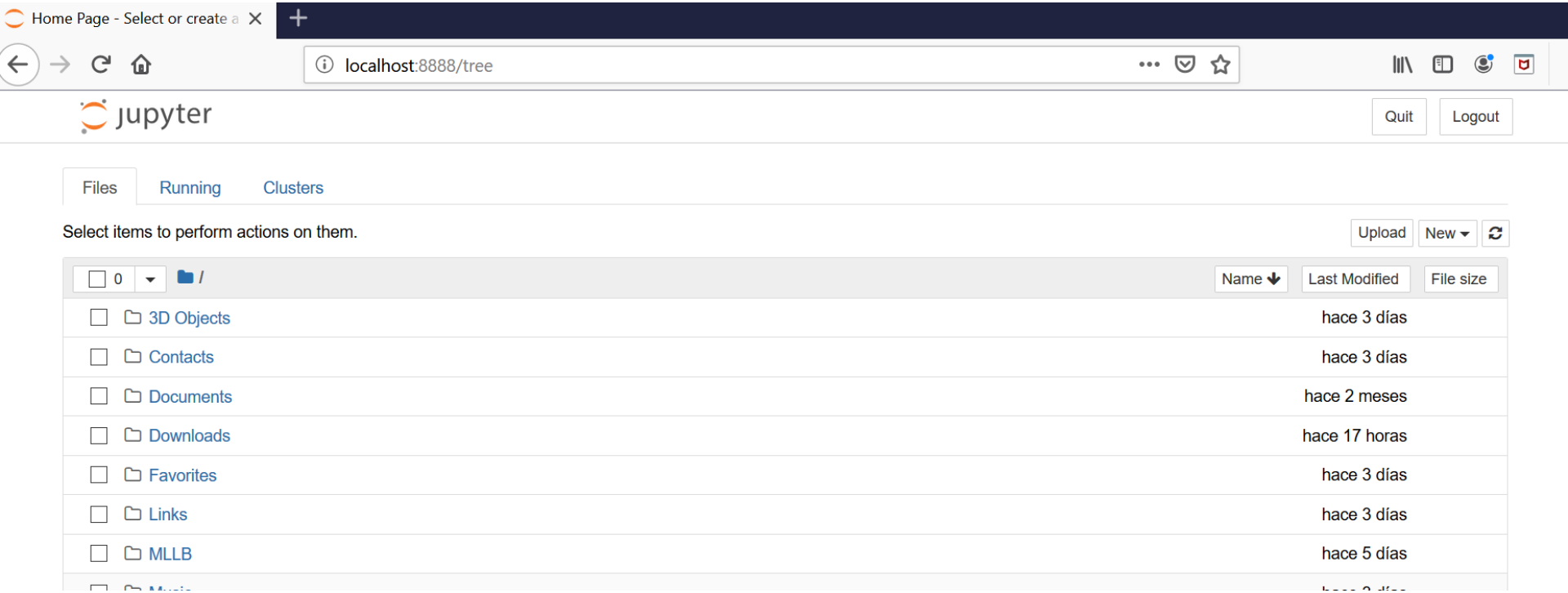
The Jupyter Notebook

- Rich web client
- Text & math
- Code
- Results
- Share, reproduce.




Gateways 2016: Fernando Perez on Project Jupyter
Jupyter Protocol
is language agnostic
jupyter
julia
python
IP[y]:
IPython
6:49 / 48:08


Anaconda Navigator
File
Help
ANACONDA NAVIGATOR
Sign in to Anaconda Cloud
Home
Environments
Projects (beta)
Learning
Community
Documentation
Developer Blog
Feedback
Applications on
root
Channels
Refresh
jupyterlab
0.27.0
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
qtconsole
4.3.1
PyQt GUI that supports inline figures, proper multiline editing with syntax highlighting, graphical calltips, and more.
Launch
spyder
3.2.4
Scientific PYthon Development EnviRonment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features
Launch
glueviz
0.10.4
Multidimensional data visualization across files. Explore relationships within and among related datasets.
Install
orange3
3.4.1
Component based data mining framework. Data visualization and data analysis for novice and expert. Interactive workflows with a large toolbox.
Install
rstudio
1.1.383
A set of integrated tools designed to help you be more productive with R. Includes R essentials and notebooks.
Install


Home Page - Select or create a
localhost:8888/tree
jupyter
Quit
Logout
Files
Running
Clusters
Select items to perform actions on them.
Upload
New
0
/
Name
Last Modified
File size
3D Objects
hace 3 días
Contacts
hace 3 días
Documents
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Downloads
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Favorites
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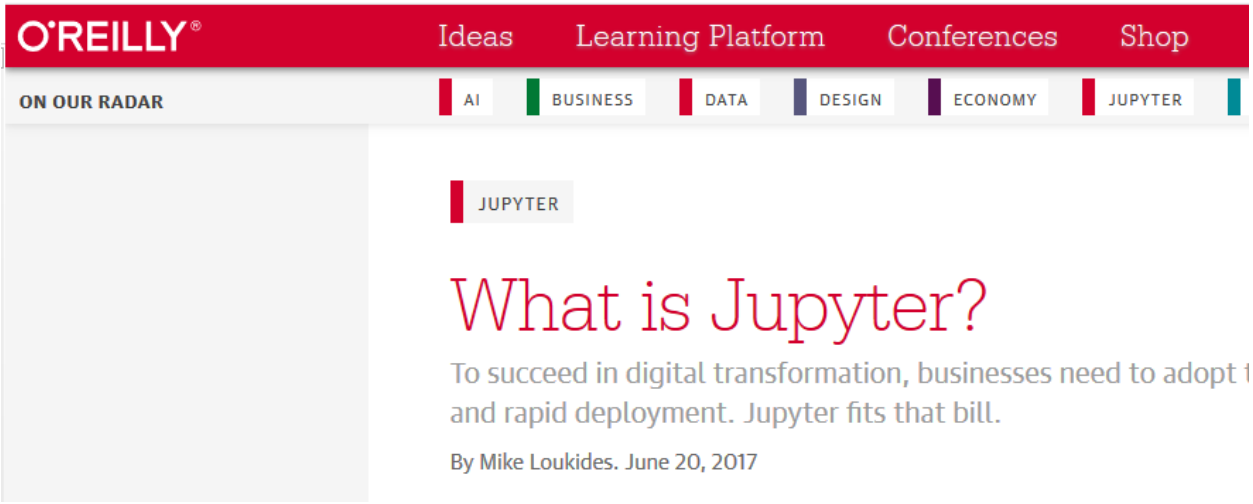
Links
hace 3 días
MLLB
hace 5 días



