Lab1 Getting started with NP

Introduction to Human language Technology

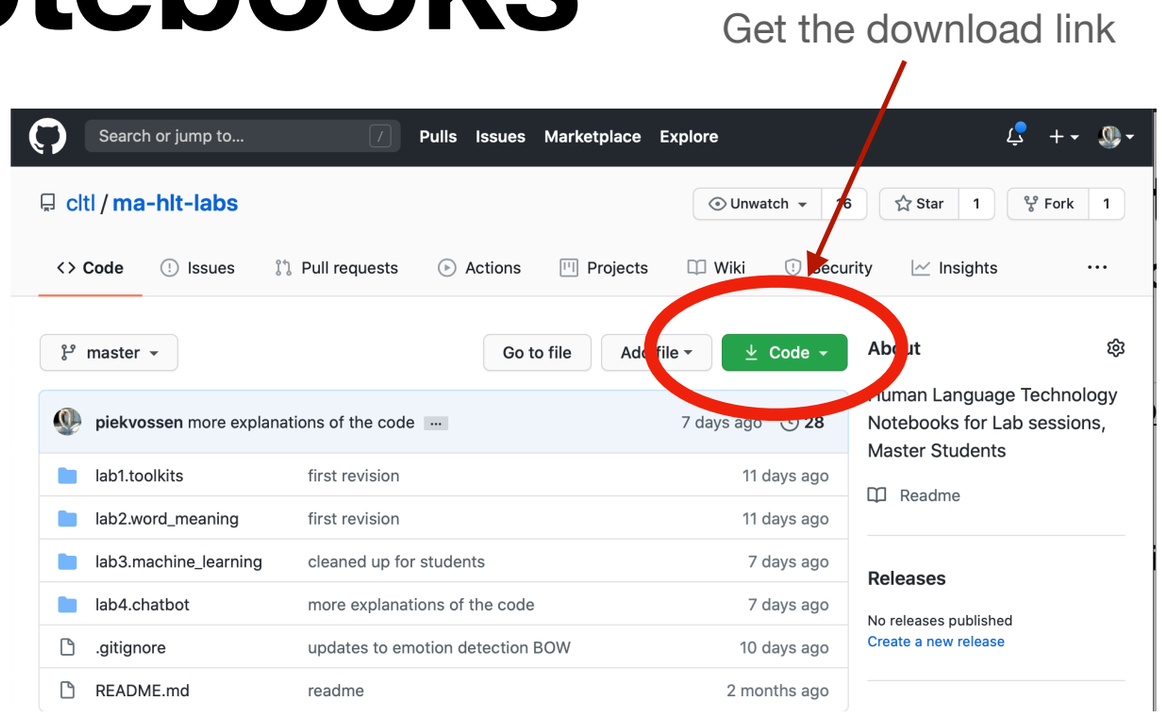
Piek Vossen

Preparations

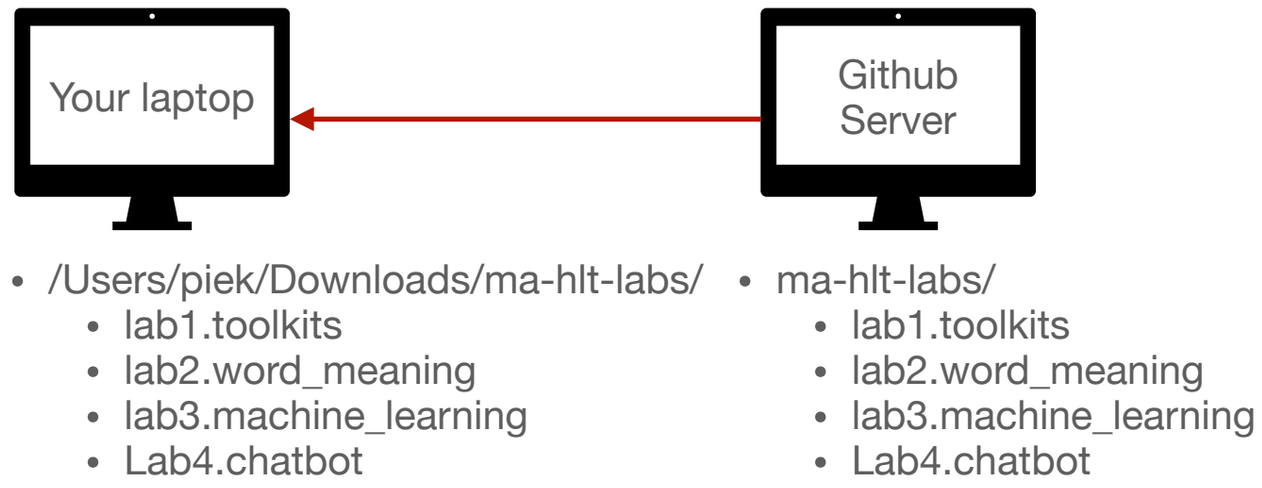
- Make sure you have administrator rights on your laptop to install whatever you want
- Install software in the same environment (see later), check if you are in the same environment
- Understand the basics of the command line (windows) or terminal (mac, linux)
- Install Anaconda with Python 3.8 or higher
- Familiarise yourself with Jupyter notebooks or labs
- Use a “plain” (not Word) text editor for inspecting data:
    - Windows: Notepad++
    - Mac/Linux: Atom
- Useful (gotta learn that anyway later) install Git to interact with GitHub:
    - Install Git: https://git-scm.com/book/en/v2/Getting-Started-Installing-Git

