

Python Installation



Kyungwon Kim

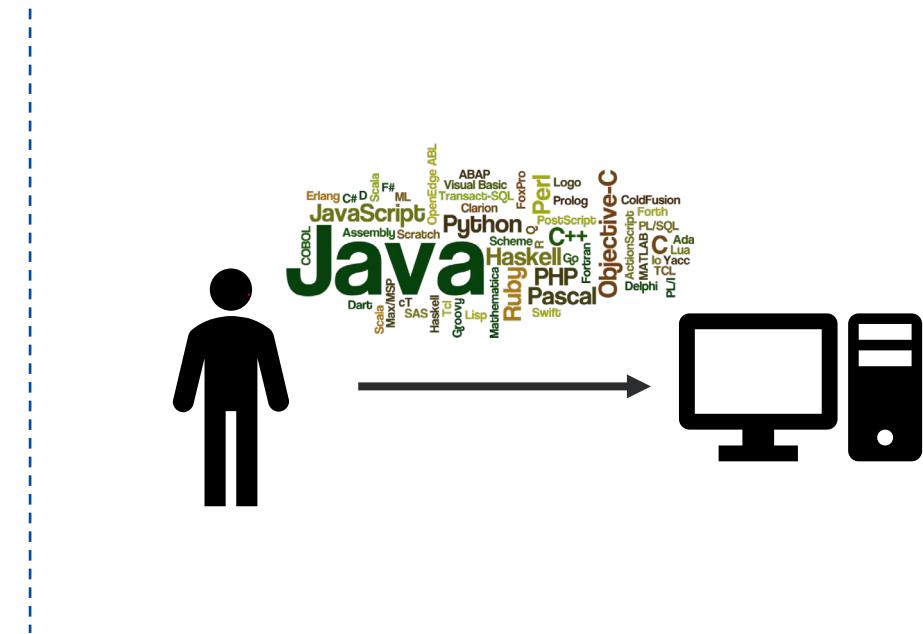
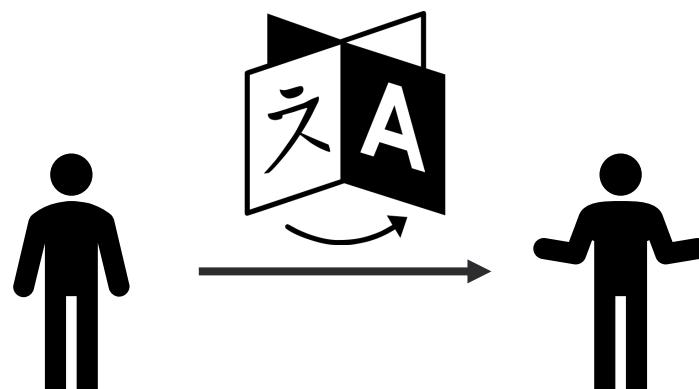
Assistant Professor
Department of International Trade
College of Global Political Science and Economics
Incheon National University



사람언어 및 컴퓨터언어 차이

➤ 사람언어와 컴퓨터언어의 차이는 대상만 다른 뿐 같은 기능!

- 사람언어: 내가 **다른 사람**과 대화하기 위한 말이나 논리
→ 한국어, 영어, 불어, 스페인어, 철학, 수학, 논리학 등
- 컴퓨터언어: 내가 **컴퓨터**와 대화하기 위한 말이나 논리
→ Fortran, Cobol, Pascal, C++, Java, Perl, Python, HTML, Ruby, PHP 등



분석에 특화된 컴퓨터언어 소개

➤ 컴퓨터언어의 용어

- 프로그래밍/코딩: 컴퓨터언어를 사용해서 컴퓨터가 동작/작업을 수행할 수 있도록 프로그램을 만드는 것
- 알고리즘: 컴퓨터언어를 사용해서 문제를 해결하기 위한 절차나 방법을 자동으로 수행하는 프로그램으로 결과를 얻는 것

➤ 왜 파이썬을 배워야 하는가

- 쉽게 배울 수 있는 컴퓨터 언어
- 세계적인 기업들(구글, 아마존 등)이 필수도구로 사용하고 성능이 입증된 언어
- 인공지능(머신러닝, 딥러닝)을 빠르게 배우고 활용할 수 있는 컴퓨터 언어
- 데이터분석과 머신러닝에 특화 된 언어 중 확장성과 범용성이 높음
- 누구나 활용 가능한 오픈소스로 공개되어 접근성과 활용성이 뛰어남

파이썬 플랫폼과 컴퓨터 얼굴 소개

➤ Anaconda

- Python기반의 Open Data Science Platform
- Python을 포함하여 Python Library 등을 하나로 정리해 둔 배포판
- Pandas, Numpy, Matplotlib 등 데이터분석에 유용한 Library를 포함
- 추가적인 Library를 연결 및 확장하여 개발/웹/오피스/비즈니스로 활용가능

➤ Jupyter Notebook / Jupyter Lab / PyCharm ...

- Interactive 환경을 인간에게 제공하여 컴퓨터(Programming Platform)와 소통을 가능하게 함
- Anaconda 프로그래밍 환경을 그대로 사용
- 코딩하면서 바로 결과를 확인할 수 있음
- 문서화(Markdown)와 클라우드(Git, Google Drive 등) 연결/저장 등이 가능
- 각종 단축키와 투터리얼 등의 자료가 많음

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 - 2) Jupyter Notebook 설치: 사람이 컴퓨터에게 지시를 할 수 있음
 - 3) Jupyter Lab 설치: Jupyter Notebook보다 고급환경
 - 4) 작업경로 반영: 분석할 때 작업하던 장소를 찾아 헤맬 필요 없음
- 여기까지 완료되면 분석/사용하는데 무리 없음

➤ 고급설정

- 1) Anaconda Prompt 진입: 모듈이나 기능의 추가/업데이트
- 2) Jupyter Notebook 확장기능 설치
- 3) Jupyter Lab 확장기능 설치

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➤ 기본설정

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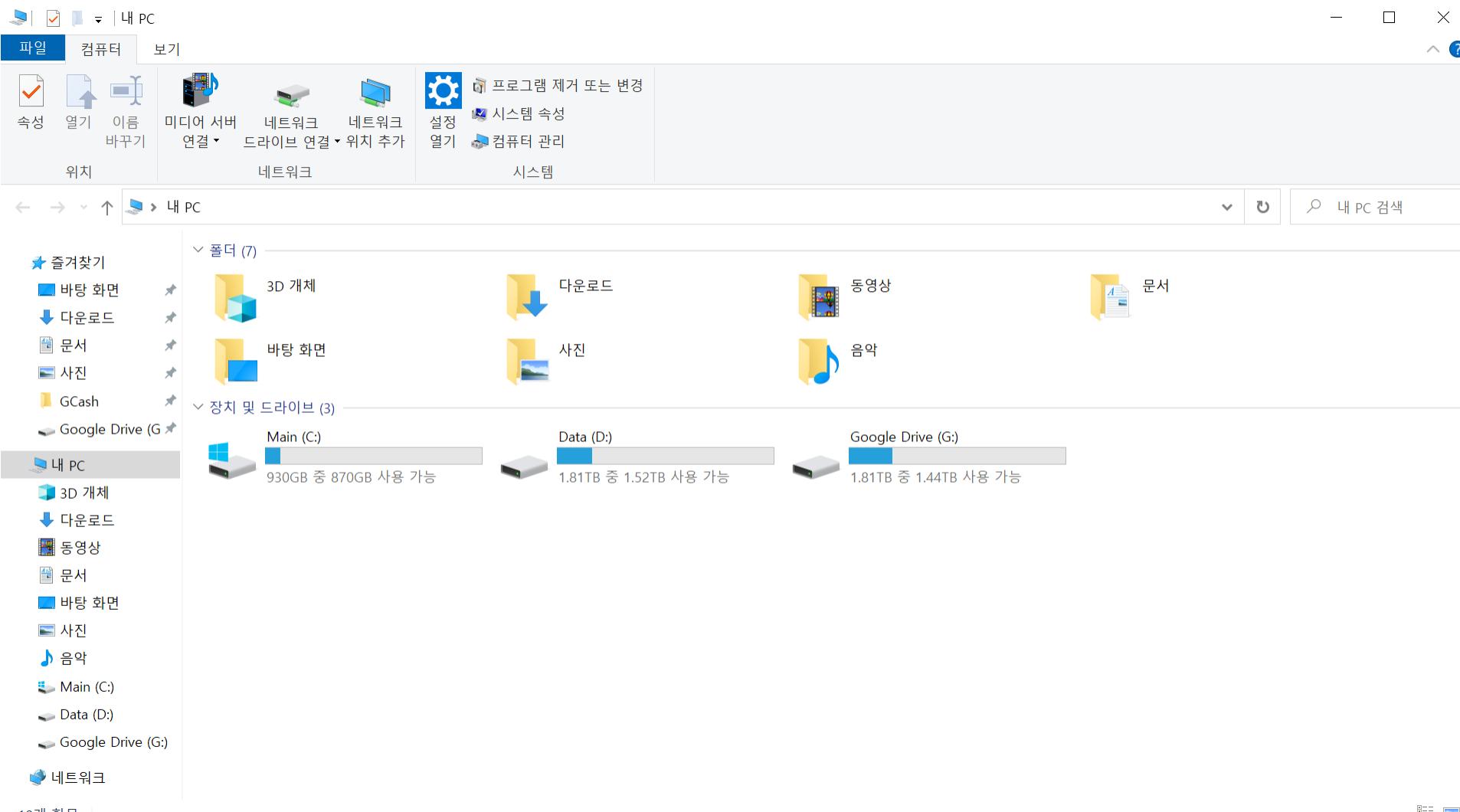
- 1) Anaconda 설치: 사람과 컴퓨터가 서로 대화할 수 있음
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➤ 고급설정

- 1) Anaconda Prompt 진입: 모듈이나 기능의 추가/업데이트
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기본설정: 0) 본인 PC 사양확인

➤ 윈도우탐색기 → “내 PC” 우클릭 → “속성” 선택



기본설정: 0) 본인 PC 사양확인

➤ 시스템 종류에서 32비트 / 64비트 확인

설정

홈

설정 검색

시스템

디스플레이

소리

알림 및 작업

집중 지원

전원 및 절전

저장소

태블릿

멀티태스킹

PC에 화면 표시

공유 환경

클립보드

정보

PC가 모니터링되고 보호됩니다.

자세한 내용은 Windows 보안을 참조하세요.

장치 사양

디바이스 이름: DESKTOP-BQOP850
프로세서: Intel(R) Core(TM) i5-8600 CPU @ 3.10GHz 3.10 GHz
설치된 RAM: 48.0GB(47.9GB 사용 가능)
장치 ID: C29F9DFA-505B-4E5C-9553-CE1A11C12BCB
제품 ID: 00330-80000-00000-AA021
시스템 종류: 64비트 운영 체제, x64 기반 프로세서
펜 및 터치: 이 디스플레이에 사용할 수 있는 펜 또는 터치식 입력이 없습니다.

복사

이 PC의 이름 바꾸기

Windows 사양

에디션: Windows 10 Pro
버전: 20H2
설치 날짜: 2020-12-29
OS 빌드: 19042.804

관련 설정

BitLocker 설정

장치 관리자

원격 데스크톱

시스템 보호

고급 시스템 설정

이 PC의 이름 바꾸기(고급)

도움말 보기

피드백 보내기



기본설정: 1) Anaconda 설치

➤ ANACONDA 홈페이지 접속 → Get Started (기존에 설치했다면 제어판서 삭제 후 진행)

The screenshot shows the Anaconda website homepage. At the top, there is a navigation bar with links for Products, Pricing, Solutions, Resources, Blog, and Company. A prominent 'Get Started' button is located in the top right corner. Below the navigation bar, the main headline reads 'Data science technology for human sensemaking.' in large, bold text. Underneath the headline, a subtext states: 'A movement that brings together millions of data science practitioners, data-driven enterprises, and the open source community.' At the bottom of the page, there is a cookie consent banner with the text: 'This website uses cookies to ensure you get the best experience on our website. [Privacy Policy](#)' and a 'Accept' button.

기본설정: 1) Anaconda 설치

➤ Download Anaconda installers

The screenshot shows the Anaconda website homepage. At the top, there's a navigation bar with links for Products, Pricing, Solutions, Resources, Blog, and Company. Below the navigation, a large banner features a smiling woman with curly hair on the right side. The main headline in the center says "Hello! Let's get started!" Below it are three calls-to-action: "See all Anaconda products", "Check out the latest in data science", and "Request an Anaconda demo". A prominent button at the bottom right of the main area says "Download Anaconda installers". The background of the page has a faint watermark-like text: "Data science technology", "hundreds of thousands", and "of users around the world".

Anaconda | The World's Most P X +

anaconda.com

ANACONDA Products Pricing Solutions Resources Blog Company

Hello! Let's get started!

See all Anaconda products

Check out the latest in data science

Request an Anaconda demo

Download Anaconda installers

This website uses cookies to ensure you get the best experience on our website. [Privacy Policy](#)

Accept

<https://www.anaconda.com/products/individual#Downloads>

기본설정: 1) Anaconda 설치

➤ 본인 os 사양에 맞는 프로그램 다운로드

The screenshot shows a web browser window with the title bar "Anaconda | Individual Edition". The address bar contains the URL "anaconda.com/products/individual#Downloads". The main content area displays the "Anaconda Installers" section. It features three columns for different operating systems: Windows, MacOS, and Linux. Each column has a heading, an OS logo, and a list of Python versions with their corresponding installer links. The "Windows" column has two links: "64-Bit Graphical Installer (457 MB)" (underlined in blue) and "32-Bit Graphical Installer (403 MB)". The "MacOS" column has two links: "Python 3.8" and "64-Bit Graphical Installer (435 MB)". The "Linux" column has two links: "Python 3.8" and "64-Bit (x86) Installer (529 MB)".

