



**UNIVERSITÀ
DEGLI STUDI
DI BERGAMO**

Dipartimento
di Ingegneria Gestionale,
dell'Informazione e della Produzione

LABORATORY

Setup the development environment

**DATA SCIENCE AND
AUTOMATION COURSE**

**MASTER DEGREE SMART
TECHNOLOGY ENGINEERING**

TEACHER

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PLACE

University of Bergamo

Outline

1. Install Matlab
2. Install the Anaconda Python distribution
3. Useful commands
4. Git and Github



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Install Matlab

- During the course, we will use both Matlab and Python
- The code exercises for the data science part of the course are available at the following link: <https://drive.google.com/drive/folders/1zr98ul6GRekL9058hw6Y9wx0LZZg7zwi?usp=sharing>
 1. Write me an email by telling me who you are
 2. Use your student university account to request access to the link
- Install Matlab by following the instructions given by the university, using your university account



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Install Python 3

- Anaconda is a Python set of libraries (distribution) that are assured to work well together
 - ✓ <https://www.anaconda.com/distribution/#download-section>

 Windows |  macOS |  Linux

Anaconda 2019.10 for Windows Installer

**Download
Python 3.7**



Python 3.7 version

Download

64-Bit Graphical Installer (462 MB)

32-Bit Graphical Installer (410 MB)

Python 2.7 version

Download

64-Bit Graphical Installer (413 MB)

32-Bit Graphical Installer (356 MB)

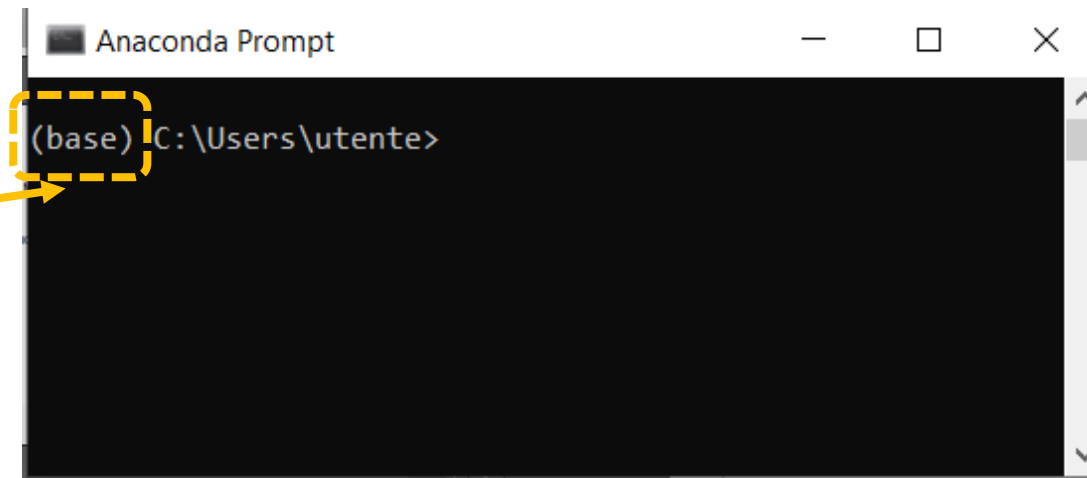
Install Python 3

- You now have installed many things:
 - ✓ **Anaconda prompt:** this is a shell where you can enter commands (e.g. managing libraries)