Getting the Lab notebooks

Check regularly for updates



- https://github.com/cltl/ma-hlt-labs
  - Git installed:
    - Clone with ssh:
    - > git clone git@github.com:cltl/ma-hlt-labs.git
- No local Git installed:
  - Download ZIP file
  - Unpack anywhere



Some Git

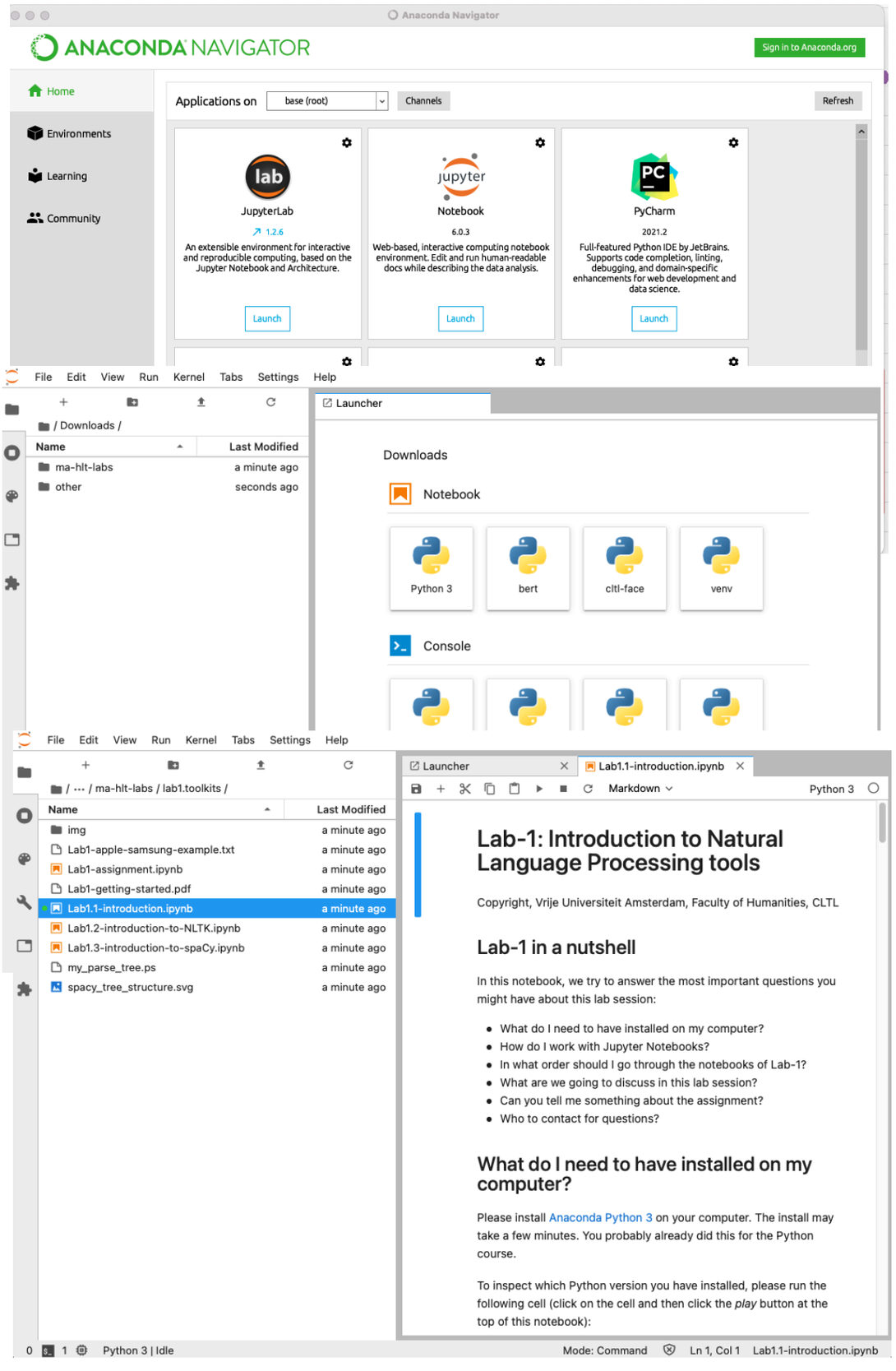
Only for those who use Git from command line

