Installation of JupyterLab

MATH 4432 Statistical Machine Learning

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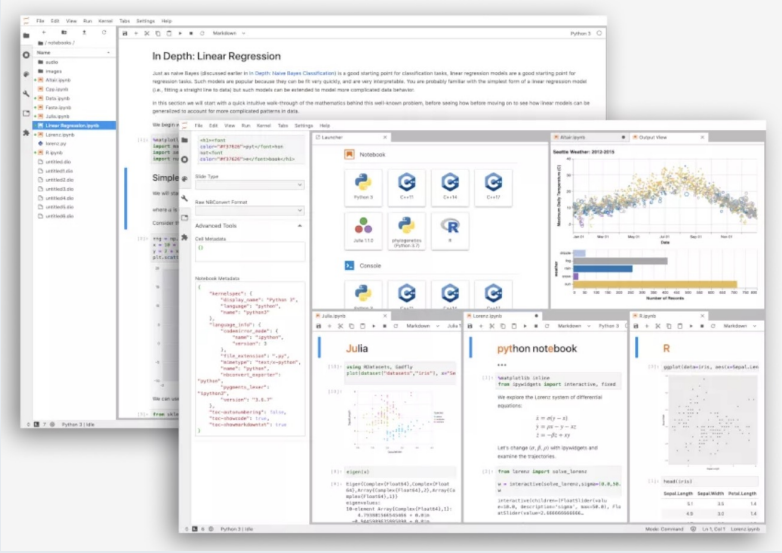
What is JupyterLab?

JupyterLab: A Next-Generation Notebook Interface

JupyterLab is the latest web-based interactive development environment for notebooks, code, and data. Its flexible interface allows users to configure and arrange workflows in data science, scientific computing, computational journalism, and machine learning. A modular design invites extensions to expand and enrich functionality.

JupyterLab can support **both Python and R**.



Now let's install it via Anaconda!

First download and install Anaconda

Anaconda Installers

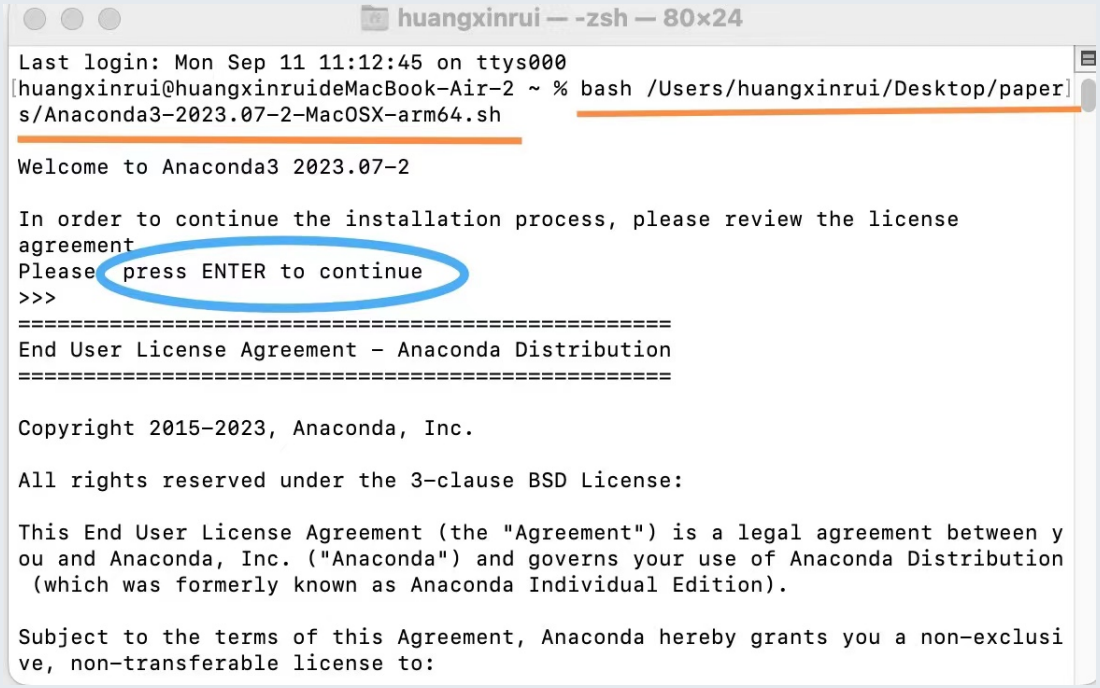
Find the version compatible with your device