Platform	Python Version	Installer Type	File Size
Windows	Python 3.8	64-Bit Graphical Installer	457 MB
		32-Bit Graphical Installer	403 MB
MacOS	Python 3.8	64-Bit Graphical Installer	435 MB
		64-Bit Command Line Installer	428 MB
Linux	Python 3.8	64-Bit (x86) Installer	529 MB
		64-Bit (Power8 and Power9) Installer	279 MB

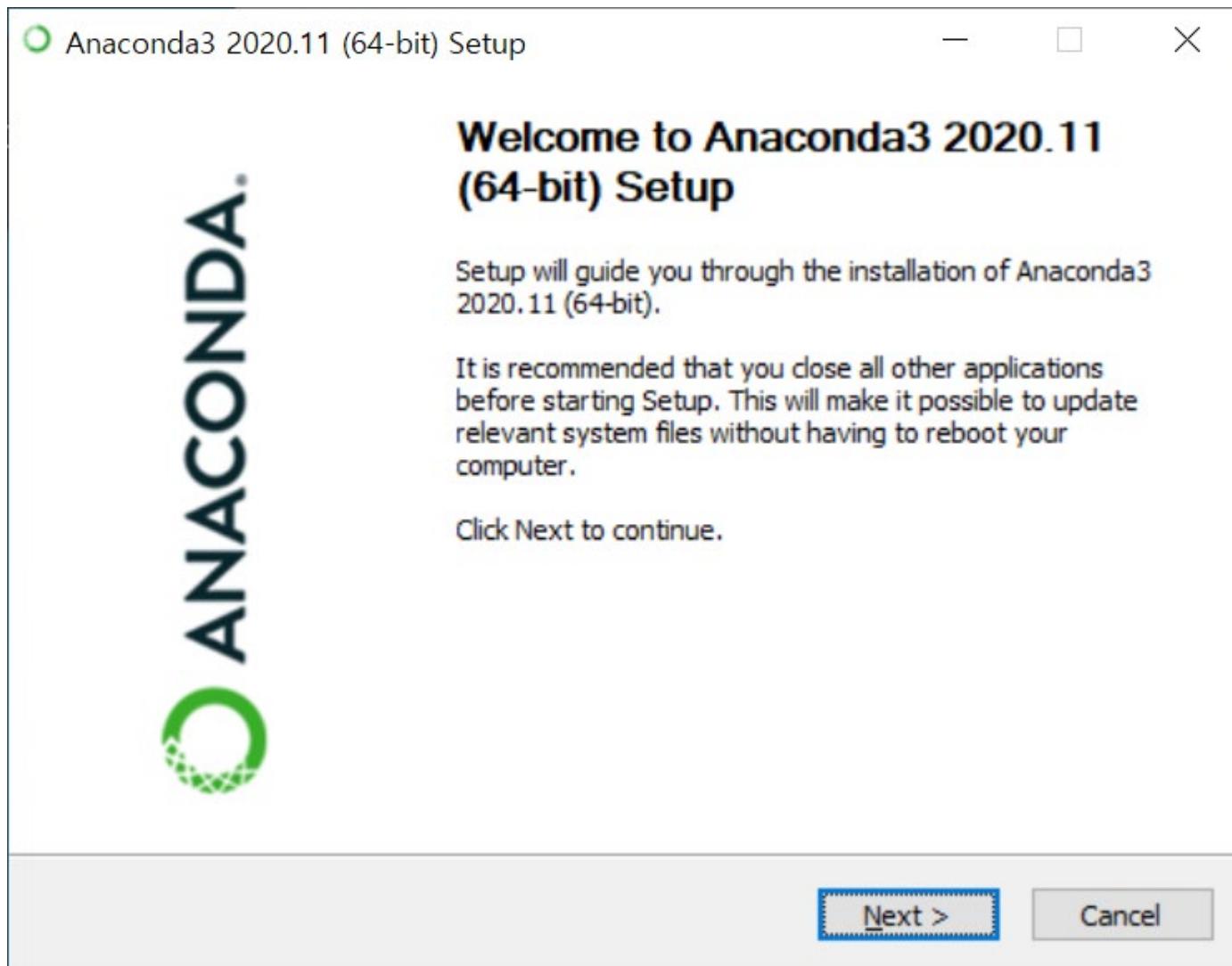
This website uses cookies to ensure you get the best experience on our website. [Privacy Policy](#)

Accept

https://repo.anaconda.com/archive/Anaconda3-2020.11-Windows-x86_64....