- At any moment in time you can check for updates on the server
  - Use “cd” to navigate to the directory with your local copy
  - This is a git directory (there is an invisible git flag with each file downloaded from a GitHub repository)
  - Type the command: “git pull”
  - Any updates will be downloaded from the server BUT if you changed a file Git will say you are out of sync.
- WARNING:
  - You can change your local copy of the Git repository as much as you like but your local copy is no longer in sync
  - Git will see that there is a difference and refuse to perform “pull” to avoid that your local changes are destroyed:
    - Type the command: “git stash” to ignore your local changes (these are lost) after which you can do “git pull”
    - Rename the directory of your local copy, e.g. “ma-hlt-labs-mine” and do a new “git clone” to get two copies: your local version and the latest version from the server.

Anaconda Navigator

First steps to using notebooks

- After launching the Anaconda GUI you get a window as shown here with various tools
- When click on the launch button in the JupyterLab or JupyterNotebook panel, it will launch a browser with the Jupyter application opening in the Download folder in my case, where I cloned ma-htl-labs from Github
- Entering ma-htl-labs and lab1-toolkits, I find notebook files with the extension .ipynb
- Double clicking on Lab1.1-introduction.ipynb loads the first notebook with all instruction in your browser
- You are ready to go!

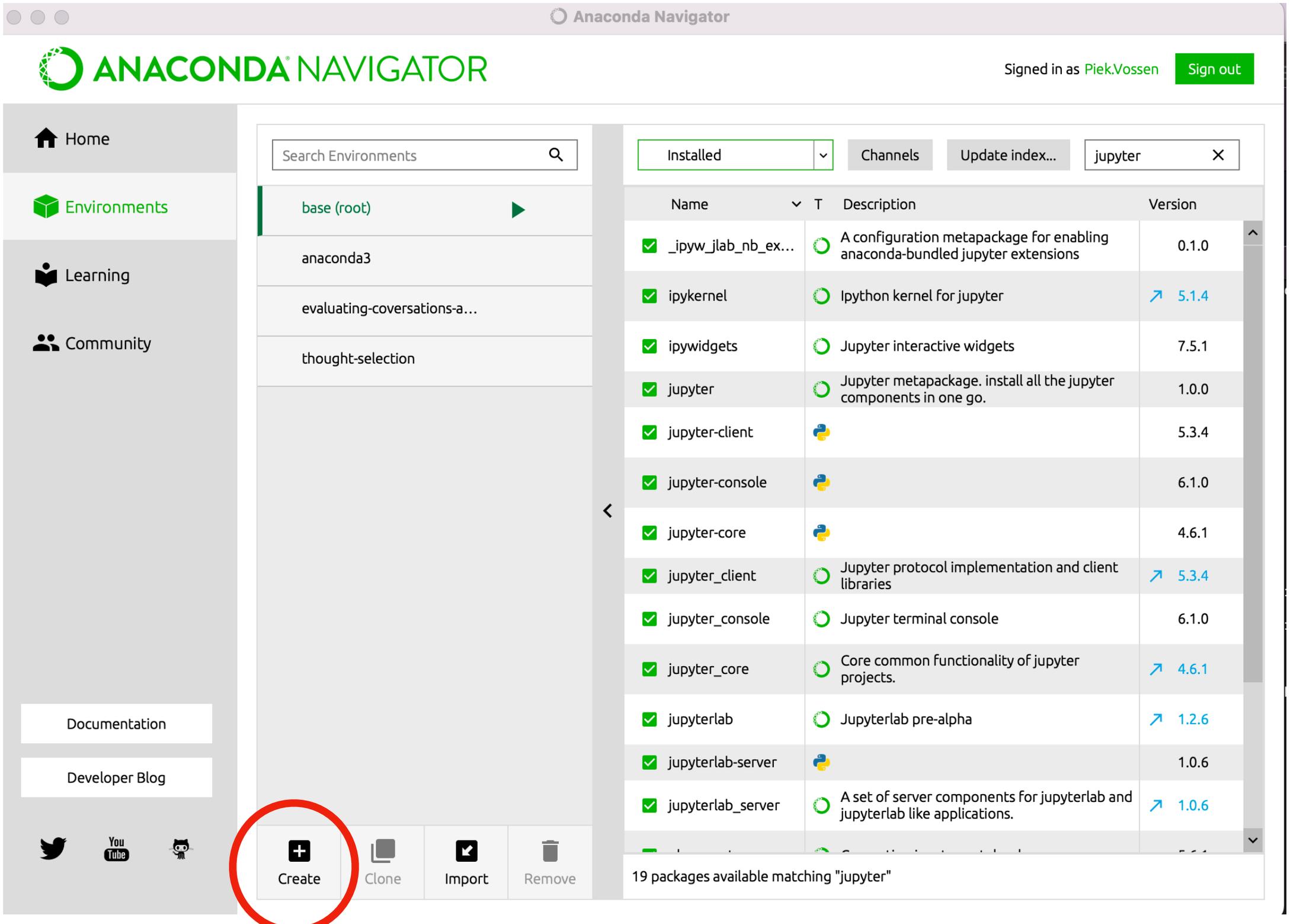


Virtual environments

Installing software within a save silo

- When installing many packages with even more dependencies, conflicts may arise between versions
- It is wise to create a new “virtual environment” (venv) first and install and run your code within (a kind of silo to install and run safely)
- Basic instructions can be found here:
  - https://docs.python.org/3/library/venv.html
- Two options:
  - Within the Anaconda navigator
  - From command line

Virtual environments