Attention:

Mac users please install the **Command Line Installer** instead of **Graphical Installer**.

For mac users

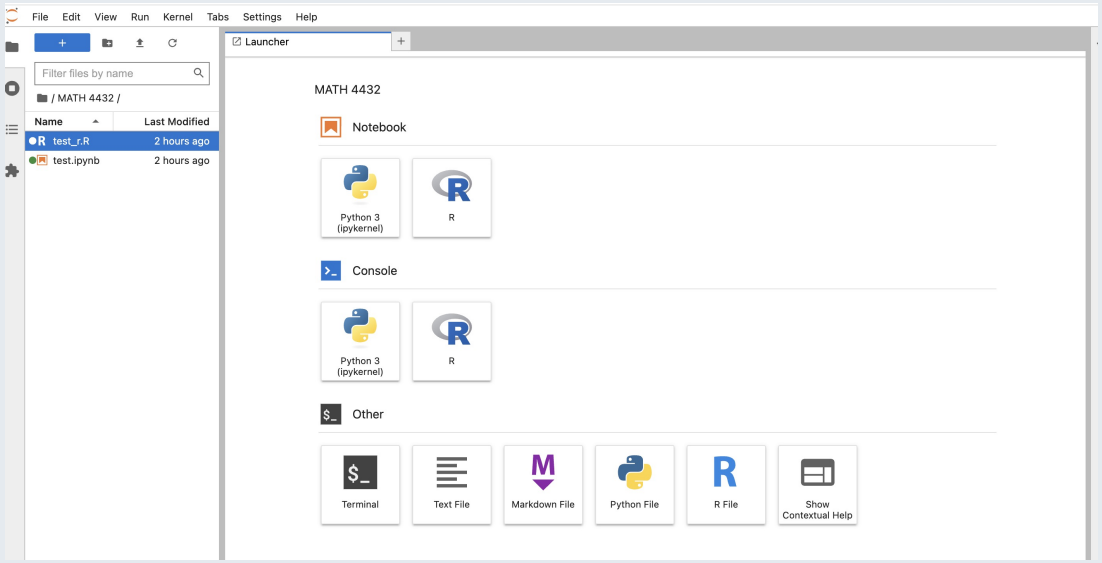
After installation, open the **terminal** and input **"bash (here fills in the path of the installer just downloaded)"**, as shown below.



Then press **"Enter"**. If you encounter **"y/n"**, then input **"y"**.

For mac users

When you finish the previous process, you can input **"jupyter lab"** in the terminal, and it will direct you to the website of jupyter lab, which is similar to the below picture, **except for the missing R kernel**.



For Windows users

Open the **Anaconda Navigator**, find **JupyterLab** and select **Launch**. Then you'll see the same website.

Next let's add the R kernel!

Add R kernel

For the procedures, you can refer to Installing the R kernel in Jupyter Lab.