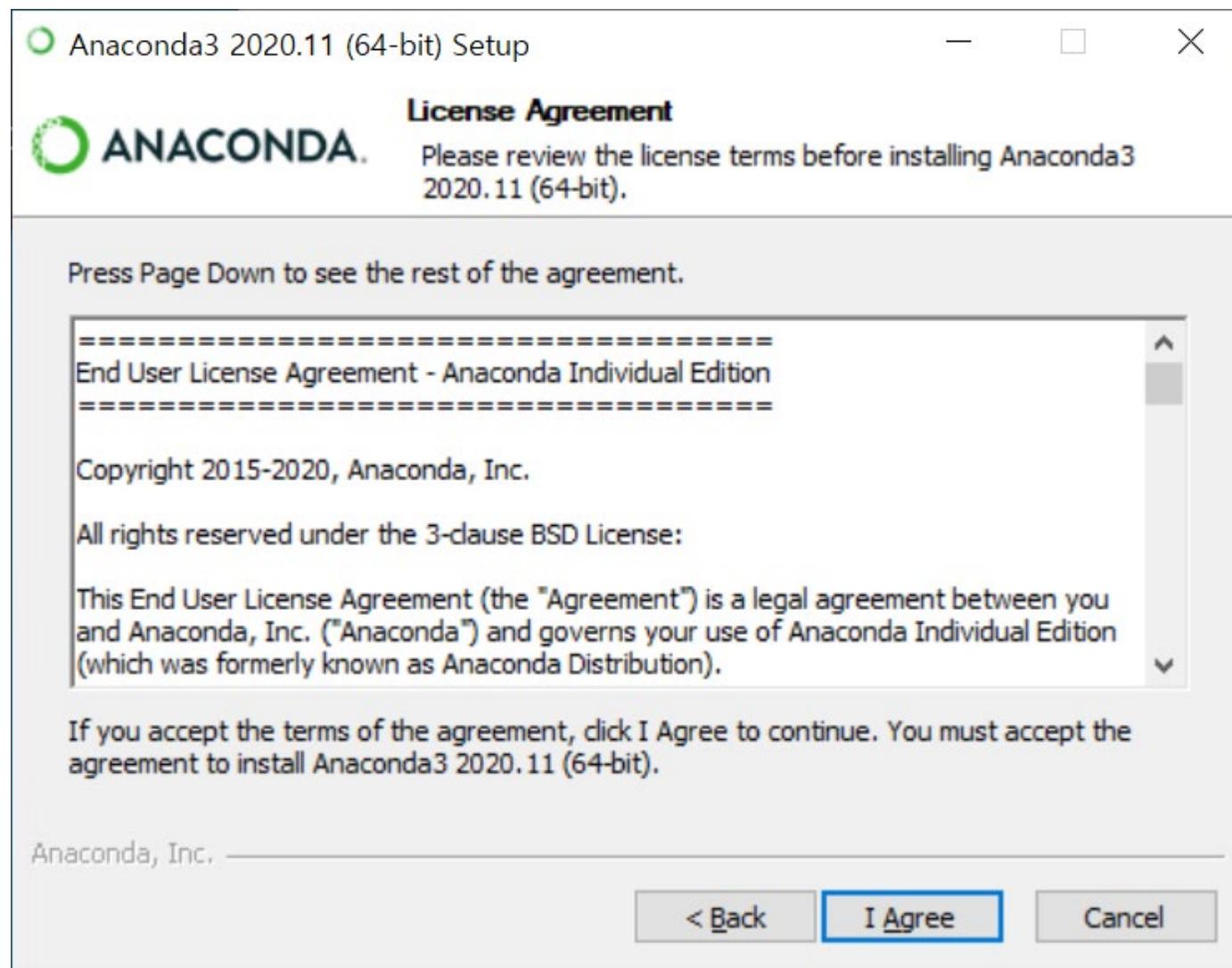
기본설정: 1) Anaconda 설치

➤ 다운받은 파일 실행 -> Next



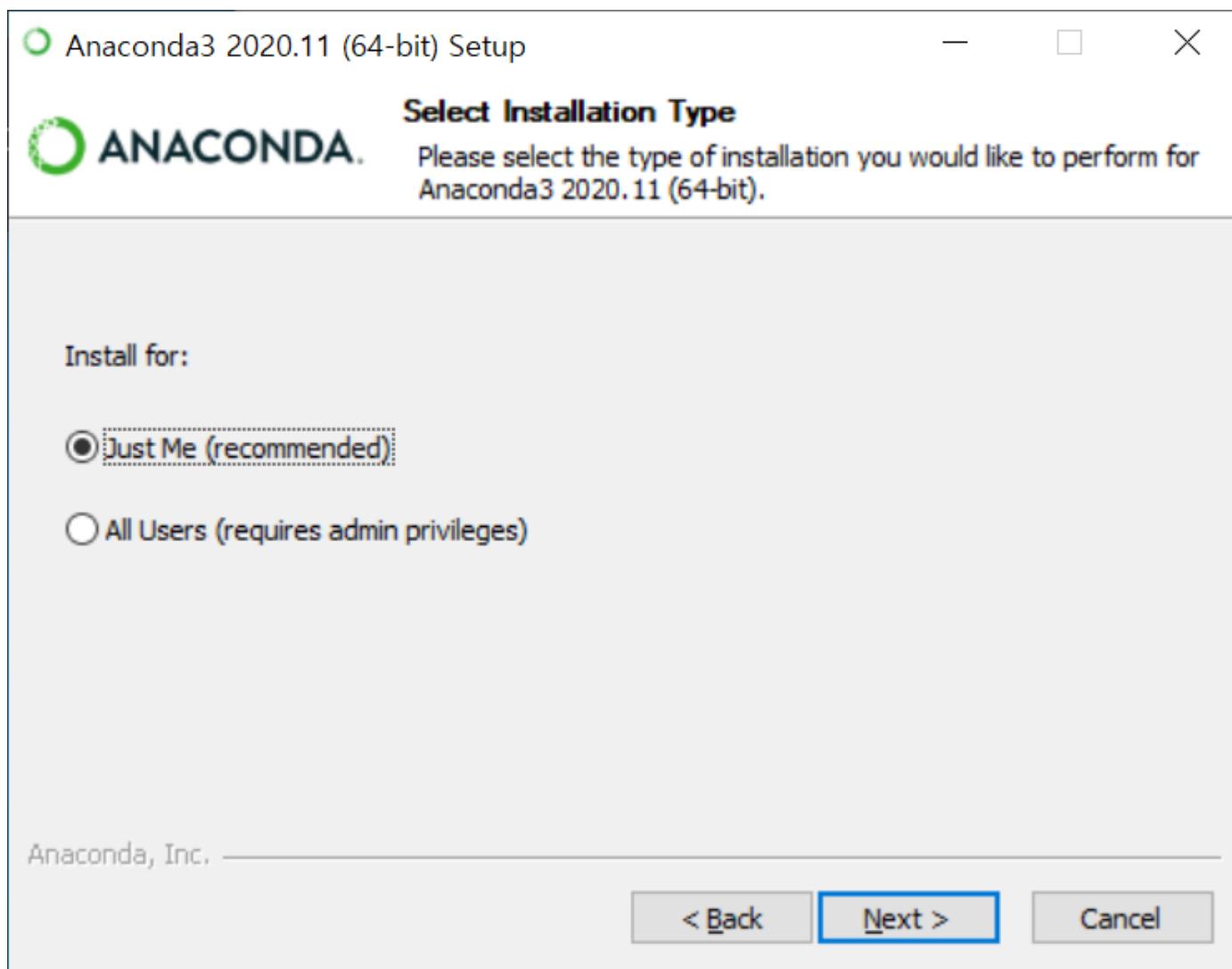
기본설정: 1) Anaconda 설치

➤ I Agree



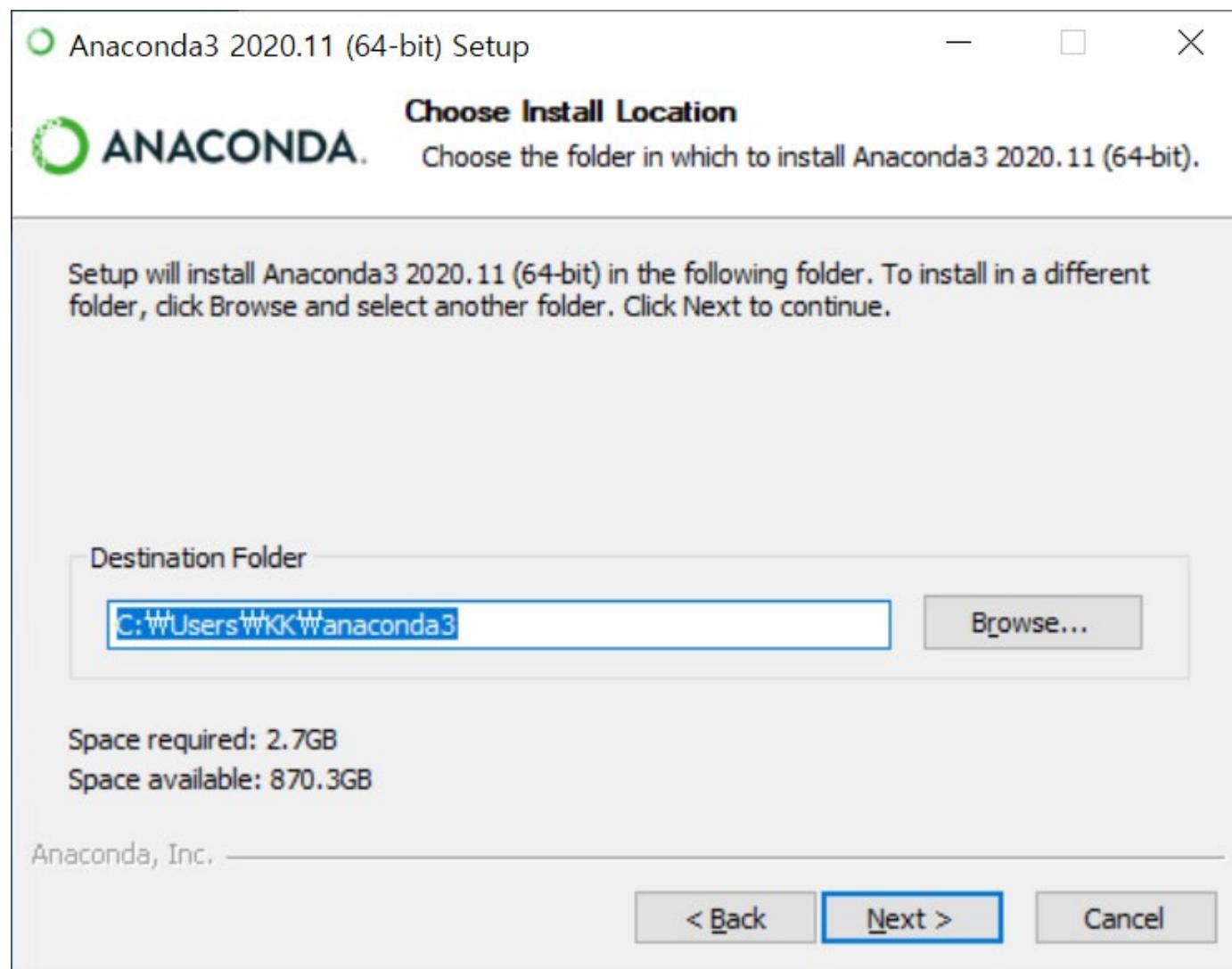
기본설정: 1) Anaconda 설치

➤ Next



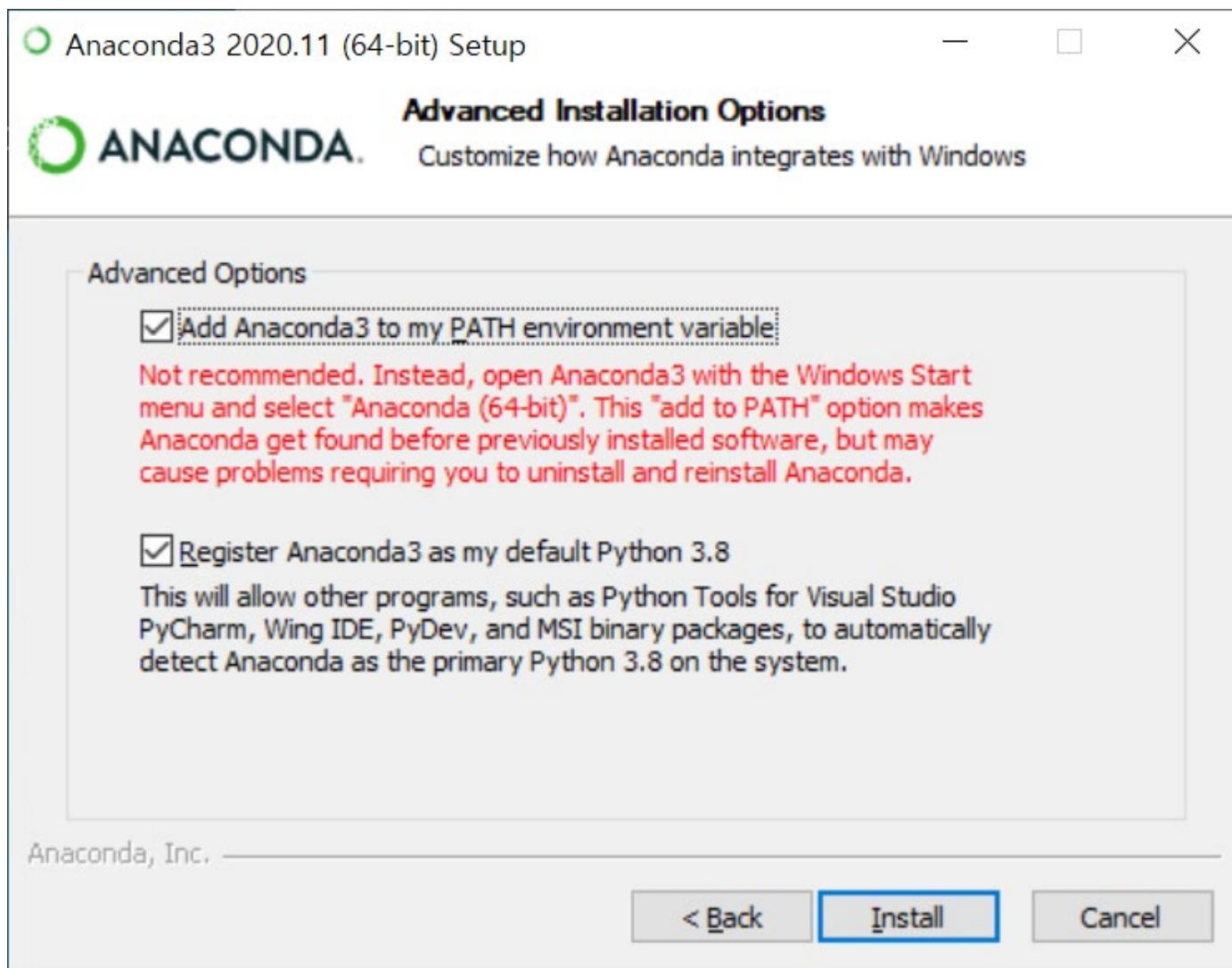
기본설정: 1) Anaconda 설치

➤ Next



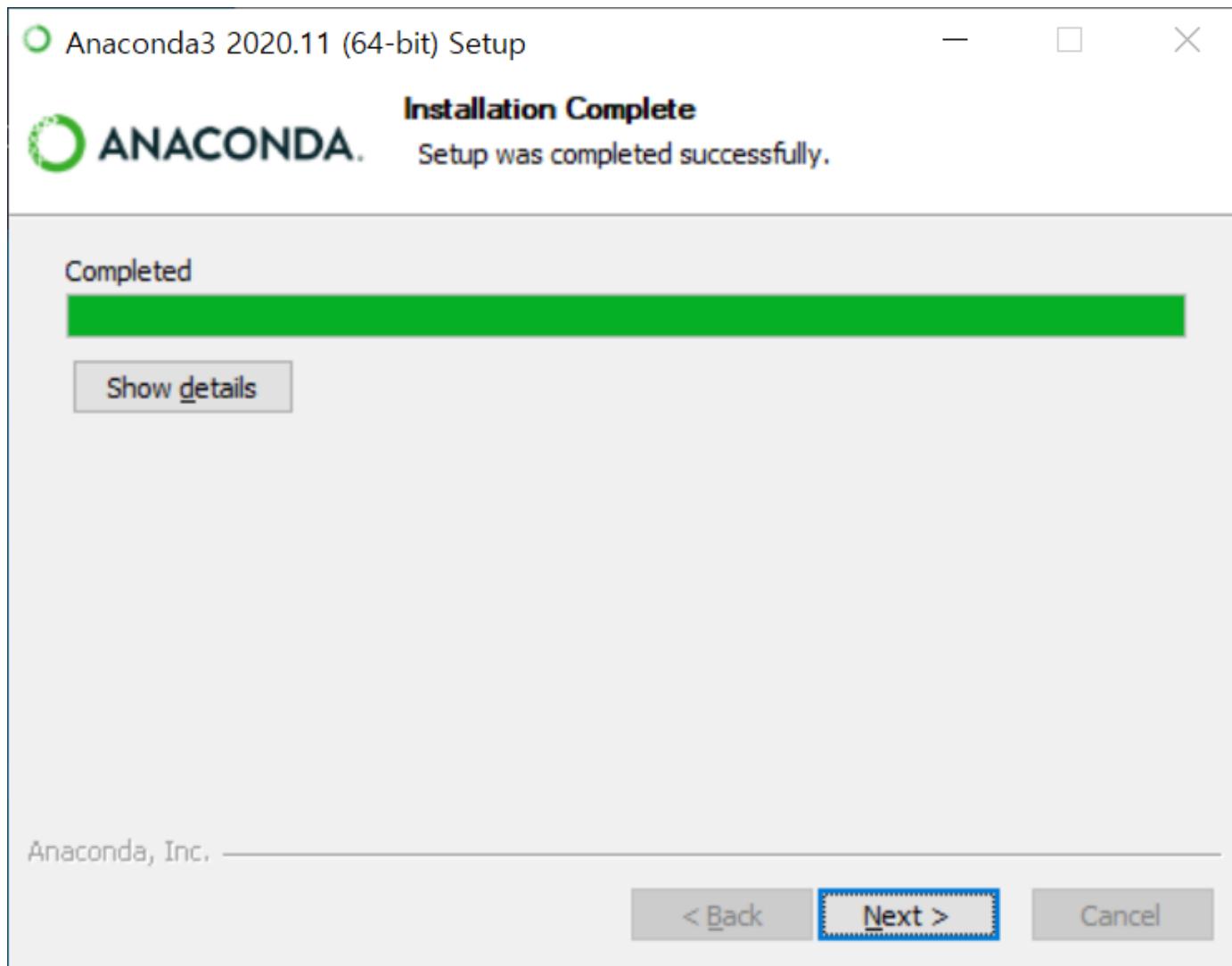
기본설정: 1) Anaconda 설치

➤ “Add Anaconda3 to my PATH~~” 체크 → Install



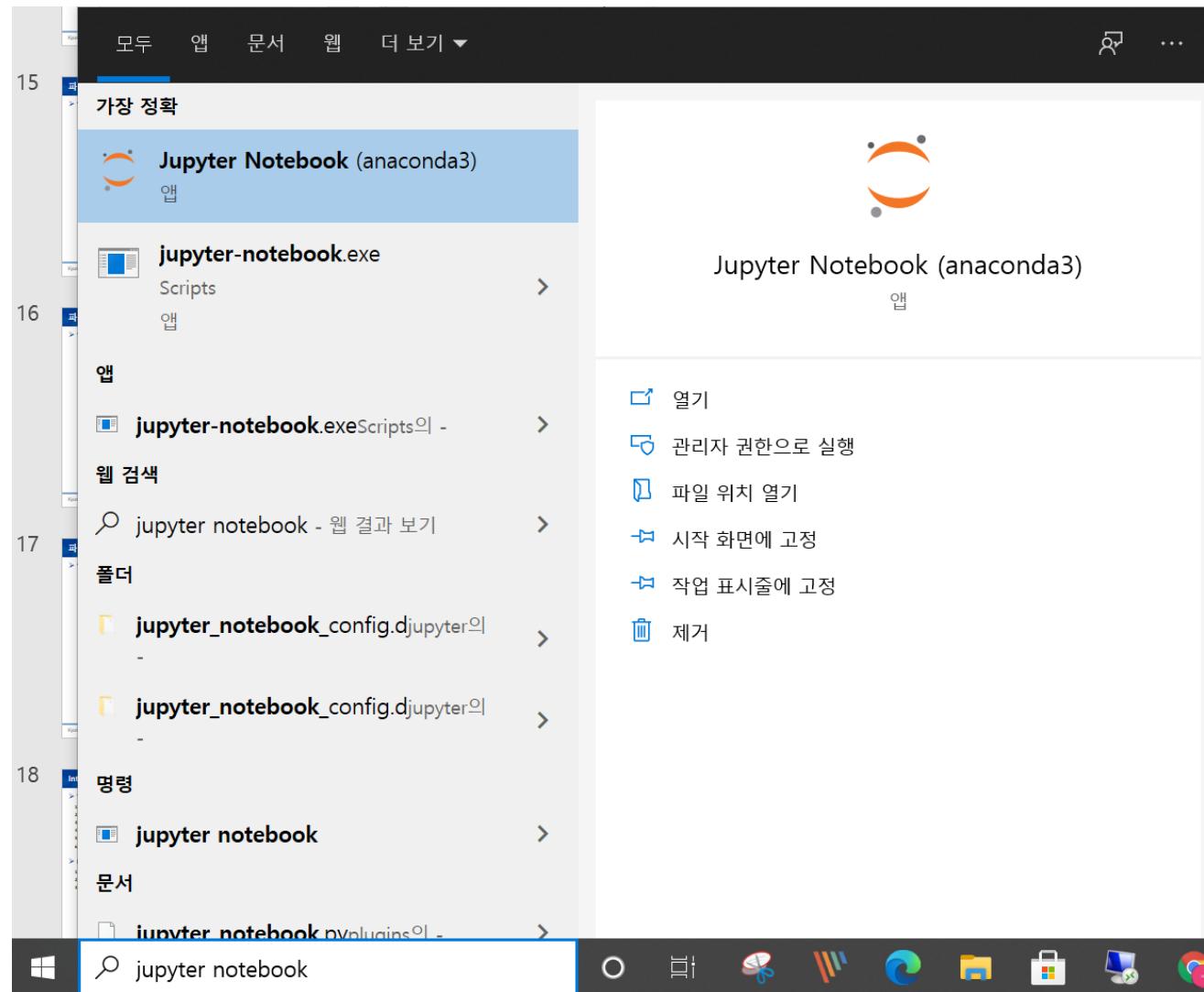
기본설정: 1) Anaconda 설치

➤ Next → Next → Finish → Anaconda 설치완료



기본설정: 2) Jupyter Notebook 설치 (Anaconda 설치 시 동시 설치)

➤ 시작 → “Jupyter Notebook” 입력 → 클릭 실행



기본설정: 2) Jupyter Notebook 설치

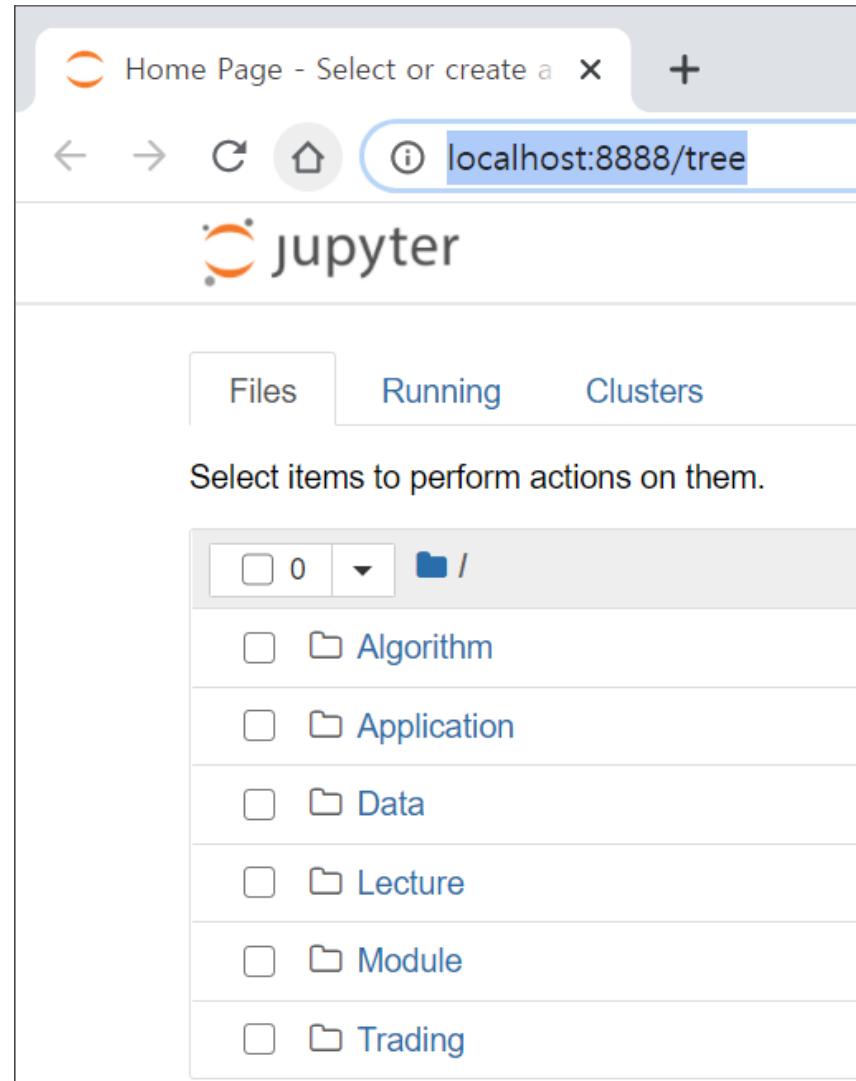
➤ Jupyter Notebook 실행화면

The screenshot shows the Jupyter Notebook web interface at `localhost:8888/tree`. The top navigation bar includes a back/forward button, refresh, search, and a plus sign for creating new notebooks. The title bar says "jupyter". On the right, there are "Quit" and "Logout" buttons. Below the title bar, there are tabs for "Files", "Running", and "Clusters", with "Files" being active. A message "Select items to perform actions on them." is displayed above the file list. The file tree lists various directories and files with their last modified times. The columns are "Name", "Last Modified", and "File size".