- The word **(base)** represents your current

python environment

You will need to **activate** your newly created environments



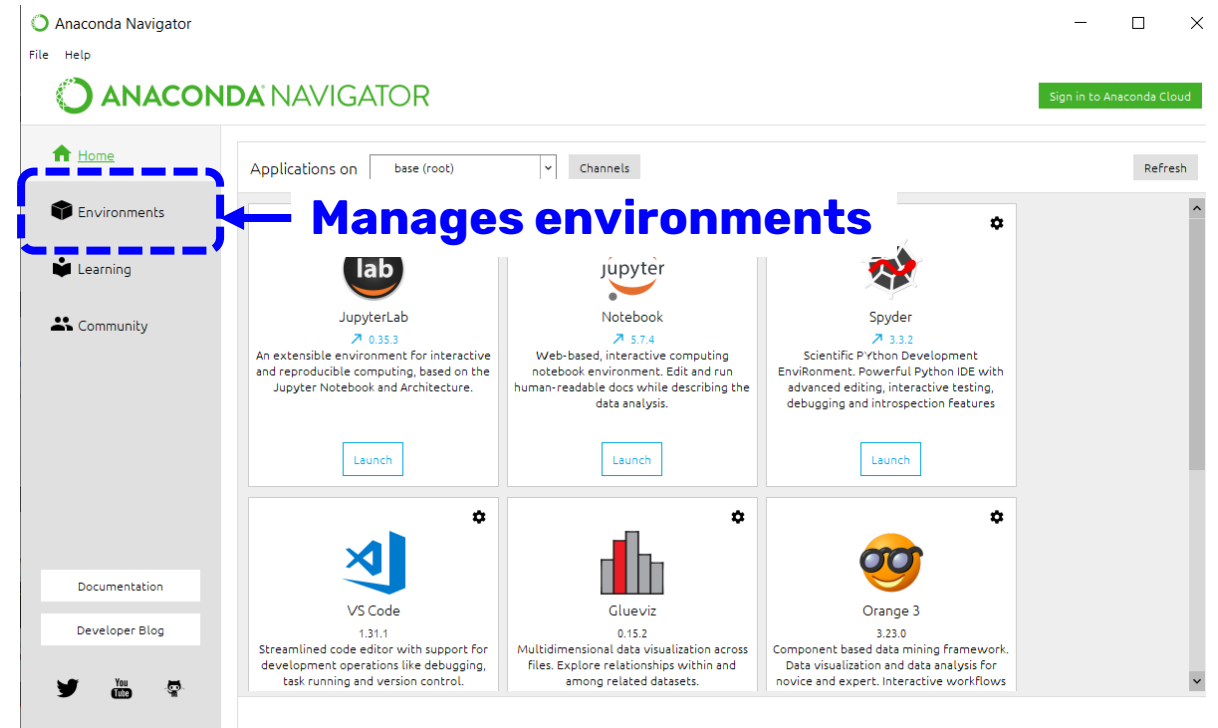
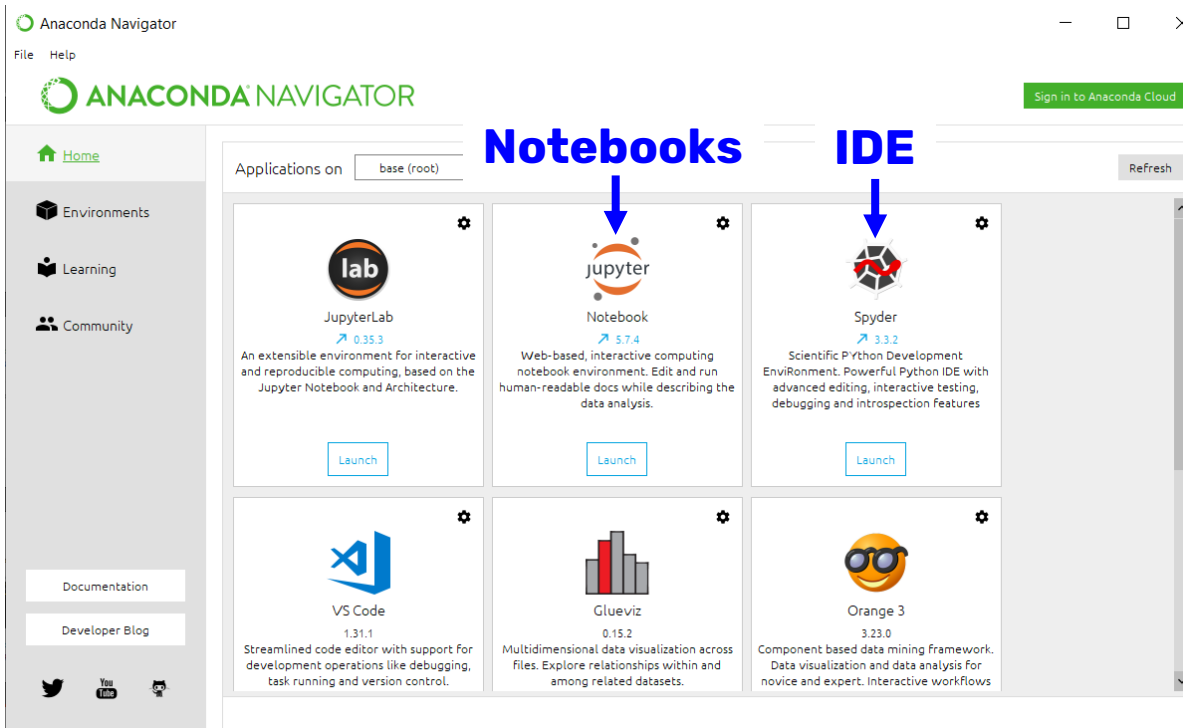
```
Anaconda Prompt
(base) C:\Users\utente>
```