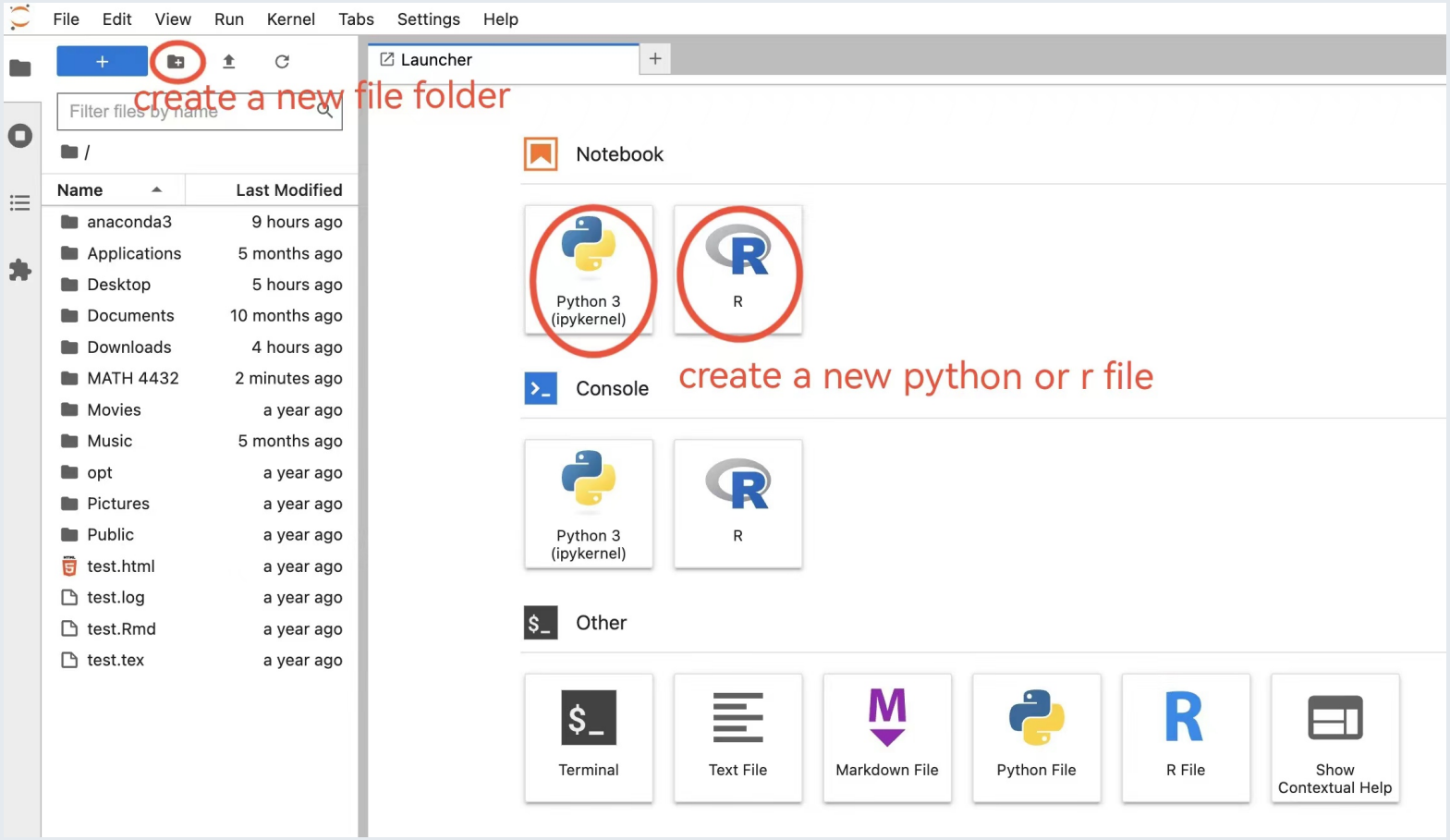
The key points are:

- Run R in **Anaconda Prompt** (for windows users) or **terminal** (for mac users);
  - Install the package **"IRkernel"** by any means;
    - You can use "devtools::install_github('IRkernel/IRkernel')" or "install.packages("IRkernel")";
  - Carry out **"IRkernel::installspec()"**.