Name	Last Modified	File size
0	2달 전	
3D Objects	한 시간 전	
anaconda3	2달 전	
Contacts	28분 전	
Desktop	한 시간 전	
Documents	21일 전	
Downloads	2달 전	
Favorites	2달 전	
Links	2달 전	
Music	2달 전	
Pictures	2달 전	
PyEMD	2달 전	
Saved Games	2달 전	
Searches	2달 전	
Videos	2달 전	
mercurial.ini	2달 전	41 B

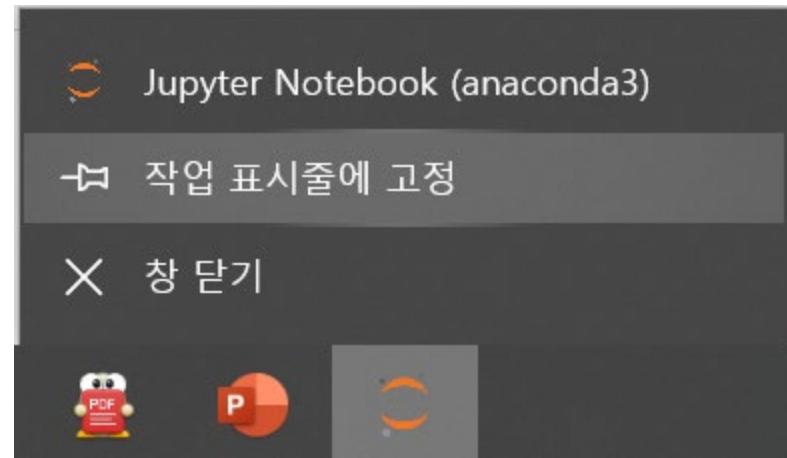
기본설정: 4) 작업경로 반영

➤ 만약 인터넷창에 Jupyter Notebook이 실행되지 않는다면 “주소 입력”으로 실행



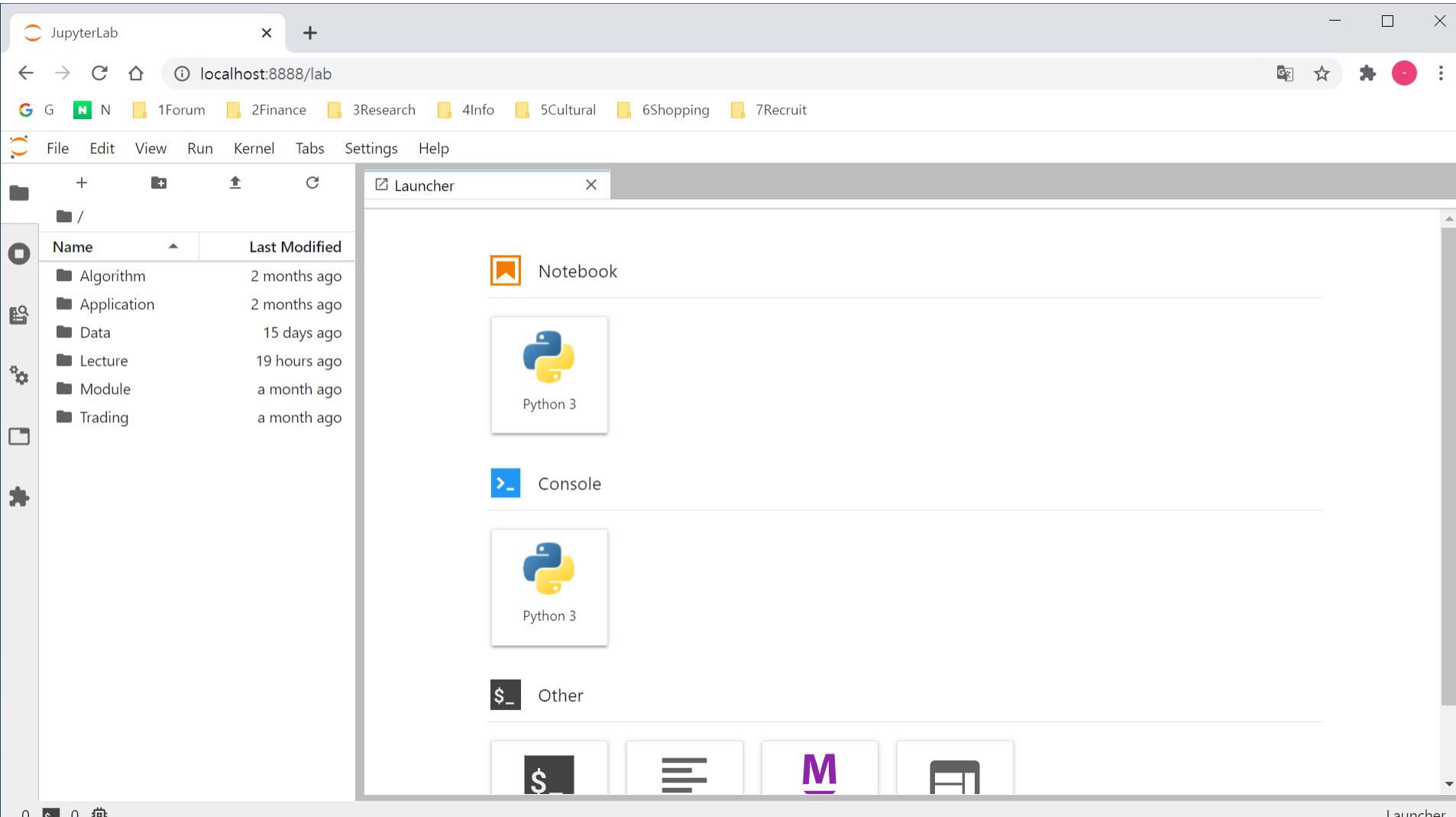
기본설정: 2) Jupyter Notebook 설치

➤ 작업표시줄 “Jupyter Notebook” 우클릭 → “작업 표시줄에 고정” 클릭



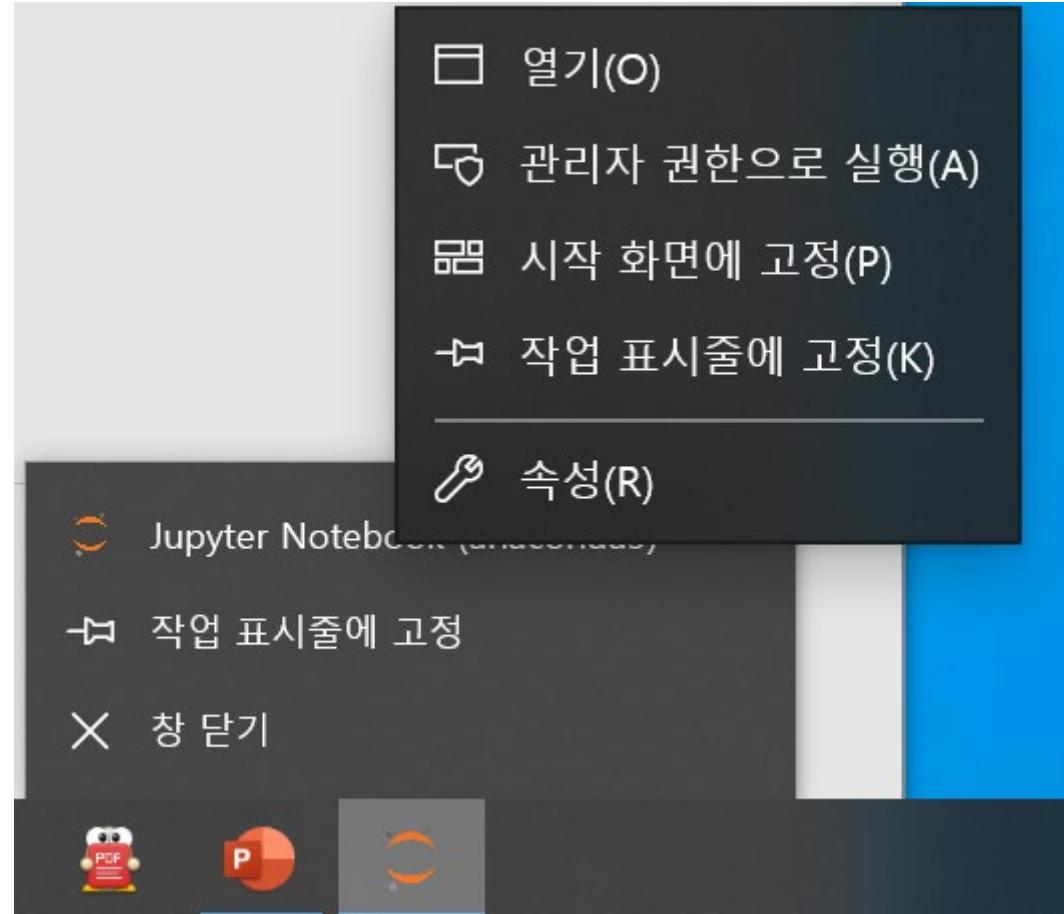
기본설정: 3) Jupyter Lab 설치 (Anaconda 설치 시 같이 설치)

➤ 만약 인터넷창 “localhost:8888/lab” 입력으로 실행



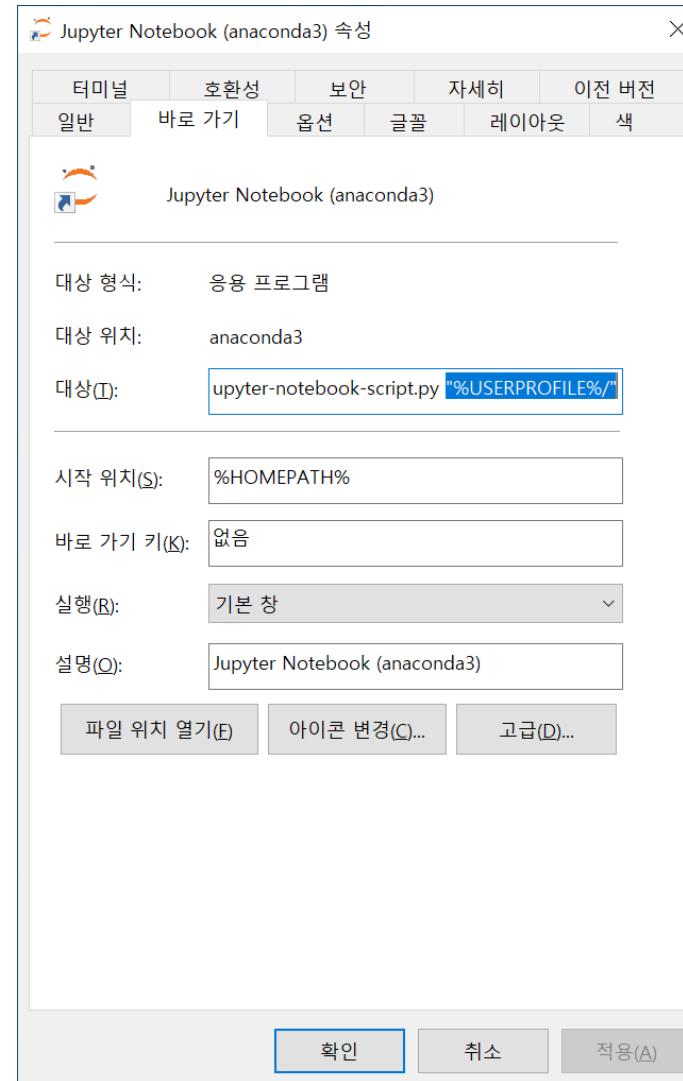
기본설정: 4) 작업경로 반영

➤ 작업표시줄 “Jupyter Notebook” 우클릭 → 상단의 “Jupyter Notebook” 우클릭 → 속성



기본설정: 4) 작업경로 반영

➤ “대상”에서 ‘“%USERPROFILE%”’ 삭제 후 본인 작업경로 반영 (ex. D:Analysis)



기본설정: 4) 작업경로 반영

➤ “시작위치”에서 “%HOMEPATH%” 삭제 후 본인 작업경로 반영 (ex. D:Analysis) → 확인



기본설정: 4) 작업경로 반영

➤ Jupyter Notebook 실행화면 끄기 + 검은화면(Prompt화면) 끄기

The screenshot shows a Jupyter Notebook interface running in a browser. The top navigation bar includes links for 'Home Page - Select or create a' and '+', along with standard browser controls like back, forward, and search. The title bar says 'localhost:8888/tree' and 'jupyter'. On the right, there are 'Quit' and 'Logout' buttons.

The main area has tabs for 'Files', 'Running', and 'Clusters'. Below these, a message says 'Select items to perform actions on them.' There is an 'Upload' button and a 'New' dropdown menu.

A terminal window is open, displaying the following log output:

```
[W 00:54:44.824 NotebookApp] Error loading server extension jupyter_nbextensions_configurator
Traceback (most recent call last):
  File "C:\Users\KK\anaconda3\lib\site-packages\notebook\notebookapp.py", line 1942, in init_server_extensions
    mod = importlib.import_module(modulename)
  File "C:\Users\KK\anaconda3\lib\importlib\__init__.py", line 127, in import_module
    return _bootstrap._gcd_import(name[level:], package, level)
  File "<frozen importlib._bootstrap>", line 1014, in _gcd_import
  File "<frozen importlib._bootstrap>", line 991, in _find_and_load
  File "<frozen importlib._bootstrap>", line 973, in _find_and_load_unlocked
ModuleNotFoundError: No module named 'jupyter_nbextensions_configurator'
[I 00:54:44.994 NotebookApp] JupyterLab extension loaded from C:\Users\KK\anaconda3\lib\site-packages\jupyterlab
[I 00:54:44.994 NotebookApp] JupyterLab application directory is C:\Users\KK\anaconda3\share\jupyter\lab
[I 00:54:44.997 NotebookApp] Serving notebooks from local directory: C:\Users\KK
[I 00:54:44.997 NotebookApp] Jupyter Notebook 6.1.4 is running at:
[I 00:54:44.997 NotebookApp] http://localhost:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[I 00:54:44.997 NotebookApp] or http://127.0.0.1:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[I 00:54:44.998 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 00:54:45.037 NotebookApp]

To access the notebook, open this file in a browser:
file:///C:/Users/KK/AppData/Roaming/jupyter/runtime/nbserver-18208-open.html
Or copy and paste one of these URLs:
http://localhost:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
or http://127.0.0.1:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
```

The terminal window also shows a warning about the nbextensions_configurator extension and provides instructions for accessing the notebook via a browser or URL.

기본설정: 4) 작업경로 반영

➤ 작업표시줄 “Jupyter Notebook” 클릭하여 실행



기본설정: 4) 작업경로 반영

➤ Jupyter Notebook 실행화면이 설정한 폴더로 변경됨이 확인됨

The screenshot shows the Jupyter Notebook web interface at the URL `localhost:8888/tree`. The title bar says "Home Page - Select or create a". The top navigation bar includes "Files", "Running", and "Clusters". On the right, there are "Quit" and "Logout" buttons, along with icons for star, gear, and refresh.