- An environment is just a set of libraries that are currently used (loaded). You can (should) have multiple environments to avoid that updating a library generates conflicts with other libraries

Install Python 3

- You now have installed many things:

✓ **Anaconda Navigator:** it is a GUI where you can run programs that use python (Notebooks, IDEs,...)



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Useful commands

(https://docs.conda.io/projects/conda/en/4.6.0/_downloads/52a95608c49671267e40c689e0bc00ca/conda-cheatsheet.pdf)

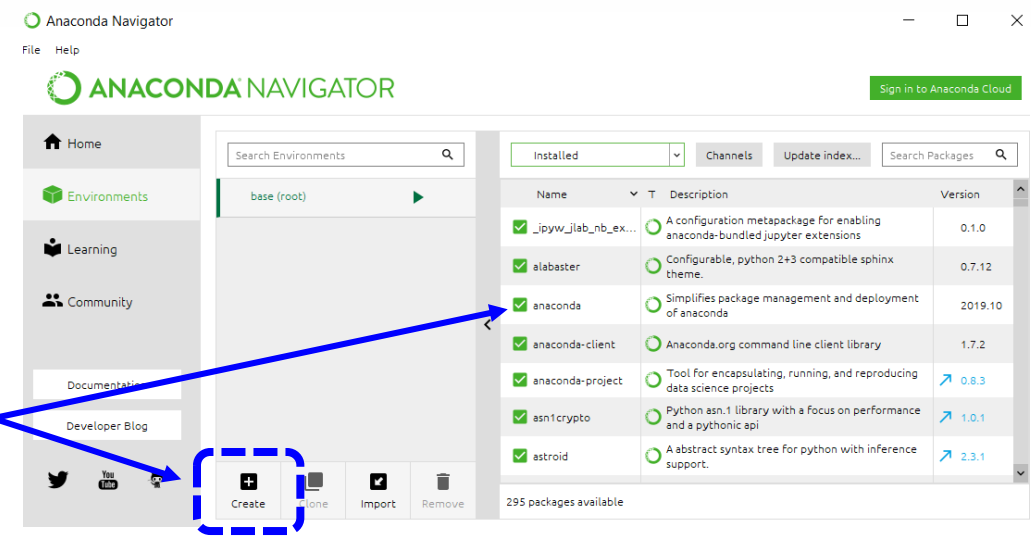
- **Create environment:** `conda create --name [name_environment] python=3.7`
- **Create environment from file:** `conda env create -f [name_environment]`
- **Delete environment:** `conda env remove --name [name_environment]`
- **Activate environment:** `conda activate [name_environment]`
 - ✓ WINDOWS: `conda activate [name_environment]`
 - ✓ LINUX, macOS: `source conda activate [name_environment]`
- **Install library:** `conda install [name_library]`
- **Get a list of all my environments (active environment is shown with *):** `conda env list`
- **List all packages and versions installed in active environment:** `conda list`



Useful commands

- **To create an environment and lunch a notebook:**

1. Open Anaconda Navigator → Environments → Create
2. Select packages to install in the new env
3. Go to Home → select the new env → install Jupyter → lunch Jupyter