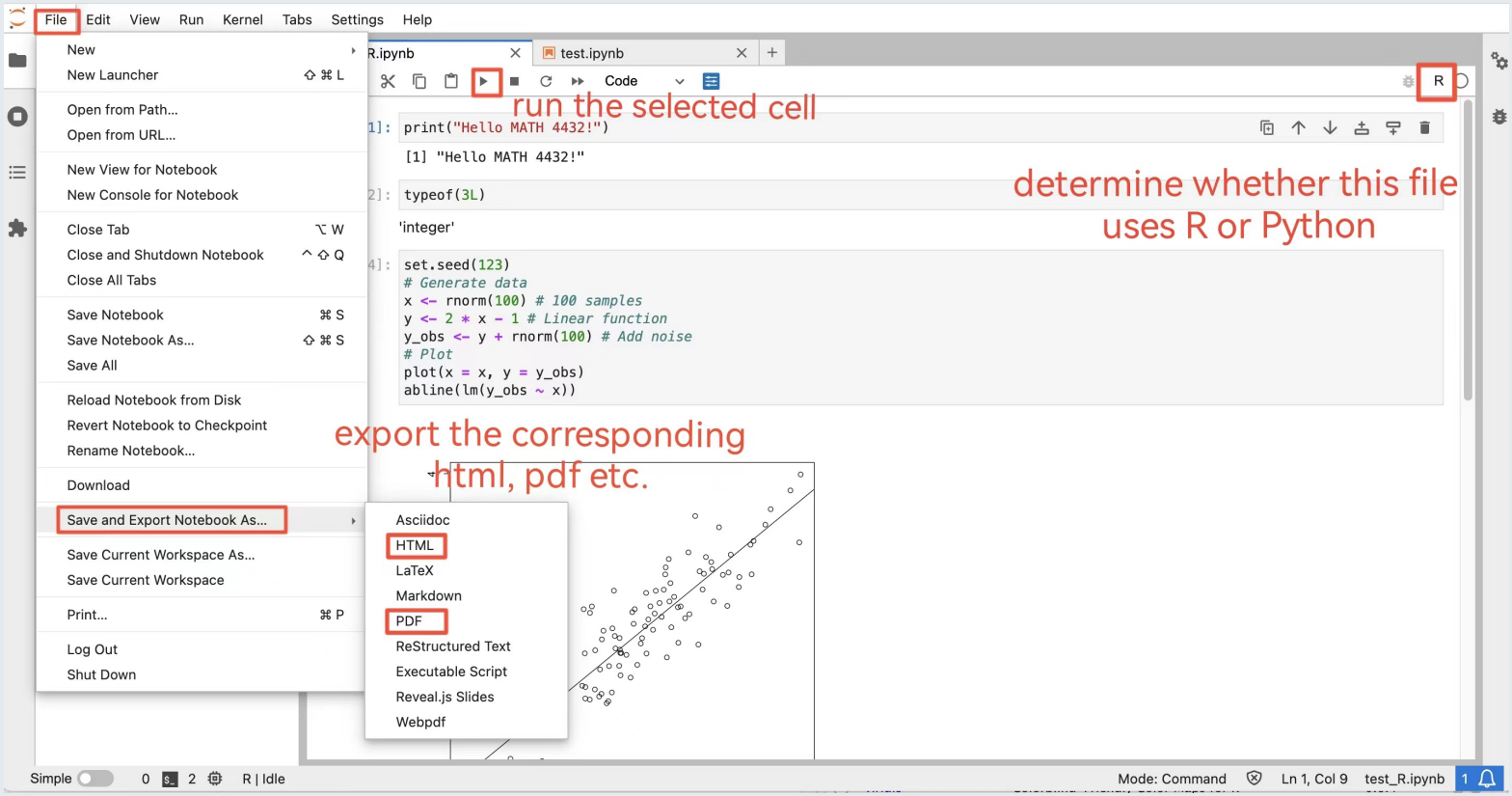
Here we only demonstrate the process for MacOS.