The main area displays a file tree under the "jupyter" directory. The tree structure is as follows:

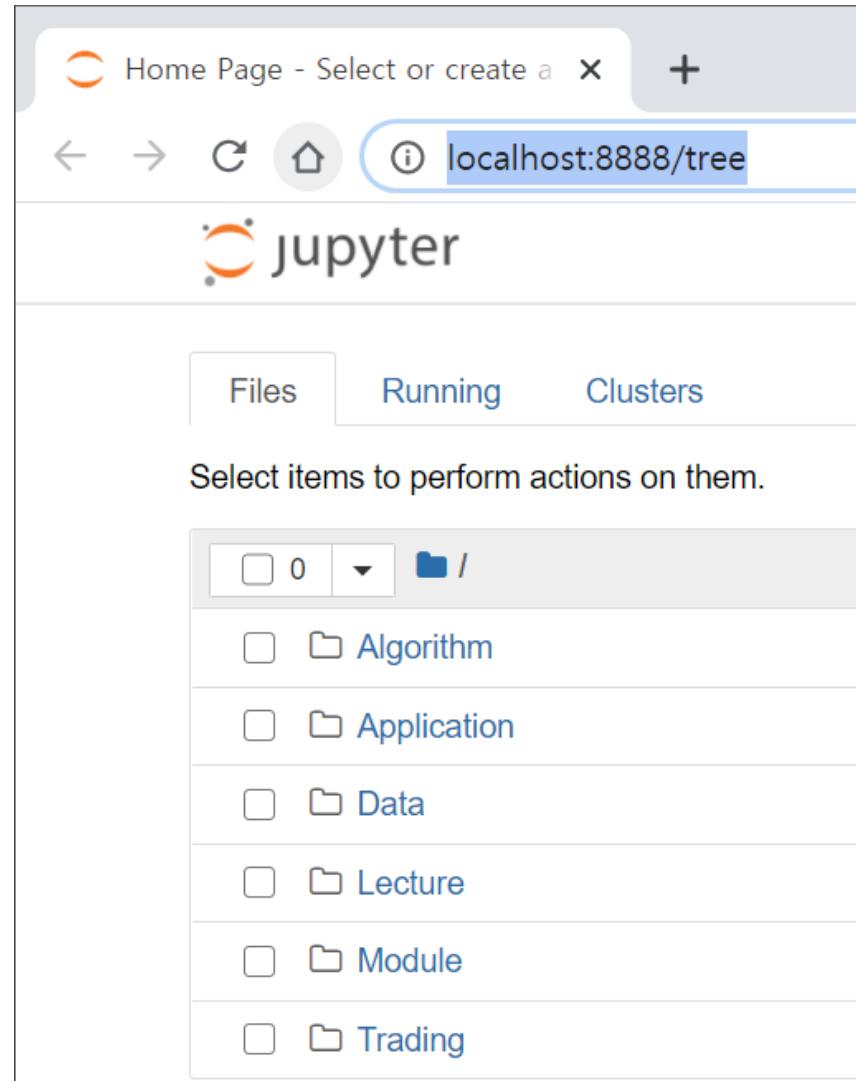
- /
- Algorithm
- Application
- Data
- Lecture
- Module
- Trading

Below the tree, there are three filter buttons: "Name", "Last Modified", and "File size". The "Last Modified" button is currently selected. The files are listed with their last modified dates:

Name	Last Modified
Algorithm	2달 전
Application	2달 전
Data	14일 전
Lecture	3시간 전
Module	25일 전
Trading	한 달 전

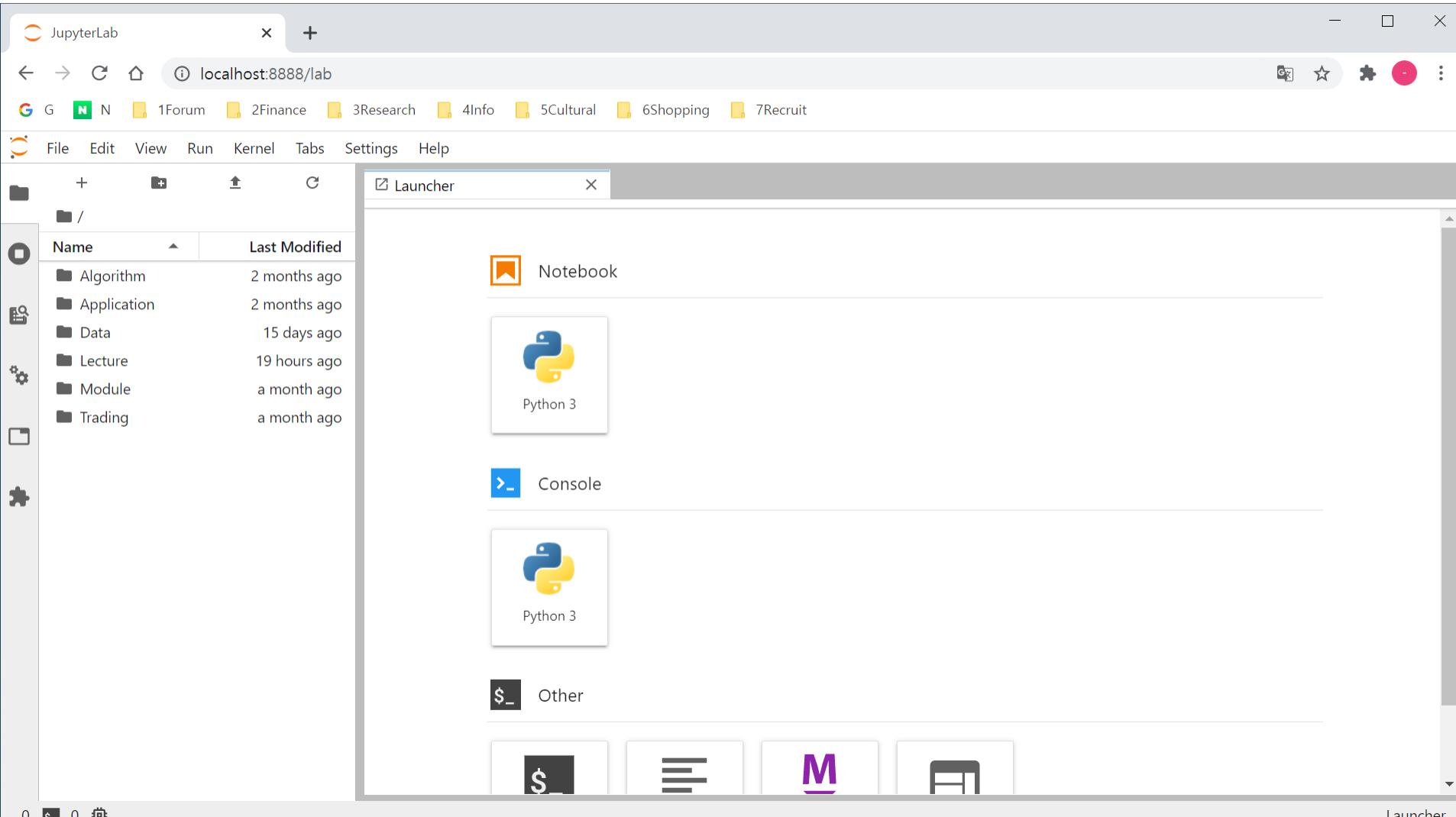
기본설정: 4) 작업경로 반영

- 만약 인터넷창에 Jupyter Notebook이 실행되지 않는다면 “주소 입력”으로 실행



기본설정: 4) 작업경로 반영

➤ Jupyter Lab도 작업경로가 동일하게 변경됨



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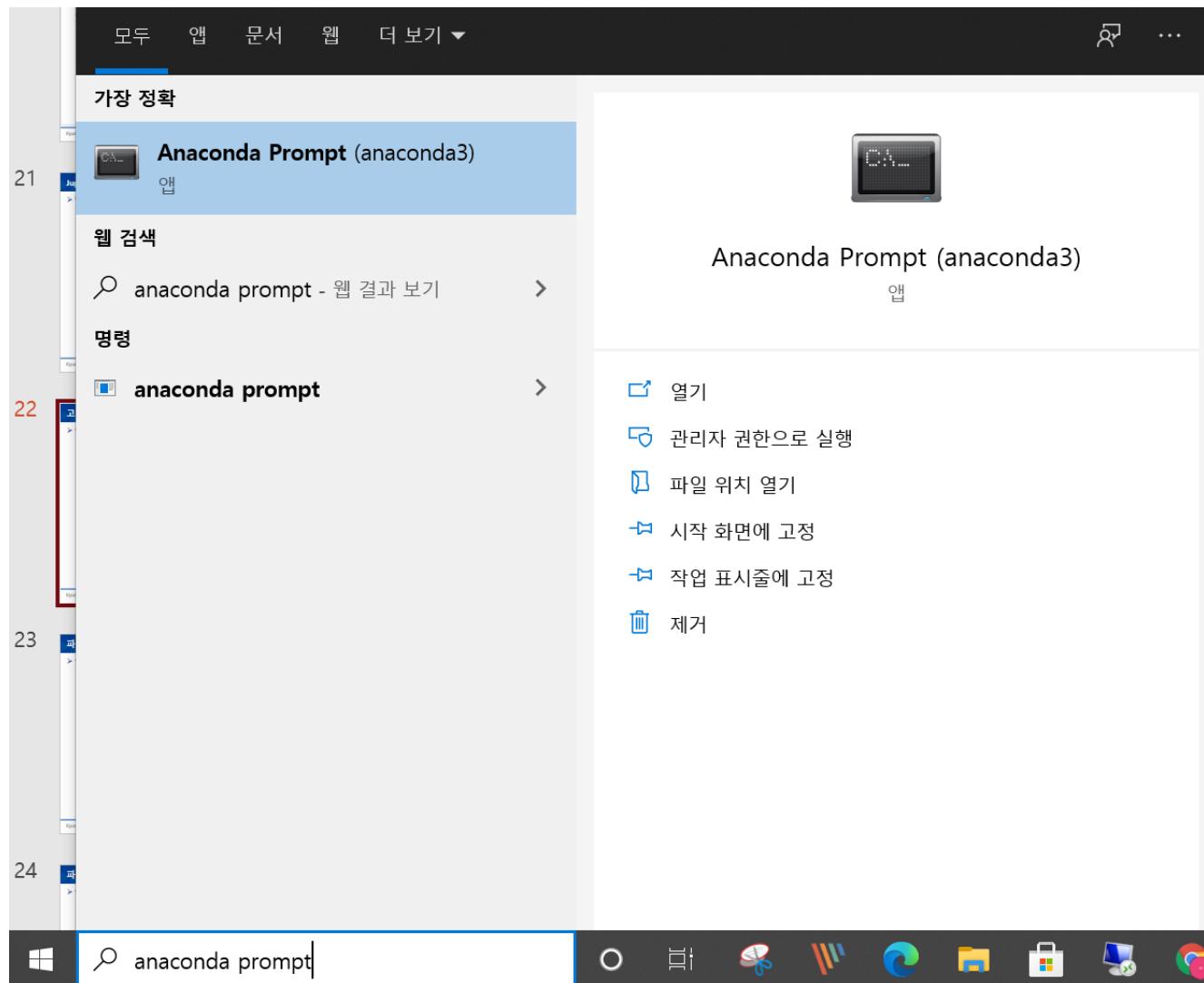
- 1) Anaconda 설치: 사람과 컴퓨터가 서로 대화할 수 있음
 - 2) Jupyter Notebook 설치: 사람이 컴퓨터에게 지시를 할 수 있음
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- ➔ 여기까지 완료되면 분석/사용하는데 무리 없음

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- 2) Jupyter Notebook 확장기능 설치
- 3) Jupyter Lab 확장기능 설치

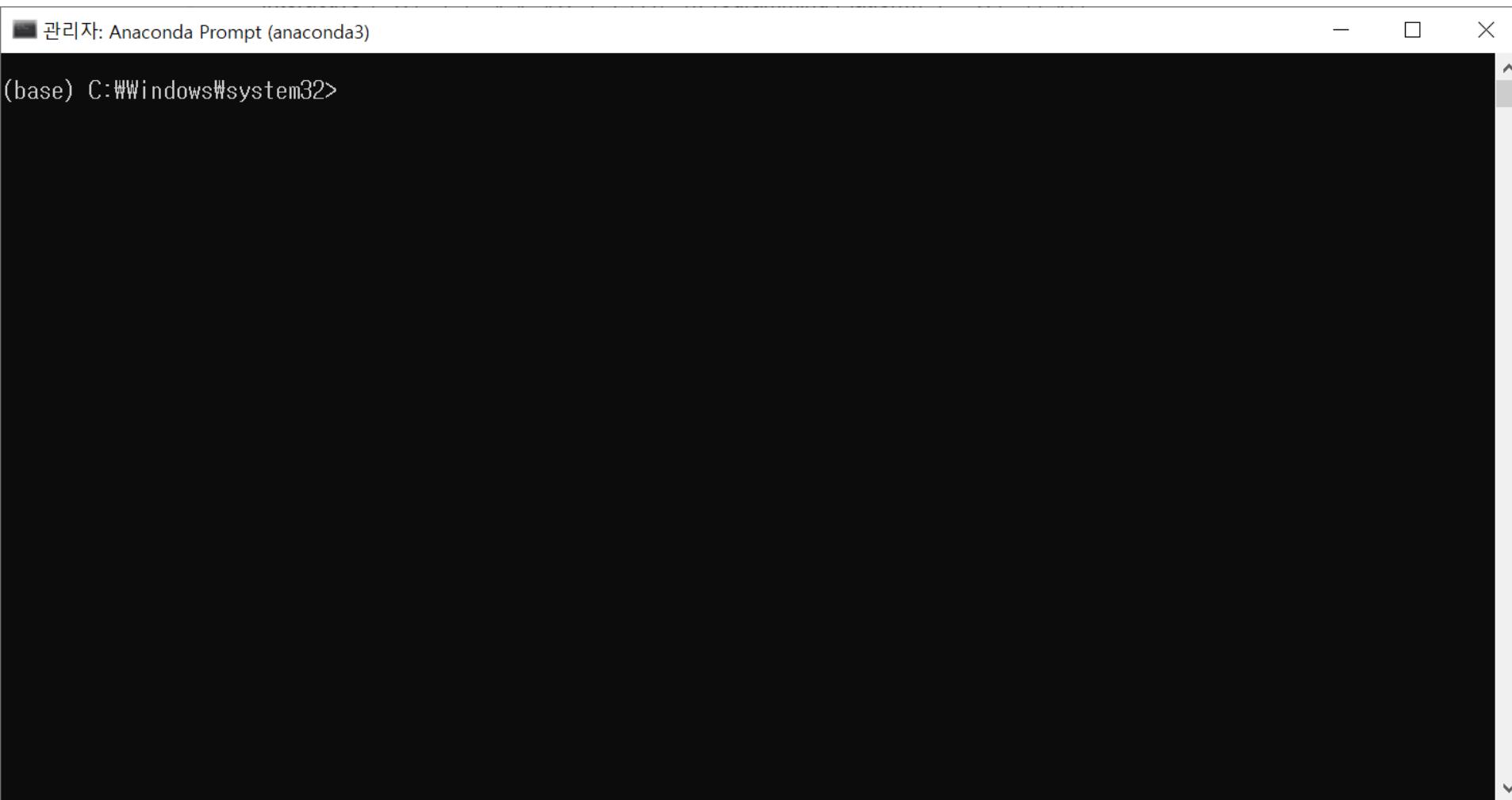
고급설정: 1) Anaconda Prompt 진입

➤ 시작 → “Anaconda Prompt” 타이핑 → 앱 우클릭 후 “관리자 권한으로 실행”



고급설정: 1) Anaconda Prompt 진입

➤ 시작 → “Anaconda Promp” 타이핑 → 앱 우클릭 후 “관리자 권한으로 실행”



