

Installation of JupyterLab

MATH 4432 Statistical Machine Learning

HUANG XINRUI

MATH, HKUST

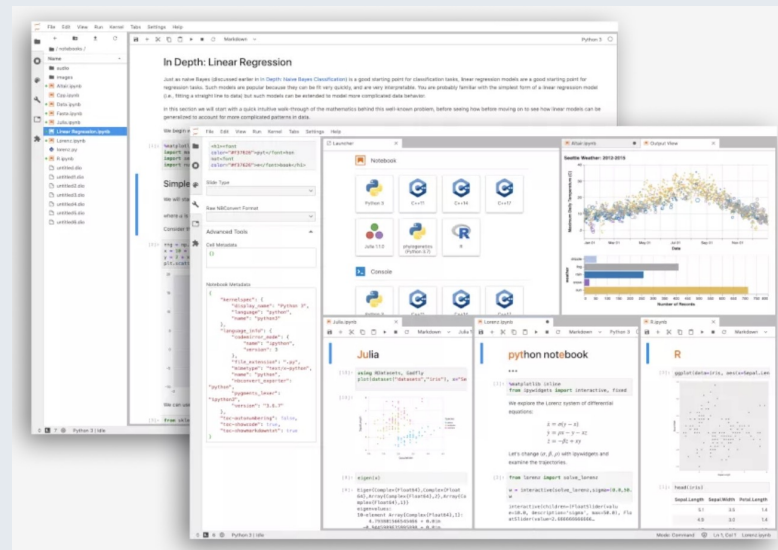
2023-09-12

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

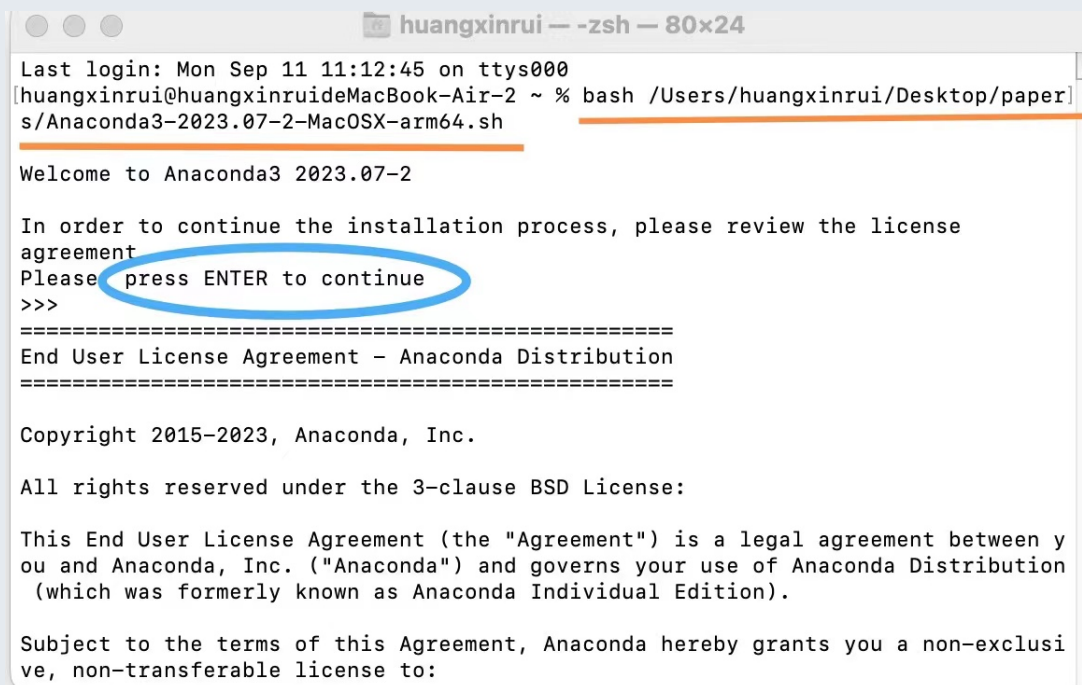
Attention:

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.