Use JupyterLab to produce a homework file

Create a new file or file folder



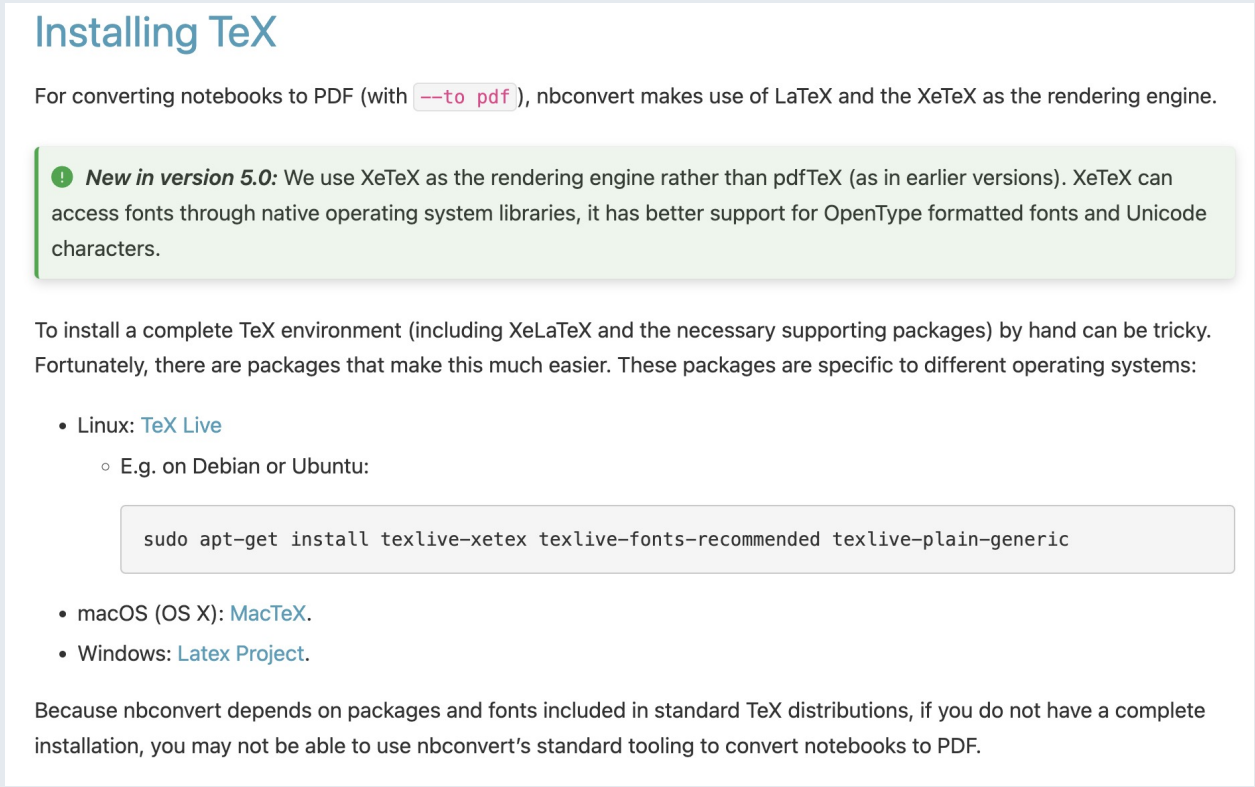
Produce the corresponding html/pdf file



Error when producing pdf

You may need to follow the guidance and install Tex.

Then reopen JupyterLab and export again.



Installing TeX

For converting notebooks to PDF (with `--to pdf`), nbconvert makes use of LaTeX and the XeTeX as the rendering engine.

New in version 5.0: We use XeTeX as the rendering engine rather than pdfTeX (as in earlier versions). XeTeX can access fonts through native operating system libraries, it has better support for OpenType formatted fonts and Unicode characters.