In this way, you have to manually search for your notebook. An alternative way to launch Jupyter (once it has been installed) is as follows:

1. Open Anaconda Prompt → `cd` (change directory) to the directory where you have the notebook
→ Activate the environment `conda activate [name_environment]`
→ Run the command `jupyter notebook`

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Git and Github

- **Git** is a software that allows you to do **version control** (track the changes you made to your files and eventually restore a previous file version). A versioned controller set of files and folders is called **repository** (or «repo»)
- Very useful if a team of developers work **on the same project**. The software automatically manages the updates of each developer and merges the changes into a single file
- I expect you to use git (and, eventually, **github**) to do you project for the course
- Git runs from command line. We instead will use **Github Desktop**, an intuitive software that uses git and github



Git and Github

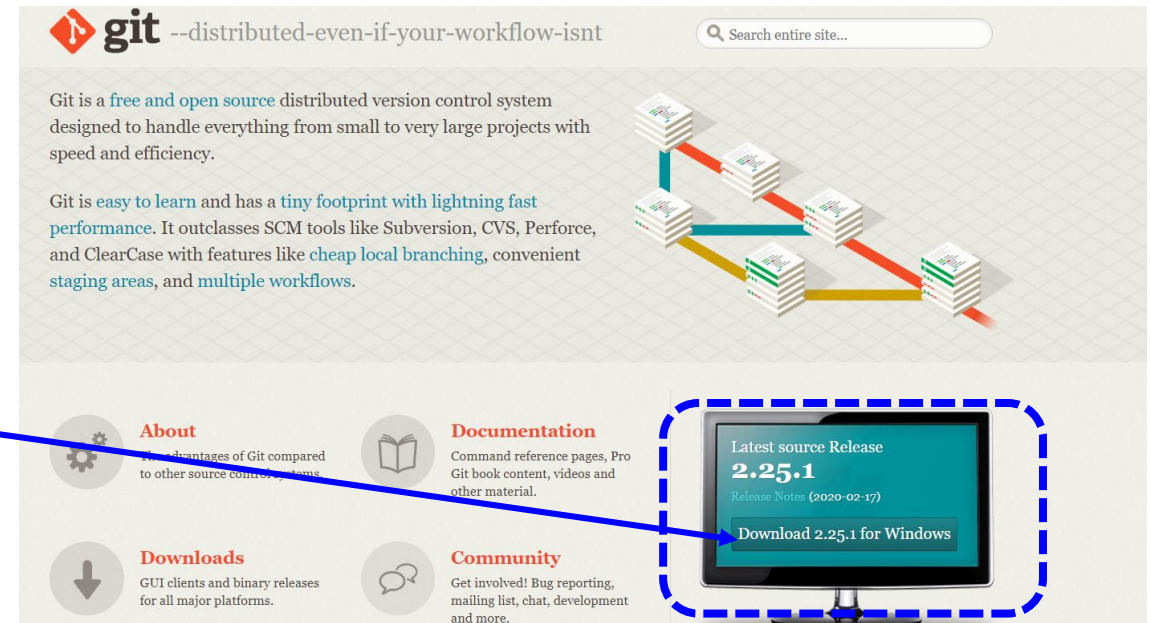
- **How to install git**

- ✓ Go to <https://git-scm.com/>
- ✓ Download and install (use default settings)

- **Git terminology**

You can do a lot of things with git. We will be fine with the following commands:

- ✓ **Commit:** save and store your changes to the files
- ✓ **Revert:** return to previously committed version
- ✓ **Push:** send the committed files to a server (e.g. your Github account)
- ✓ **Pull:** retrieve the pushed files from a server (e.g. your Github account)
- ✓ **Clone:** copy a repository from a server (e.g. your Github account)