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Search Environments

base (root)

anaconda3

evaluating-coversations-a…

thought-selection

Create | Clone | Import | Remove

Installed | Channels | Update index... | jupyter

Name	T	Description	Version
_ipyw_jlab_nb_ex…		A configuration metapackage for enabling anaconda-bundled jupyter extensions	0.1.0
ipykernel		Ipython kernel for jupyter	5.1.4
ipywidgets		Jupyter interactive widgets	7.5.1
jupyter		Jupyter metapackage. install all the jupyter components in one go.	1.0.0
			5.3.4
			6.1.0
			4.6.1
		upyter protocol implementation and client braries	5.3.4
		upyter terminal console	6.1.0
		ore common functionality of jupyter rojects.	4.6.1
		upyterlab pre-alpha	1.2.6
jupyterlab-server			1.0.6
jupyterlab_server		A set of server components for jupyterlab and jupyterlab like applications.	1.0.6

19 packages available matching "jupyter"

Create new environment X

Name: hlt_venv

Location: /opt/anaconda3/envs/hlt_venv

Packages: Python 3.8

R r

Cancel | Create

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Name	T	Description	Version
ca-certificates		Certificates for use with other packages.	2022.4.26
certifi		Python package for providing mozilla's ca bundle.	2022.6.15
libcxx		C++ standard library	12.0.0
libffi		A portable foreign function interface library.	3.3
ncurses		Library for text-based user interfaces	6.3
openssl		Openssl is an open-source implementation of the ssl and tls protocols	1.1.1q
pip		Pypa recommended tool for installing python packages	22.1.2
python		General purpose programming language	3.8.13
readline		Library for editing command lines as they are typed in	8.1.2
setuptools		Download, build, install, upgrade, and uninstall python packages	61.2.0
sqlite		Implements a self-contained, zero-configuration, sql database engine.	3.38.5
tk		A dynamic programming language with gui support. bundles tcl and tk.	8.6.12
wheel		A built-package format for python.	0.37.1
xz		Data compression software with high compression ratio	5.2.5
zlib		Massively spiffy yet delicately unobtrusive compression library	1.2.12