A screenshot of a macOS terminal window titled 'huangxinrui — zsh — 80x24'. The terminal shows the execution of a bash script to install Anaconda3. The prompt is '[huangxinrui@huangxinruiMacBook-Air-2 ~ %]'. The command entered is 'bash /Users/huangxinrui/Desktop/papers/Anaconda3-2023.07-2-MacOSX-arm64.sh'. The output includes a welcome message, a license agreement prompt, and the start of the End User License Agreement (EULA) text. A blue oval highlights the text 'Please press ENTER to continue' and the '>>>' prompt.

```
huangxinrui — zsh — 80x24
Last login: Mon Sep 11 11:12:45 on ttys000
[huangxinrui@huangxinruiMacBook-Air-2 ~ %] bash /Users/huangxinrui/Desktop/papers/Anaconda3-2023.07-2-MacOSX-arm64.sh

Welcome to Anaconda3 2023.07-2

In order to continue the installation process, please review the license
agreement
Please press ENTER to continue
>>>
=====
End User License Agreement - Anaconda Distribution
=====

Copyright 2015-2023, Anaconda, Inc.

All rights reserved under the 3-clause BSD License:

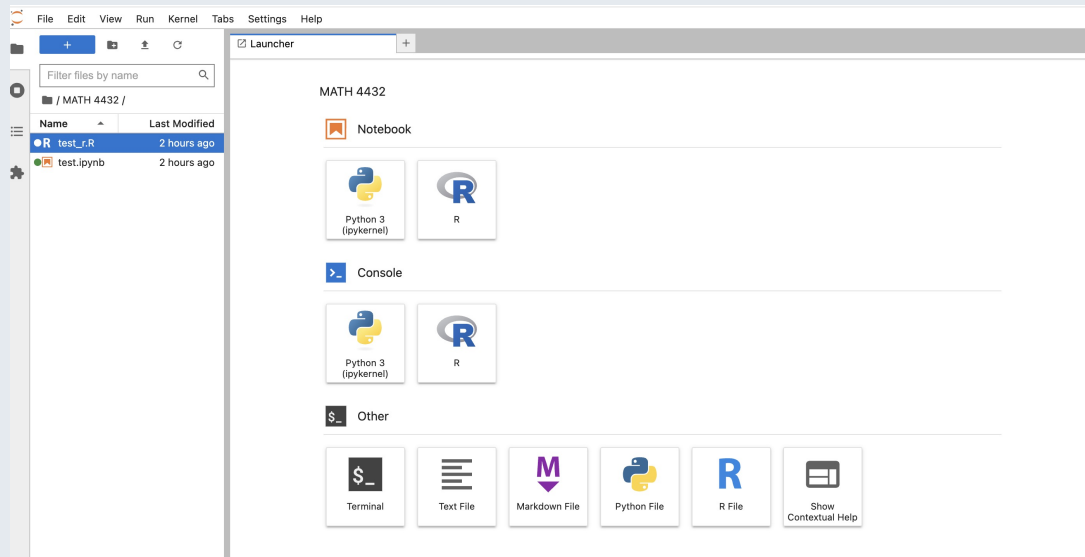
This End User License Agreement (the "Agreement") is a legal agreement between y
ou and Anaconda, Inc. ("Anaconda") and governs your use of Anaconda Distribution
(which was formerly known as Anaconda Individual Edition).

Subject to the terms of this Agreement, Anaconda hereby grants you a non-exclusi
ve, non-transferable license to:
```

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!