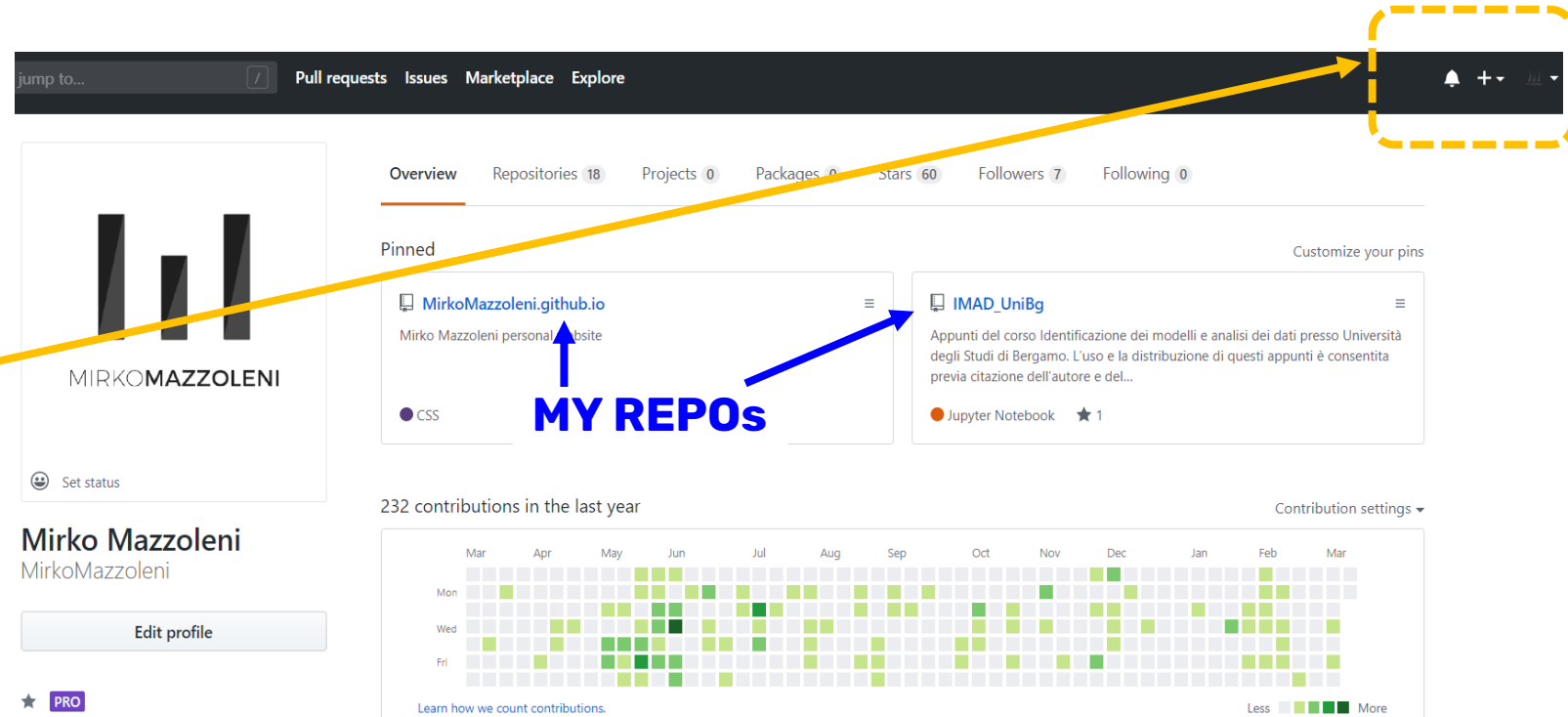


Git and Github

- GitHub, Inc. web-based hosting service that provides hosting for software development version control using Git. It allows for **free (public) repository**

- **How to setup Github**

- ✓ Go to <https://github.com/>
- ✓ Create an account
- ✓ Create a new repo



Git and Github

- ✓ Insert the name of the repo
- ✓ Go to the repo → Clone or download → copy the link
- ✓ This link will be use in Github desktop to clone the repo in your local machine

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere?

[Import a repository.](#)

Owner: Repository name:

Great repository names are short and memorable. Need inspiration? How about **legendary-robot**?

Description (optional):

Public
Anyone can see this repository. You choose who can commit.

Private
You choose who can see and commit to this repository.