15 packages available

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Open Terminal

Open with Python

Open with IPython

Open with Jupyter Notebook

Not installed | Channels | Update index... | jupyter

1

2

Name	T	Description	Version
_ipyw_jlab_nb_ex…		A configuration metapackage for enabling anaconda-bundled jupyter extensions	0.1.0
hdijupyterutils		Project with useful classes/methods for all projects created by the hdinsight team at microsoft around jupyter	0.12.9
ipykernel		Ipython kernel for jupyter	5.3.0
ipywidgets		Jupyter interactive widgets	7.5.1
jupyter		Jupyter metapackage. install all the jupyter components in one go.	1.0.0
jupyter_client		Jupyter protocol implementation and client libraries	6.1.3
jupyter_console		Jupyter terminal console	6.1.0
jupyter_core		Core common functionality of jupyter projects.	4.6.3
jupyter_dashboar…		An add-on for jupyter notebook	0.9.1
jupyter_kernel_ga…		Jupyter kernel gateway	2.4.0
jupyter_telemetry			0.0.5
jupyterhub		Multi-user server for jupyter notebooks	1.0.0
jupyterlab		Jupyterlab pre-alpha	2.1.5
jupyterlab_launcher		A launcher for jupyterlab based applications.	0.6.0
jupyterlab_server		A set of server components for jupyterlab and jupyterlab like applications.	1.1.5

3

4

5

30 packages available matching "jupyter" 1 package selected | Apply | Clear

Install Packages X

81 packages will be installed

	Name	Unlink	Link	Channel
1	jupyterlab	-	3.3.2	pkgs/main
2	*anyio	-	3.5.0	pkgs/main
3	*appnope	-	0.1.2	pkgs/main
4	*argon2-cffi	-	21.3.0	pkgs/main
5	*argon2-cffi-bindings	-	21.2.0	pkgs/main
6	*asttokens	-	2.0.5	pkgs/main

* indicates the package is a dependency of a selected package

Cancel | Apply

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jupyter_console		Jupyter terminal console	6.1.0
jupyter_dashboar…		An add-on for jupyter notebook	0.9.1
jupyter_kernel_ga…		Jupyter kernel gateway	2.4.0
jupyter_telemetry			0.0.5
jupyterhub		Multi-user server for jupyter notebooks	1.0.0
jupyterlab_launcher		A launcher for jupyterlab based applications.	0.6.0
metakernel		Metakernel for jupyter.	0.24.3
nb_conda		Conda environment and package access extension from within jupyter	2.2.1
nb_conda_kernels		Launch jupyter kernels for any installed conda environment	2.2.3
nbpresent		Next generation slides for jupyter notebooks	3.0.2
nbserverproxy		Jupyter server extension to proxy web services	0.8.8
pivottablejs		Pivottable.js integration for jupyter/ipython	

22 packages available matching "jupyter"