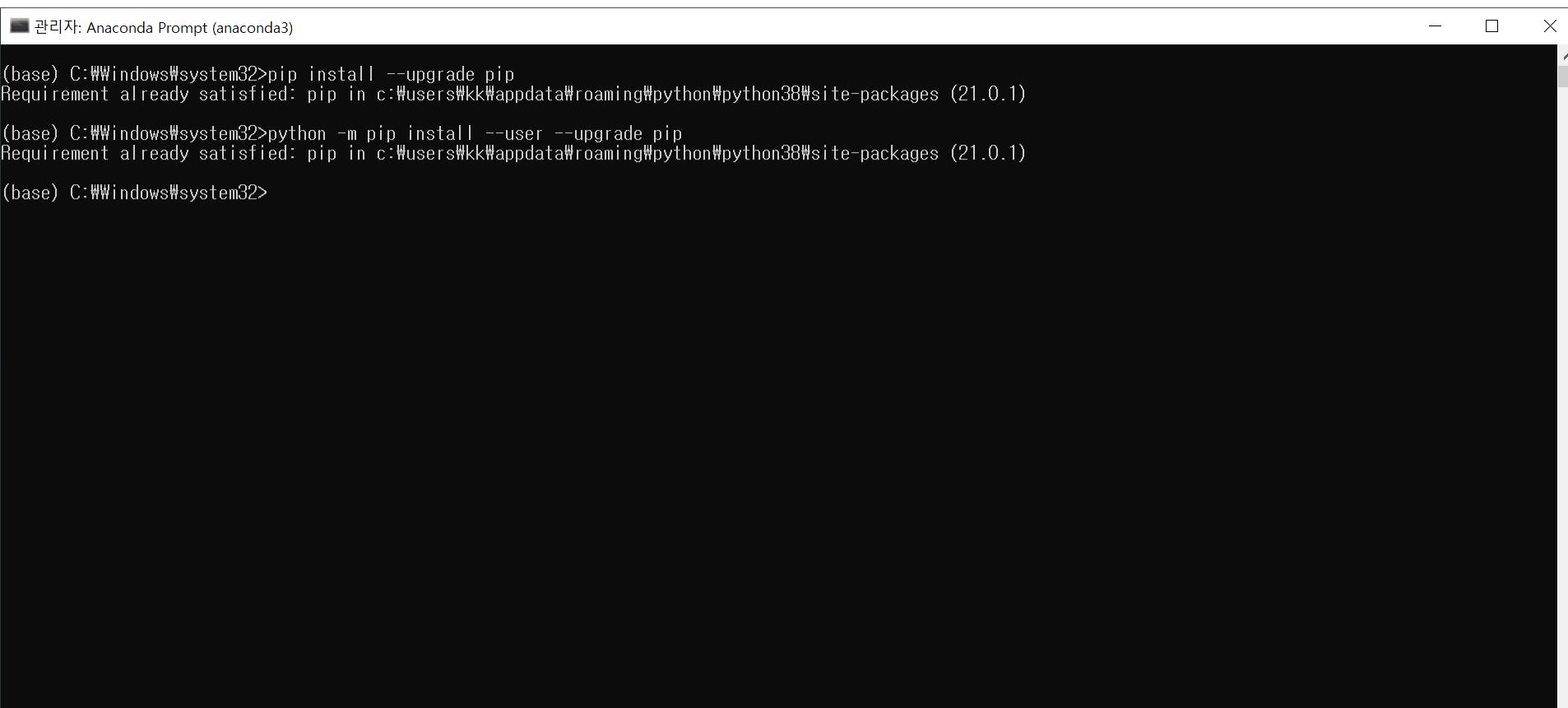
고급설정: 1) Anaconda Prompt 진입

➤ “pip”라는 파이썬의 패키지 라이브러리 관리 시스템 업데이트 (복불가능)

:: Update of PIP

pip install --upgrade pip

python -m pip install --user --upgrade pip



The screenshot shows a Windows terminal window titled "관리자: Anaconda Prompt (anaconda3)". The command "pip install --upgrade pip" was run twice, once directly and once via Python's pip module. Both commands output that the requirement is already satisfied for pip version 21.0.1.

```
(base) C:\Windows\system32>pip install --upgrade pip
Requirement already satisfied: pip in c:\users\kk\appdata\roaming\python\python38\site-packages (21.0.1)

(base) C:\Windows\system32>python -m pip install --user --upgrade pip
Requirement already satisfied: pip in c:\users\kk\appdata\roaming\python\python38\site-packages (21.0.1)

(base) C:\Windows\system32>
```

고급설정: 2) Jupyter Notebook 확장기능 설치

➤ “nbextensions”라는 노트북 확장기능 패키지 설치 (복불가능)

:: Jupyter Nbextensions

```
pip install jupyter_contrib_nbextensions
```

```
jupyter contrib nbextension install --user
```

```
0.png
[I 18:07:52 InstallContribNbextensionsApp] Copying: c:\Users\kk\Anaconda3\lib\site-packages\latex_envs\static\doc\latex_env_doc_files\latex_env_doc_48_0.png
-> C:\Users\KK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env_doc_files\latex_env_doc_48_0.png
[W 18:07:52 InstallContribNbextensionsApp] Out of date: C:\Users\KK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env_doc_files\latex_env_doc_49_0.png
[I 18:07:52 InstallContribNbextensionsApp] Copying: c:\Users\kk\Anaconda3\lib\site-packages\latex_envs\static\doc\latex_env_doc_files\latex_env_doc_49_0.png
-> C:\Users\KK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env_doc_files\latex_env_doc_49_0.png
[W 18:07:52 InstallContribNbextensionsApp] Out of date: C:\Users\KK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env_doc_files\latex_env_doc_50_0.png
[I 18:07:52 InstallContribNbextensionsApp] Copying: c:\Users\kk\Anaconda3\lib\site-packages\latex_envs\static\doc\latex_env_doc_files\latex_env_doc_50_0.png
-> C:\Users\KK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env_doc_files\latex_env_doc_50_0.png
[W 18:07:52 InstallContribNbextensionsApp] Out of date: C:\Users\KK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env_doc_files\latex_env_doc_51_0.png
[I 18:07:52 InstallContribNbextensionsApp] Copying: c:\Users\kk\Anaconda3\lib\site-packages\latex_envs\static\doc\latex_env_doc_files\latex_env_doc_51_0.png
-> C:\Users\KK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env_doc_files\latex_env_doc_51_0.png
[W 18:07:52 InstallContribNbextensionsApp] Out of date: C:\Users\KK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env_doc_files\latex_env_doc_52_0.png
[I 18:07:52 InstallContribNbextensionsApp] Copying: c:\Users\kk\Anaconda3\lib\site-packages\latex_envs\static\doc\latex_env_doc_files\latex_env_doc_52_0.png
-> C:\Users\KK\AppData\Roaming\jupyter\nbextensions\latex_envs\doc\latex_env_doc_files\latex_env_doc_52_0.png
[I 18:07:52 InstallContribNbextensionsApp] - Validating: ok
[I 18:07:52 InstallContribNbextensionsApp] Installing jupyter_contrib_nbextensions items to config in C:\Users\KK\.jupyter
Enabling: jupyter_nbextensions_configurator
- Writing config: C:\Users\KK\.jupyter
  - Validating...
    jupyter_nbextensions_configurator 0.4.1 ok
Enabling notebook nbextension_nbextensions_configurator/config_menu/main...
Enabling tree_nbextension_nbextensions_configurator/tree_tab/main...
[I 18:07:52 InstallContribNbextensionsApp] Enabling notebook extension contrib_nbextensions_help_item/main...
[I 18:07:52 InstallContribNbextensionsApp] - Validating: ok
[I 18:07:52 InstallContribNbextensionsApp] - Editing config: C:\Users\KK\.jupyter\jupyter_nbconvert_config.json
[I 18:07:52 InstallContribNbextensionsApp] -- Configuring nbconvert template path
[I 18:07:52 InstallContribNbextensionsApp] -- Configuring nbconvert preprocessors
[I 18:07:52 InstallContribNbextensionsApp] - Writing config: C:\Users\KK\.jupyter\jupyter_nbconvert_config.json
[I 18:07:52 InstallContribNbextensionsApp] -- Writing updated config file C:\Users\KK\.jupyter_nbconvert_config.json
(base) C:\Windows\system32>
```

고급설정: 2) Jupyter Notebook 확장기능 설치

➤ Jupyter Notebook 실행화면 끄기 + 검은화면(Prompt화면) 끄기

The screenshot shows a Jupyter Notebook interface with a sidebar containing file navigation options like 'Files', 'Running', and 'Clusters'. A central terminal window displays the following log output:

```
[W 00:54:44.824 NotebookApp] Error loading server extension jupyter_nbextensions_configurator
Traceback (most recent call last):
  File "C:\Users\KK\anaconda3\lib\site-packages\notebook\notebookapp.py", line 1942, in init_server_extensions
    mod = importlib.import_module(modulename)
  File "C:\Users\KK\anaconda3\lib\importlib\__init__.py", line 127, in import_module
    return _bootstrap._gcd_import(name[level:], package, level)
  File "<frozen importlib._bootstrap>", line 1014, in _gcd_import
  File "<frozen importlib._bootstrap>", line 991, in _find_and_load
  File "<frozen importlib._bootstrap>", line 973, in _find_and_load_unlocked
ModuleNotFoundError: No module named 'jupyter_nbextensions_configurator'
[I 00:54:44.994 NotebookApp] JupyterLab extension loaded from C:\Users\KK\anaconda3\lib\site-packages\jupyterlab
[I 00:54:44.994 NotebookApp] JupyterLab application directory is C:\Users\KK\anaconda3\share\jupyter\lab
[I 00:54:44.997 NotebookApp] Serving notebooks from local directory: C:\Users\KK
[I 00:54:44.997 NotebookApp] Jupyter Notebook 6.1.4 is running at:
[I 00:54:44.997 NotebookApp] http://localhost:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[I 00:54:44.997 NotebookApp] or http://127.0.0.1:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[I 00:54:44.998 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 00:54:45.037 NotebookApp]

To access the notebook, open this file in a browser:
file:///C:/Users/KK/AppData/Roaming/jupyter/runtime/nbserver-18208-open.html
Or copy and paste one of these URLs:
http://localhost:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
or http://127.0.0.1:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[W 00:54:46.842 NotebookApp] 404 GET /nbextensions/nbextensions_configurator/tree_tab/main.js?v=20210228005444 (::1) 6.9
5ms referer=http://localhost:8888/tree
```