MirkoMazzoleni / MirkoMazzoleni.github.io

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

Mirko Mazzoleni personal website

43 commits 1 branch 0 packages 0 releases 1 environment 1 contributor

Branch: master New pull request Create new file Upload files Find file **Clone or download**

MirkoMazzoleni	Update cv.pdf	
Rmarkdowns	fist commit	
_data	fist commit	
_includes	update related articles	
_layouts	Removed analytics and comments	2 years ago
_posts	update tags	4 months ago
_sass	fist commit	2 years ago
assets	Update cv.pdf	2 months ago
feed	fist commit	

Clone with HTTPS
Use Git or checkout with SVN using the web URL.
<https://github.com/MirkoMazzoleni/MirkoMazzoleni>

Open in Desktop Download ZIP



Github desktop

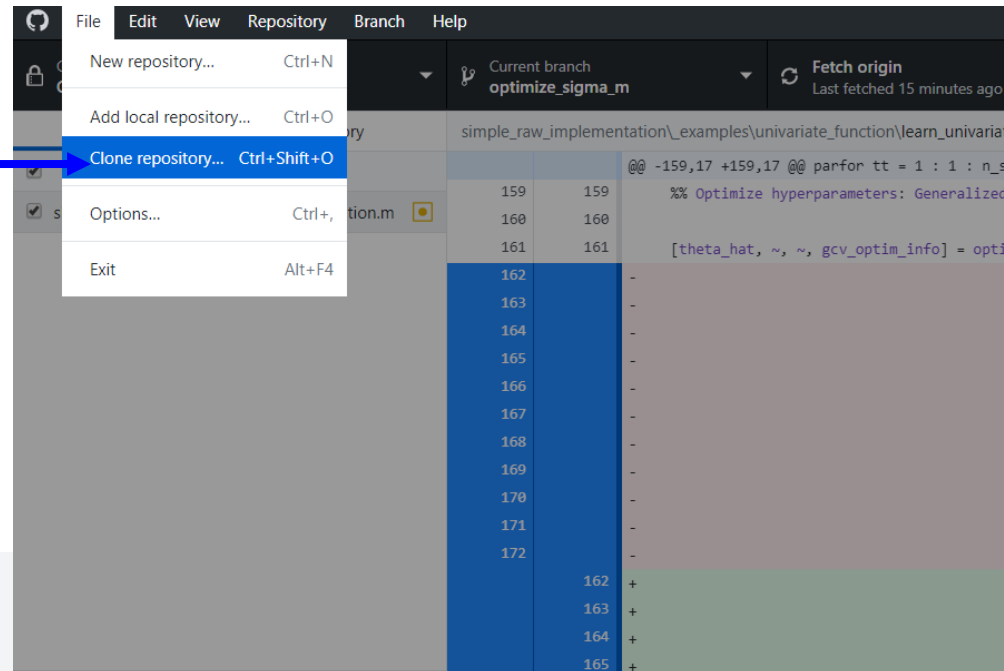
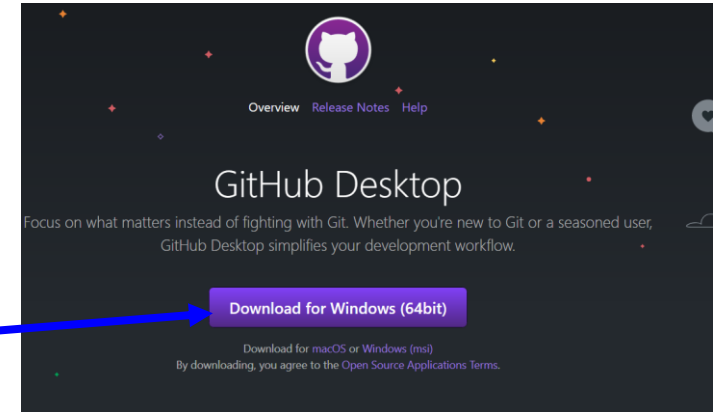
- GitHub desktop is a software that simplifies the use of git with github (you need to have a github account to use it)

- **How to setup Github desktop**

- ✓ Go to <https://desktop.github.com/>

- ✓ Download and install

- ✓ Clone your repository



Your turn

1. Download Anaconda
2. Install a virtual environment in python
3. Activate the environment
4. Launch the jupyter notebook
5. Look at the linear regression code example