To install a complete TeX environment (including XeLaTeX and the necessary supporting packages) by hand can be tricky. Fortunately, there are packages that make this much easier. These packages are specific to different operating systems:

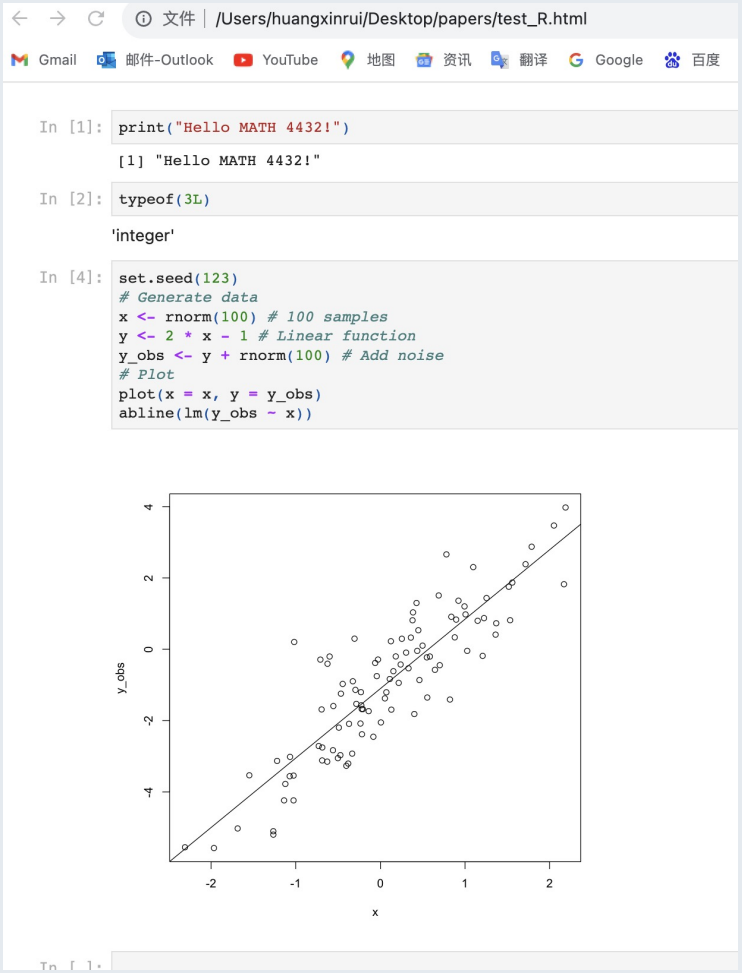
- Linux: TeX Live
  - E.g. on Debian or Ubuntu:

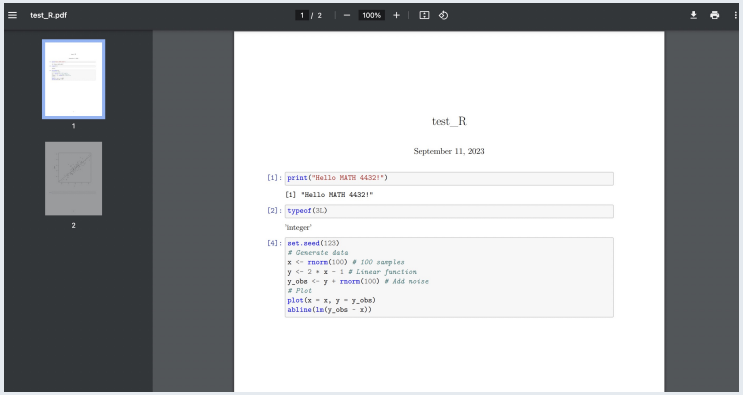
```
sudo apt-get install texlive-xetex texlive-fonts-recommended texlive-plain-generic
```

- macOS (OS X): MacTeX.
- Windows: Latex Project.

Because nbconvert depends on packages and fonts included in standard TeX distributions, if you do not have a complete installation, you may not be able to use nbconvert's standard tooling to convert notebooks to PDF.

Get the pdf/html successfully!





Thank you!