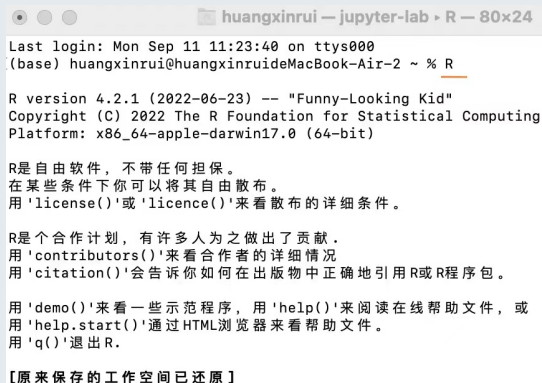
Add R kernel

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.



```
huangxinrui — jupyter-lab • R — 80x24
Last login: Mon Sep 11 11:23:40 on ttys000
(base) huangxinrui@huangxinruiMacBook-Air-2 ~ % R

R version 4.2.1 (2022-06-23) -- "Funny-Looking Kid"
Copyright (C) 2022 The R Foundation for Statistical Computing
Platform: x86_64-apple-darwin17.0 (64-bit)

R是自由软件，不帶任何担保。
在某些条件下你可以将其自由散布。
用 'license()' 或 'licence()' 来看散布的详细条件。

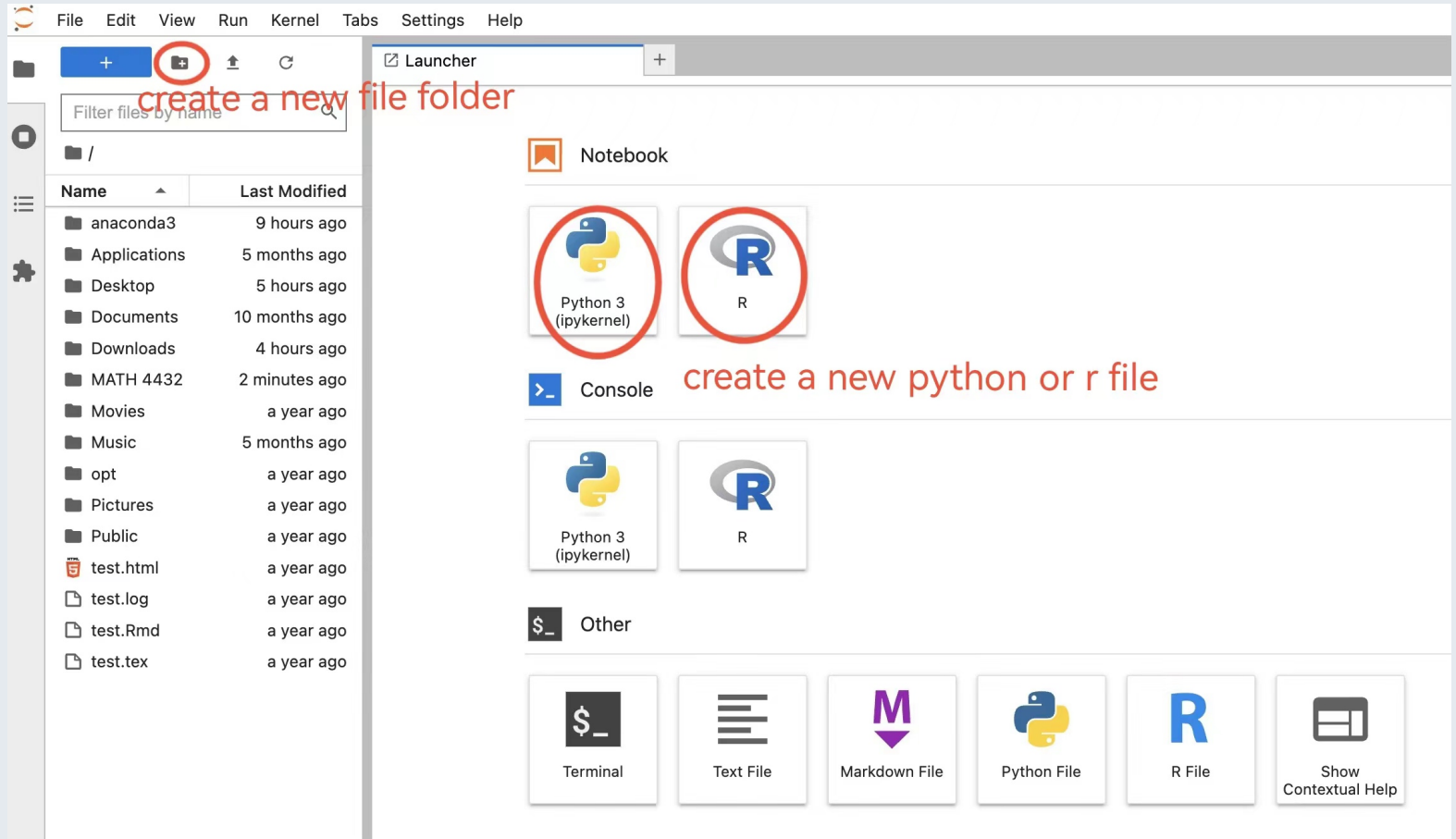
R是个合作计划，有许多人为了它做出了贡献。
用 'contributors()' 来看合作者的详细情况
用 'citation()' 会告诉你如何在出版物中正确地引用R或R程序包。

用 'demo()' 来看一些示范程序，用 'help()' 来阅读在线帮助文件，或
用 'help.start()' 通过HTML浏览器来看帮助文件。
用 'q()' 退出R。

[原来保存的工作空间已还原]
```

Use JupyterLab to produce a
homework file

Create a new file or file folder



Produce the corresponding html/pdf file

The screenshot displays the RStudio environment with the following elements:

- File Menu:** Opened on the left, showing options like 'New', 'Open from Path...', 'Save Notebook', and 'Save and Export Notebook As...'. The 'Save and Export Notebook As...' option is highlighted with a red box.
- Code Editor:** Contains R code in a file named 'test.ipynb'. The first cell is selected, and the 'Run' button (a play icon) is highlighted with a red box. A red annotation 'run the selected cell' points to it.
- Output Console:** Shows the output of the first cell: `[1] "Hello MATH 4432!"`.
- Code Editor (Second Cell):** Contains R code for generating data and plotting a linear regression line. A red annotation 'determine whether this file uses R or Python' points to the code.
- Export Menu:** A sub-menu is open from 'Save and Export Notebook As...', showing options like 'AsciiDoc', 'HTML', 'LaTeX', 'Markdown', 'PDF', 'ReStructured Text', 'Executable Script', 'Reveal.js Slides', and 'Webpdf'. Both 'HTML' and 'PDF' are highlighted with red boxes. A red annotation 'export the corresponding html, pdf etc.' points to this menu.
- Plot:** A scatter plot with a linear regression line is visible in the background.
- Status Bar:** At the bottom, it shows 'Mode: Command', 'Ln 1, Col 9', and the file name 'test_R.ipynb'.

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:

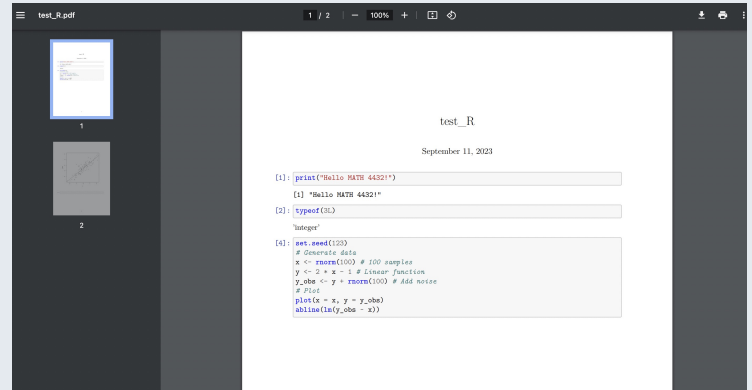
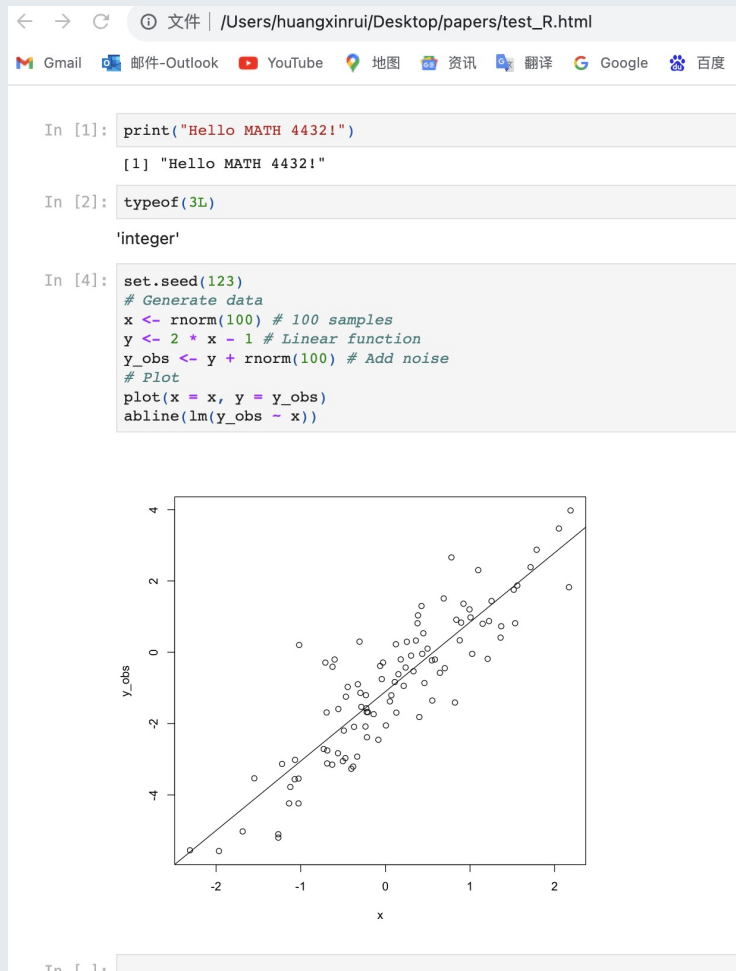
- Linux: [TeX Live](#)
 - E.g. on Debian or Ubuntu:

```
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!