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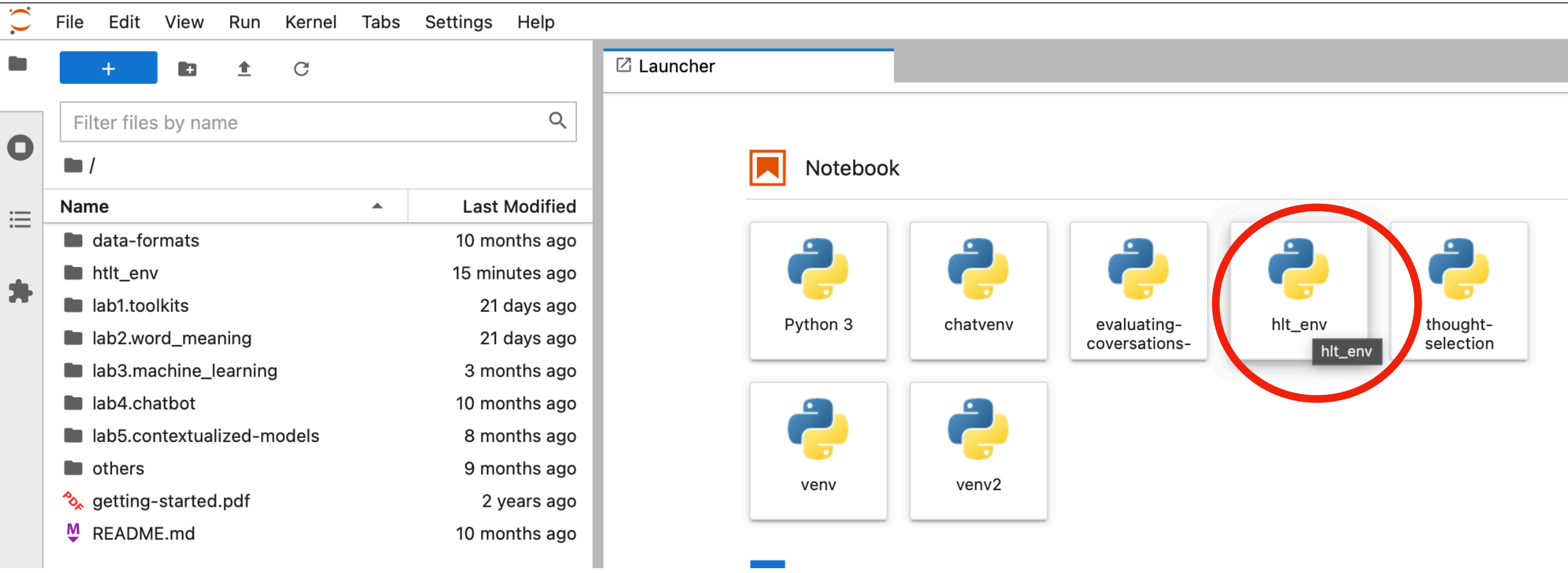
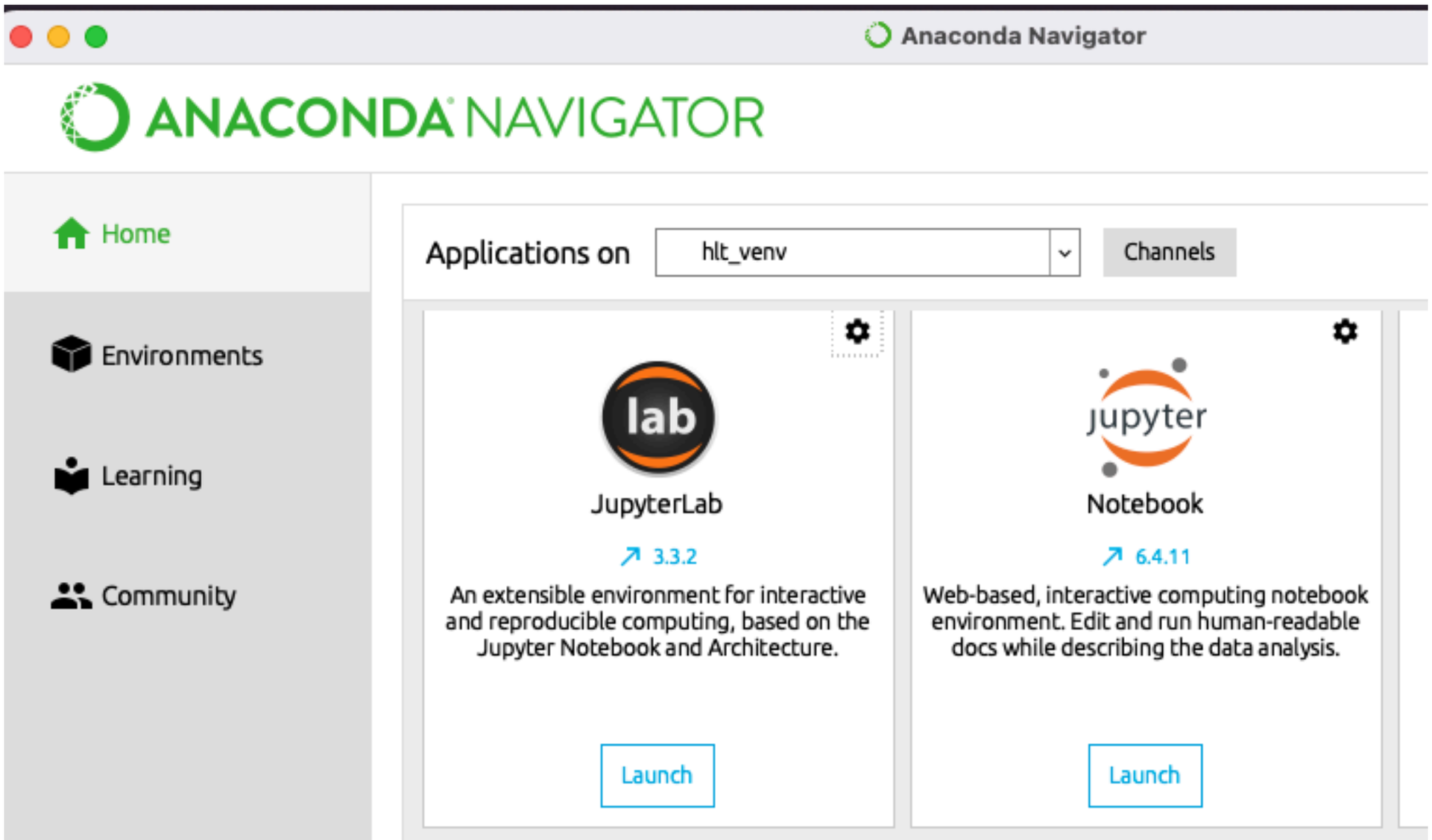
Virtual environments