The Jupyter architecture: Jupyter is built from three parts:

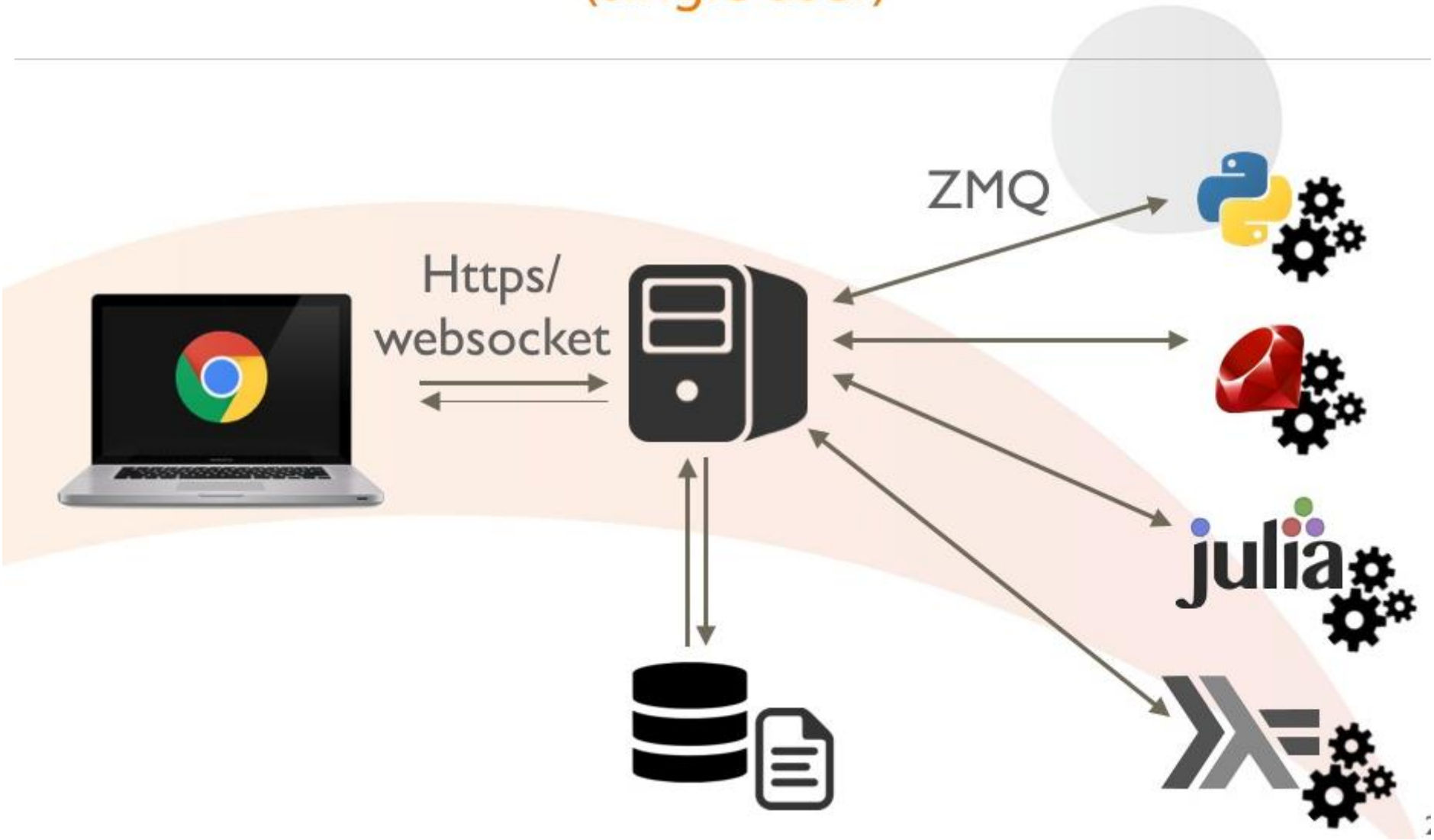
1.The notebook front end. The front end allows you to edit and run notebooks (JavaScript application)

2.The Jupyter server, which is either a relatively simple application that runs on your laptop, or a multi-user server. The Jupyter project's JupyterHub is the most widely used multi-user server for Jupyter.

3.The kernel protocol, which allows the server to offload the task of running code to a language-specific kernel. Jupyter ships with kernels for Python 2 and Python 3, but kernels for many other languages are available.

The networking architecture

(single user)



jupyterHub