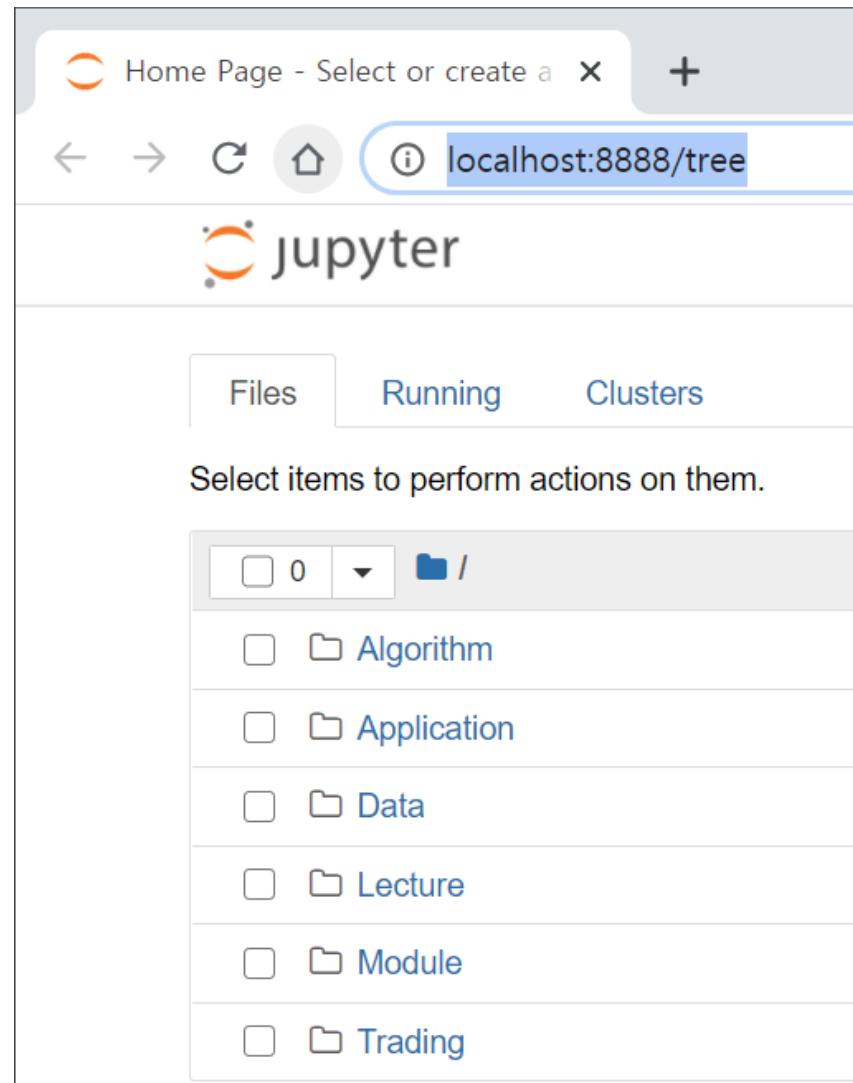
고급설정: 2) Jupyter Notebook 확장기능 설치

➤ 작업표시줄 “Jupyter Notebook” 클릭하여 실행



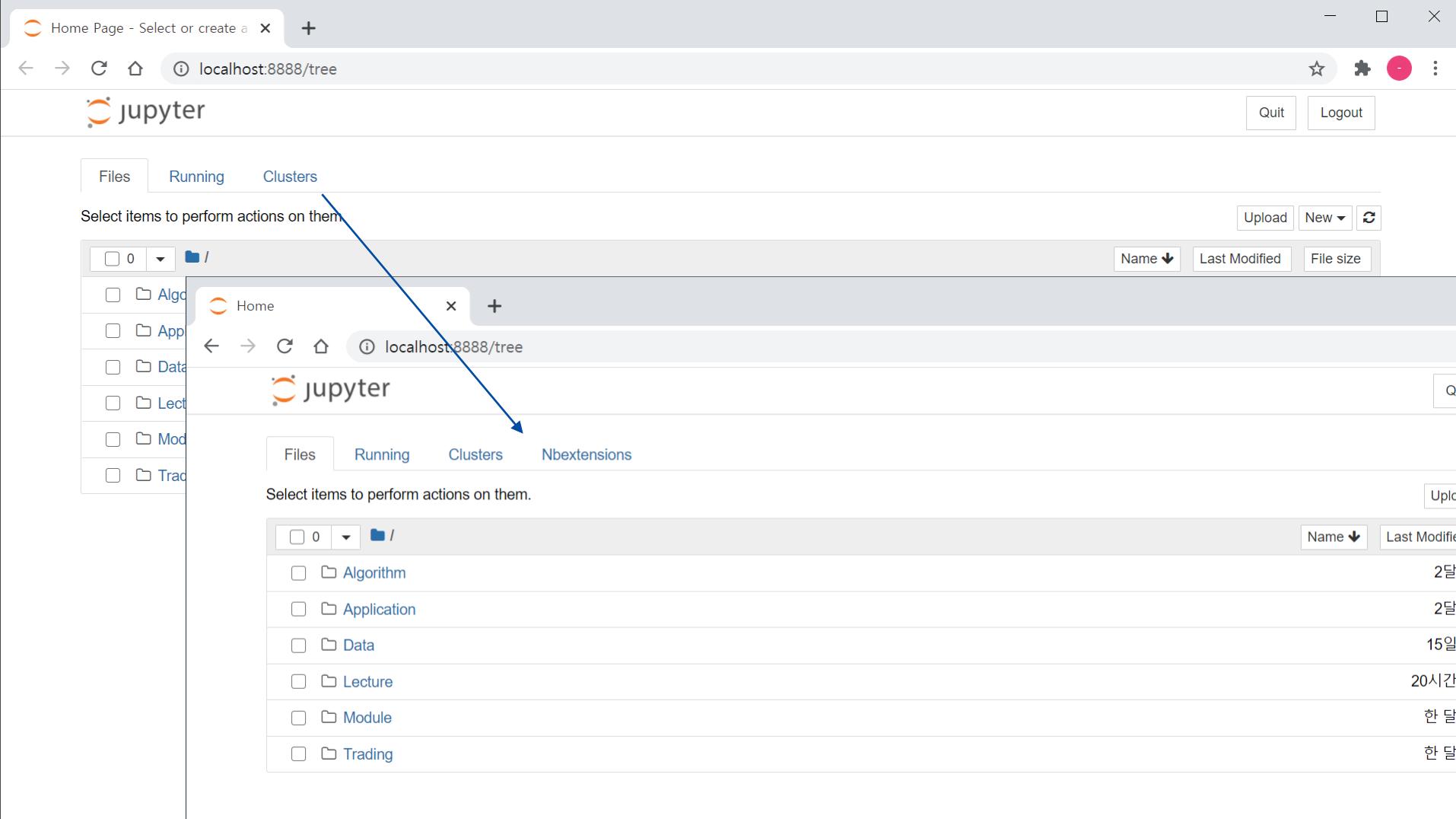
고급설정: 2) Jupyter Notebook 확장기능 설치

- 만약 인터넷창에 Jupyter Notebook이 실행되지 않는다면 “주소 입력”으로 실행



고급설정: 2) Jupyter Notebook 확장기능 설치

➤ Jupyter Notebook 실행화면에서 “Nbextensions” 탭이 추가됨



고급설정: 2) Jupyter Notebook 확장기능 설치

➤ “disable ~~”를 해제하고 하기처럼 기능들을 추가 (선택적이며 스크롤다운시 설명나옴)

The screenshot shows the Jupyter Notebook interface with the 'nbextensions_configurator' extension active. The 'Nbextensions' tab is selected. A red box highlights the checkbox labeled "disable configuration for nbextensions without explicit compatibility (they may break your notebook environment, but can be useful to show for nbextension development)". Below this, there is a search/filter bar and a list of nbextension options. The 'jupyter-js-widgets/extension' option is highlighted with a yellow background.

Category	Option	Status
General	disable configuration for nbextensions without explicit compatibility	<input type="checkbox"/>
	jupyter-js-widgets/extension	<input checked="" type="checkbox"/>
Code	Code folding	<input checked="" type="checkbox"/>
	CodeMirror mode extensions	<input type="checkbox"/>
Execution	Exercise	<input type="checkbox"/>
	Gist-it	<input type="checkbox"/>
File	Autoprep8	<input checked="" type="checkbox"/>
	Code Font Size	<input type="checkbox"/>
Help	Datestamper	<input type="checkbox"/>
	Initialization cells	<input type="checkbox"/>
Kernel	Launch QTConsole	<input type="checkbox"/>
	Move selected cells	<input type="checkbox"/>
Kernel	NbTranslate	<input type="checkbox"/>
	Rubberband	<input type="checkbox"/>
Kernel	Scratchpad	<input type="checkbox"/>
	Skip-Traceback	<input type="checkbox"/>
Kernel	Split Cells Notebook	<input type="checkbox"/>
	Tree Filter	<input type="checkbox"/>
Kernel	Autoscroll	<input type="checkbox"/>
	Cell Filter	<input type="checkbox"/>
Kernel	Comment/Uncomment Hotkey	<input type="checkbox"/>
	Contrib_nbextensions_help_item	<input checked="" type="checkbox"/>
Kernel	Execution Dependencies	<input type="checkbox"/>
	Freeze	<input type="checkbox"/>
Kernel	Hide input	<input type="checkbox"/>
	Hinterland	<input type="checkbox"/>
Kernel	Keyboard shortcut editor	<input type="checkbox"/>
	Load TeX macros	<input type="checkbox"/>
Kernel	Nbextensions edit menu item	<input checked="" type="checkbox"/>
	Python Markdown	<input type="checkbox"/>
Kernel	Runttools	<input type="checkbox"/>
	SKILL Syntax	<input type="checkbox"/>
Kernel	Spellchecker	<input type="checkbox"/>
	Toggle all line numbers	<input type="checkbox"/>
Kernel	Table beautifier	<input type="checkbox"/>
	Zenmode	<input type="checkbox"/>

고급설정: 2) Jupyter Notebook 확장기능 설치

➤ Table of Contests 설명 예시

The screenshot shows a Jupyter Notebook interface with the following details:

- Header:** Home Page - Select or create a × +
- Address Bar:** localhost:8888/tree#nbextensions_configurator
- Toolbar:** Back, Forward, Refresh, Home, 1Forum, 2Finance, 3Research, 4Info, 5Cultural, 6Shopping, 7Recruit, jupyter, Quit, Logout.
- Title Bar:** Table of Contents (2)
- Description and main features:**

The toc2 extension enables to collect all running headers and display them in a floating window, as a sidebar or with a navigation menu. The extension is also draggable, resizable, collapsable, dockable and features automatic numerotation with unique links ids, and an optional toc cell. Sections of currently selected/edited or running cells are highlighted in the toc. Some minor display tweaks are also available (moving header tile/menus, widening cells); Finally, the toc can preserved when exporting to html.
- First demo: Floating toc window and SideBar, toc auto-update, section numbering**
- Screenshot Description:** A floating sidebar titled "Contents [1-1] v n t" displays a hierarchical tree of sections from the notebook. The tree includes:
 - 1.1 Notations
 - 1.2 Ergodic properties i.e. non random
 - 1.2.1 Stationnarity
 - 1.2.2 Ergodism
 - 1.2.2.1 Definition
 - 1.2.3 Examples of random signals
 - 1.2.4 White noise

고급설정: 2) Jupyter Notebook 확장기능 설치

➤ “Files” 탭으로 와서 강의자료와 실습을 진행

The screenshot shows the Jupyter Notebook interface with the 'Files' tab selected. The top navigation bar includes 'Home', 'localhost:8888/tree', and 'jupyter'. Below the navigation is a toolbar with 'Quit' and 'Logout' buttons. The main area displays a file tree with several folders: 'Algorithm', 'Application', 'Data', 'Lecture', 'Module', and 'Trading'. Each folder has a checkbox next to it. To the right of the file tree are three sorting/filtering buttons: 'Name', 'Last Modified', and 'File size'. The 'Last Modified' button is currently active, showing the last modified date for each item.

Name	Last Modified
Algorithm	2달 전
Application	2달 전
Data	15일 전
Lecture	20시간 전
Module	한 달 전
Trading	한 달 전

고급설정: 2) Jupyter Notebook 확장기능 설치

➤ 확장기능이 표시된 강의자료 예시

The screenshot shows a Jupyter Notebook interface. The top bar includes tabs for 'Lecture/시계열딥러닝/' and 'Lecture1_DataAnalysis_DataScienc'. The main window displays a notebook titled 'Lecture1_DataAnalysis_DataScience_KK.ipynb'.

The left sidebar, titled 'Contents', lists the following structure:

- 1 데이터 분석의 단계별 목적 이해하기 (분석 싸이클 이해)
 - 1.1 데이터 사이언티스트?/애널리스트?/엔지니어?/비즈니스고객? 관점에서:
 - 1.2 데이터분석 현실 관점에서:
 - 1.3 데이터 사이언티스트 실무 관점에서:
- 2 분석을 이해하고 공감하는 자세 및 방향
 - 2.1 통계의 한계
 - 2.2 통계의 한계
 - 2.3 통계를 올바르게 사용하는 방법
 - 2.4 데이터사이언티스트 스킬셋 3종

The main notebook area contains the following content:

1 데이터 분석의 단계별 목적 이해하기 (분석 싸이클 이해)

1.1 데이터 사이언티스트?/애널리스트?/엔지니어?/비즈니스고객? 관점에서:

- 데이터수집: 소스별 데이터 추출 및 저장(Loading)
- 데이터전처리: 기초통계(Descriptive Statistics) + 붙이기(Curation) + 없애기(Remove) + 채우기(Fill) + 필터(Filter) + 변경하기(Transform)
- 데이터정리: 데이터한곳에담기(Data Warehouse) + 바꾸기및정리(Data Mart) + 분리(Data Split)
- 데이터분석: 기초통계(Descriptive Statistics) + 모델링(Algorithm) + 검증(Evaluation) + 에러분석(Error Analysis)
- 결과정리: 시각화(Visualization/Dashboard) + 의사결정(Decision Support) + 지식화(Knowledge) + 공유(Reporting)

A diagram illustrating the Data Science Cycle (Analytics Cycle) is shown at the bottom:

The diagram illustrates the Data Science Cycle (Analytics Cycle) with four main stages:

- 1 Raw Data:** Shows various data types: Structured (CSV, SQL), Semi-Structured (JSON, XML, DOC), and Un-Structured (DOCX, AVI, Facebook, RSS).
- 2 ETL:** Shows the process of Extracting data from various sources, Transforming it into a usable format, and Loading it into a central repository.
- 3 Data Warehouse:** Shows a central repository where data is stored in a Data Mart for specific analytical purposes.
- 4 Reporting:** Shows the final products of the cycle: Reports & Score-Cards, Dashboards, and Mobile BI.

고급설정: 3) Jupyter Lab 확장기능 설치

➤ 하기 내용 복사 후 검은화면(Avacaonda Prompt)에 우클릭(붙여넣기) → 시간소요!

:: Jupyter Lab

pip install jupyterlab

pip install --upgrade jupyterlab

:: Jupyter Lab Extensions Package

pip install nodejs

conda install --yes nodejs

conda install -c conda-forge --yes nodejs

:: Table of Contents

jupyter labextension install @jupyterlab/toc

:: Shortcut UI

jupyter labextension install @jupyterlab/shortcutui

:: Variable Inspector

jupyter labextension install @lckr/jupyterlab_variableinspector

:: Go to Definition of Module

jupyter labextension install @krassowski/jupyterlab_go_to_definition

:: Interactive Visualization

jupyter labextension install @jupyter-widgets/jupyterlab-manager

jupyter labextension install lineup_widget

:: Connection to Github

jupyter labextension install @jupyterlab/github

:: CPU+RAM Monitor

pip install nbresuse

jupyter labextension install jupyterlab-topbar-extension jupyterlab-system-monitor

:: File Tree Viewer

jupyter labextension install jupyterlab_filetree

:: Download Folder as Zip File

conda install --yes jupyter-archive

jupyter lab build

jupyter labextension update --all

:: End

고급설정: 3) Jupyter Lab 확장기능 설치

➤ 설치완료 (라이브러리 버전에 따라 에러가 발생할 수 있음 → 일단 무시하고 진행)

```
선택 관리자: Anaconda Prompt (anaconda3)
(base) C:\Windows\system32>conda install --yes jupyter-archive
Collecting package metadata (current_repodata.json): done
Solving environment: failed with initial frozen solve. Retrying with flexible solve.
Collecting package metadata (repodata.json): done
Solving environment: failed with initial frozen solve. Retrying with flexible solve.

PackagesNotFoundError: The following packages are not available from current channels:
- jupyter-archive

Current channels:
- https://repo.anaconda.com/pkgs/main/win-64
- https://repo.anaconda.com/pkgs/main/noarch
- https://repo.anaconda.com/pkgs/r/win-64
- https://repo.anaconda.com/pkgs/r/noarch
- https://repo.anaconda.com/pkgs/msys2/win-64
- https://repo.anaconda.com/pkgs/msys2/noarch

To search for alternate channels that may provide the conda package you're
looking for, navigate to

    https://anaconda.org

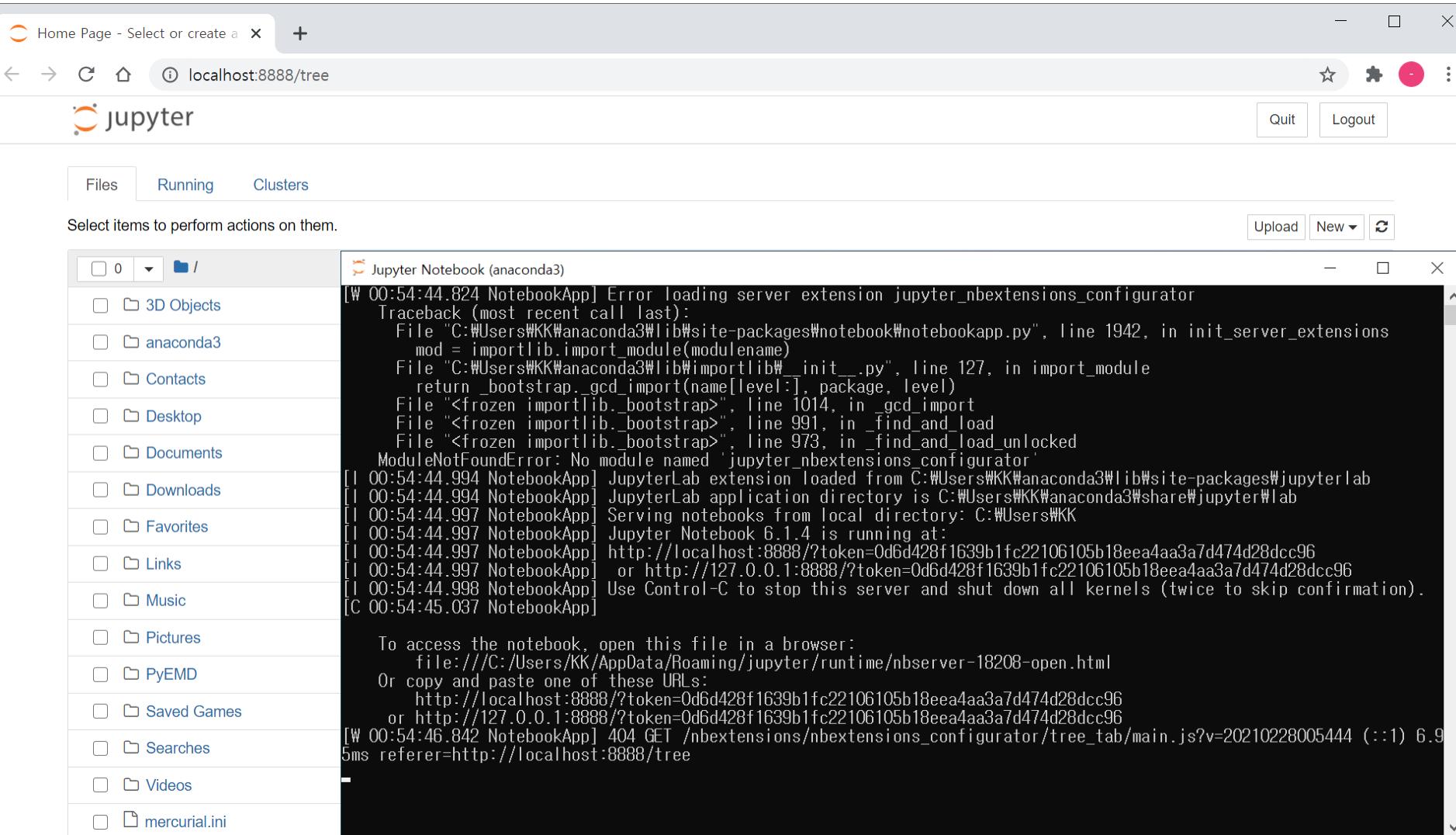
and use the search bar at the top of the page.

(base) C:\Windows\system32>jupyter lab build
[LabBuildApp] JupyterLab 3.0.9
[LabBuildApp] Building in C:\Users\KK\anaconda3\share\jupyter\lab
[LabBuildApp] Building jupyterlab assets (production, minimized)
/
(base) C:\Windows\system32>jupyter labextension update --all
No compatible version found for @jupyter-widgets/jupyterlab-manager!
Extension 'jupyterlab-system-monitor' already up to date
No compatible version found for @jupyterlab/toc!
Extension 'jupyterlab-topbar-extension' already up to date
Extension '@krassowski/jupyterlab_go_to_definition' already up to date
Extension '@lckr/jupyterlab_variableinspector' already up to date
Extension 'lineup_widget' already up to date

(base) C:\Windows\system32>:: End
```