Starting from Anaconda



Virtual environments

Installing software within a save silo



Virtual environments

Command line

- Open a terminal and navigate to the folder “ma-hlt-labs”
  - Do: python -m venv htlt_env
- Check if the directory “htl_env” is created locally
  - Do: source hltl_env/bin/activate
- Check if your prompt changed from (base):
  - (base) piek@PTJMs-MacBook-Pro ma-hlt-labs %
  - TO:
  - (htlt_env) (base) piek@PTJMs-MacBook-Pro ma-hlt-labs %

Virtual environments

Command line

- If the prompt changed, the virtual environment is active.
  - Do: pip list
  - This shows the packages activated in this environment

```
(htlt_env) (base) piek@PTJMs-MacBook-Pro ma-hlt-labs % pip list
Package    Version
---------- -------
pip        21.2.3
setuptools 57.4.0
```

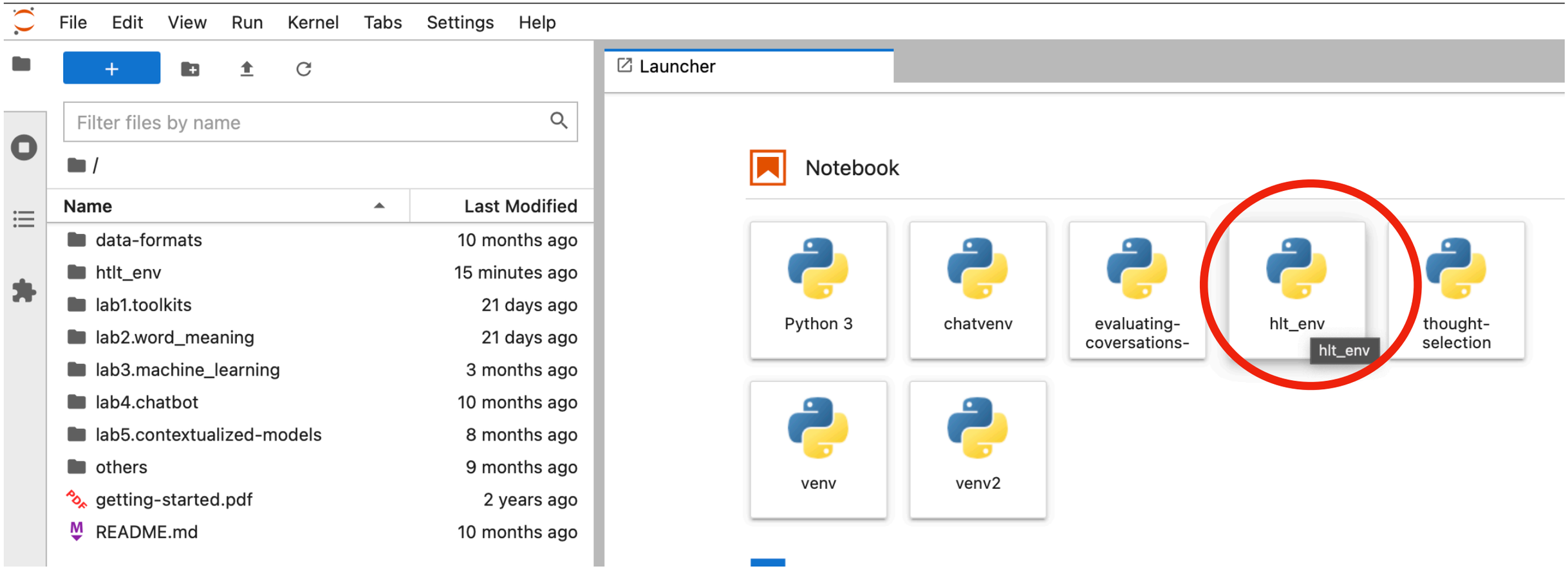
  - Do: pip install
  - Do: pip list

```
(htlt_env) (base) piek@PTJMs-MacBook-Pro ma-hlt-labs % pip list
Package    Version
---------- --------
click      8.1.3
joblib     1.1.0
nltk       3.7
pip        21.2.3
regex      2022.7.9
setuptools 57.4.0
tqdm       4.64.0
```

- Make jupyter lab/notebook use the new virtual environment “hlt_env”
  - Do: pip install ipykernel
  - Do: python -m ipykernel install --name=hlt_env
  - Do: ipython kernel install --user --name=hlt_env
  - Do: jupyter lab within the virtual environment

Virtual environments

Command line



Installing software

Software packages and toolkits are installed from command line

- Further instructions can be found on Canvas in the Basic Computer Skills modules
- Linux, Mac (Unix) users can launch a terminal (search for this application and keep it in your dock)
- Windows users can launch a command line window
    - https://docs.microsoft.com/en-us/windows/terminal/get-started
    - or
    - Simulate a unix/linux terminal on windows using Git-bash: https://www.atlassian.com/git/tutorials/git-bash
    - or
    - Open a terminal from the Anaconda navigator (see next slide for a screen dump)
- In Jupyter notebooks you can also carry out command line instructions in a cell by prefixing it with “%”
    - %ls -l
    - %pip install nltk
    - %mkdir test
    - %cd test
    - Etc…..

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Open with Python
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Installed | Channels | Update index... | Search Packages

Name	T	Description	Version
anyio			3.5.0
appnope		Disable app nap on os x 10.9	0.1.2
			21.3.0
			21.2.0
			2.0.5
attrs		Attrs is the python package that will bring back the joy of writing classes by relieving you from the drudgery of implementing object protocols (aka dunder methods).	21.4.0
babel		Utilities to internationalize and localize python applications	2.9.1
backcall		Specifications for callback functions passed in to an api	0.2.0
beautifulsoup4		Python library designed for screen-scraping	4.11.1
bleach		Easy, whitelist-based html-sanitizing tool	4.1.0
brotlipy			0.7.0
ca-certificates		Certificates for use with other packages.	2022.4.26
certifi		Python package for providing mozilla's ca bundle.	2022.6.15
cffi		Foreign function interface for python calling c code.	1.15.0
charset-normalizer			2.0.4

107 packages available

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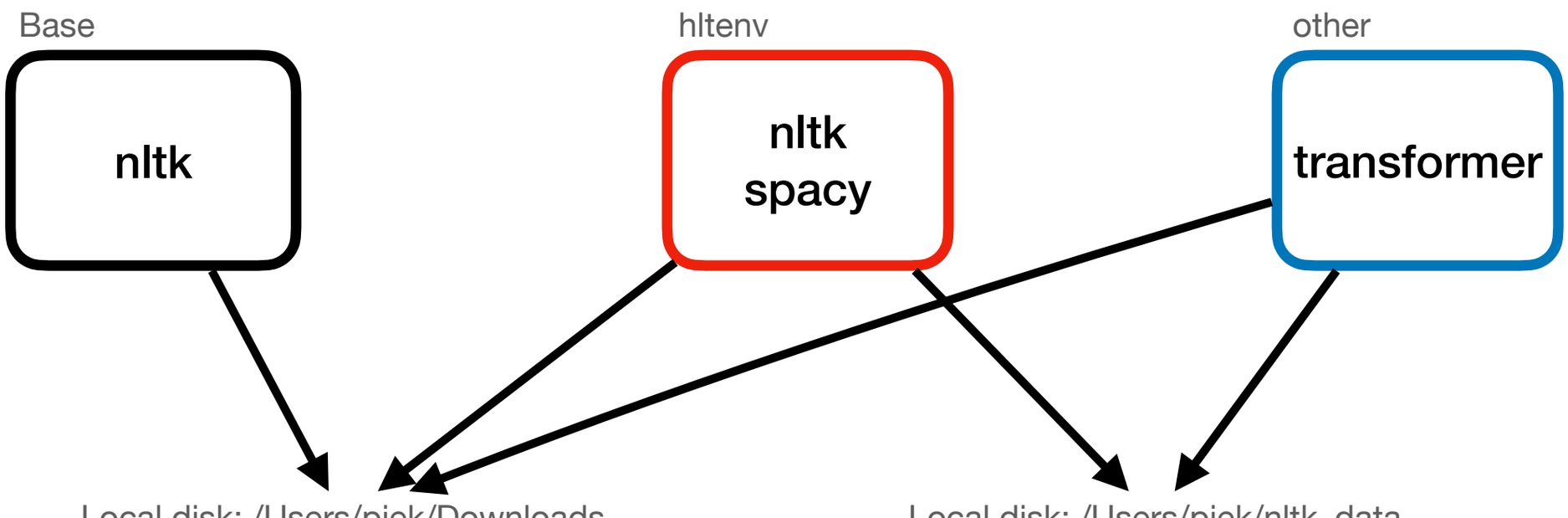

ma-hlt-labs
- lab1.toolkits
- lab2.word_meaning
- lab3.machine_learning
- lab4.contexualized-models
- lab5.final_assignment

nltk_data
- chunkers
- corpora
- grammars
- models
- sentiment