고급설정: 3) Jupyter Lab 확장기능 설치

➤ Jupyter Notebook 실행화면 끄기 + 검은화면(Prompt화면) 끄기



```
[W 00:54:44.824 NotebookApp] Error loading server extension jupyter_nbextensions_configurator
Traceback (most recent call last):
  File "C:\Users\KK\anaconda3\lib\site-packages\notebook\notebookapp.py", line 1942, in init_server_extensions
    mod = importlib.import_module(modulename)
  File "C:\Users\KK\anaconda3\lib\importlib\__init__.py", line 127, in import_module
    return _bootstrap._gcd_import(name[level:], package, level)
  File "<frozen importlib._bootstrap>", line 1014, in _gcd_import
  File "<frozen importlib._bootstrap>", line 991, in _find_and_load
  File "<frozen importlib._bootstrap>", line 973, in _find_and_load_unlocked
ModuleNotFoundError: No module named 'jupyter_nbextensions_configurator'
[I 00:54:44.994 NotebookApp] JupyterLab extension loaded from C:\Users\KK\anaconda3\lib\site-packages\jupyterlab
[I 00:54:44.994 NotebookApp] JupyterLab application directory is C:\Users\KK\anaconda3\share\jupyter\lab
[I 00:54:44.997 NotebookApp] Serving notebooks from local directory: C:\Users\KK
[I 00:54:44.997 NotebookApp] Jupyter Notebook 6.1.4 is running at:
[I 00:54:44.997 NotebookApp] http://localhost:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[I 00:54:44.997 NotebookApp] or http://127.0.0.1:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[I 00:54:44.998 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 00:54:45.037 NotebookApp]

To access the notebook, open this file in a browser:
file:///C:/Users/KK/AppData/Roaming/jupyter/runtime/nbserver-18208-open.html
Or copy and paste one of these URLs:
http://localhost:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
or http://127.0.0.1:8888/?token=0d6d428f1639b1fc22106105b18eea4aa3a7d474d28dcc96
[W 00:54:46.842 NotebookApp] 404 GET /nbextensions/nbextensions_configurator/tree_tab/main.js?v=20210228005444 (::1) 6.9
5ms referer=http://localhost:8888/tree
```

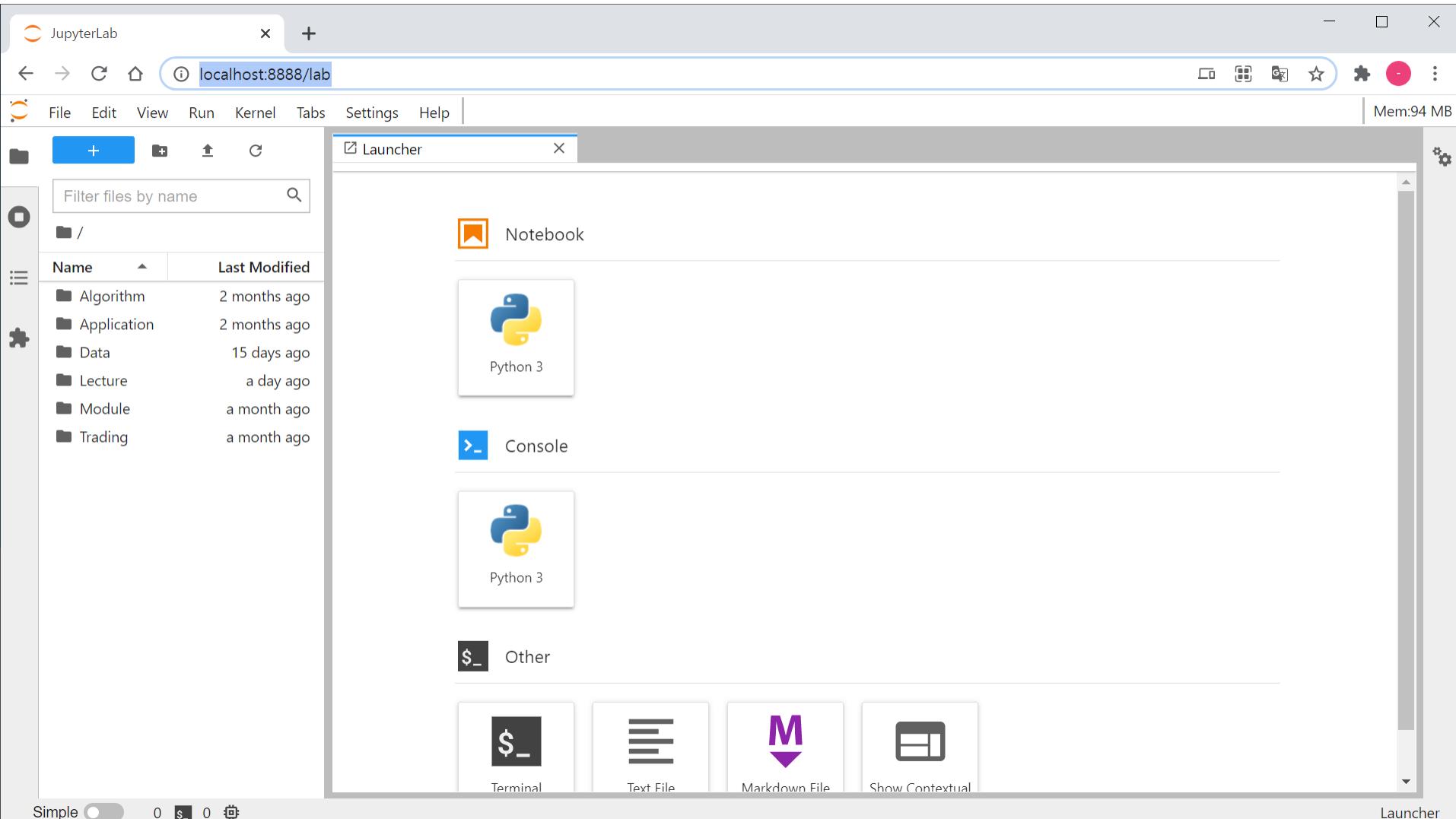
고급설정: 3) Jupyter Lab 확장기능 설치

➤ 작업표시줄 “Jupyter Notebook” 클릭하여 실행



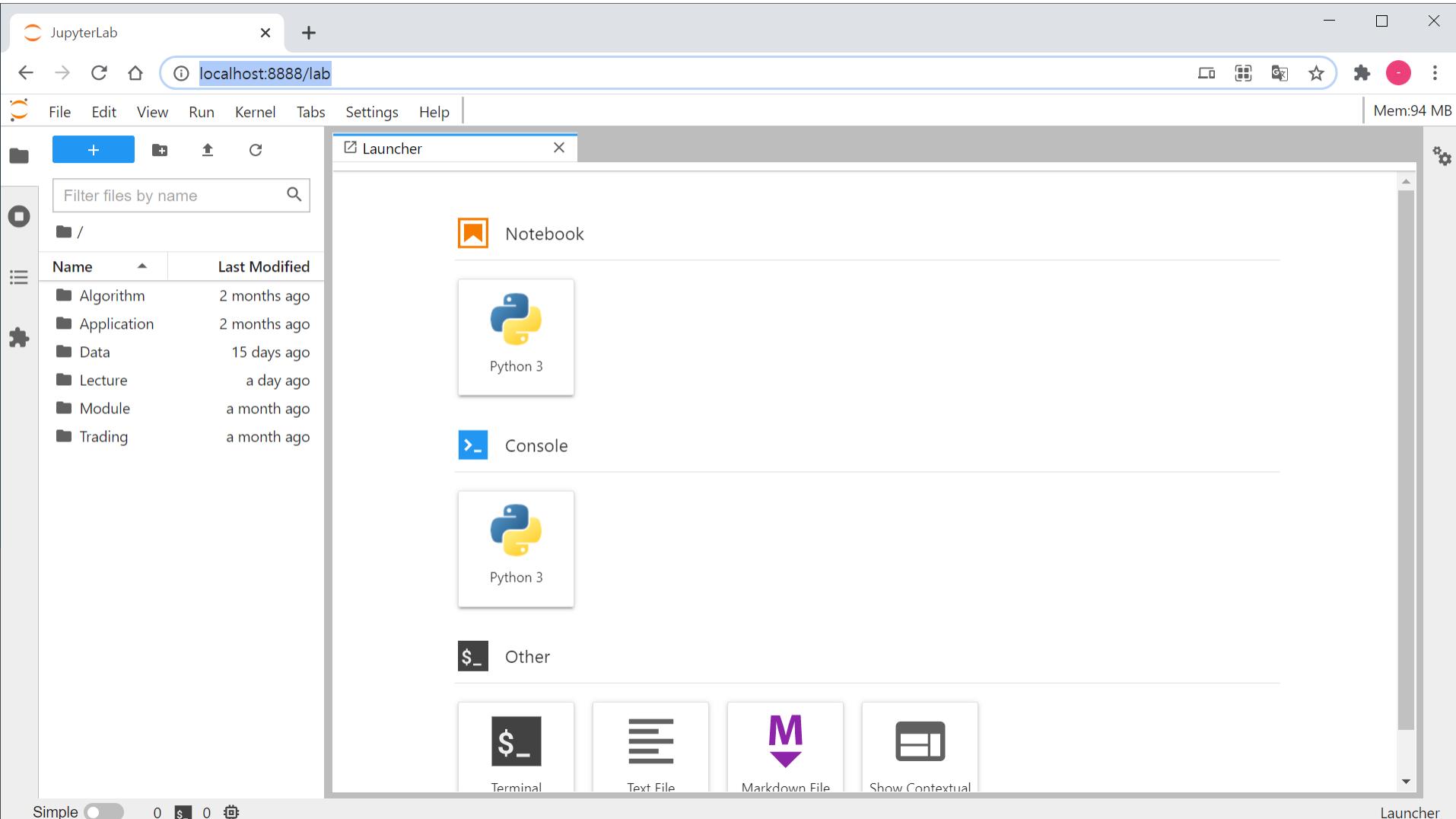
고급설정: 3) Jupyter Lab 확장기능 설치

➤ 인터넷창에 “tree” 대신 “lab”으로 변경하여 실행



고급설정: 3) Jupyter Lab 확장기능 설치

➤ 강의자료를 찾아 실습을 진행



고급설정: 3) Jupyter Lab 확장기능 설치

➤ 확장기능이 표시된 실습 예시

The screenshot shows the Jupyter Lab interface with the following details:

- Title Bar:** JupyterLab, localhost:8888/lab/tree/Lecture/시계열딥러닝/Practice8_DataAnalysis_TSDeepLearning_KK.ipynb
- Toolbar:** File, Edit, View, Run, Kernel, Tabs, Settings, Help.
- Sidebar:** PRACTICE8_DATAANALYSIS_TSDEEPLERNING, showing a tree structure:
 - 1. Import Library: 분석에 사용할 모듈 설치
 - 2. TS with Deep Learning
 - 2.1. Example 1: Bitcoin Prediction
 - 2.1.1. MLP
 - 2.1.2. RNN
 - 2.1.3. LSTM
 - 2.1.4. GRU
 - 2.2. Example 2: Bike Sharing Prediction
 - 2.2.1. MLP
 - 2.2.2. RNN
 - 2.2.2.1. sequence = 1
 - 2.2.2.2. sequence = 24
 - 2.2.3. LSTM (seq=24)
 - 2.2.4. GRU (seq=24)
- Central Area:** A tab titled "Practice8_DataAnalysis_TSDe X" is active. It contains the following content:

1. Import Library: 분석에 사용할 모듈 설치

1. Import Library

```
[1]: !python -m pip install --user --upgrade pip
Requirement already satisfied: pip in c:\users\kk\appdata\roaming\python\python38\site-packages (20.3.1)

[2]: # Ignore the warnings
import warnings
warnings.filterwarnings('always')
warnings.filterwarnings('ignore')

# System related and data input controls
import os

# Data manipulation, visualization and useful functions
import pandas as pd
pd.options.display.float_format = '{:.2f}'.format
pd.options.display.max_rows = 50
pd.options.display.max_columns = 40
import numpy as np
from itertools import product # iterative combinations
from tqdm import tqdm
import matplotlib.pyplot as plt
import seaborn as sns

# Modeling algorithms
```
- Bottom Status Bar:** Simple, 0 \$ 2, Python 3 | Idle, Mode: Command, Ln 1, Col 1, Practice8_DataAnalysis_TSDeepLearning_KK.ipynb

Appendix

➤ Library 모두 한번에 설치하기 → Anaconda Prompt에 하기 내용 복붙

```
:: Update of PIP  
pip install --upgrade pip  
python -m pip install --user --upgrade pip  
:: Jupyter Nbextensions  
pip install jupyter_contrib_nbextensions  
jupyter contrib nbextension install --user  
:: Jupyter Lab  
pip install jupyterlab  
pip install --upgrade jupyterlab  
:: Jupyter Lab Extensions Package  
pip install nodejs  
conda install --yes nodejs  
conda install -c conda-forge --yes nodejs  
:: Table of Contents  
jupyter labextension install @jupyterlab/toc  
:: Shortcut UI  
jupyter labextension install @jupyterlab/shortcutui  
:: Variable Inspector  
jupyter labextension install @lckr/jupyterlab_variableinspector  
:: Go to Definition of Module  
jupyter labextension install @krassowski/jupyterlab_go_to_definition  
:: Interactive Visualization  
jupyter labextension install @jupyter-widgets/jupyterlab-manager  
jupyter labextension install lineup_widget  
:: Connection to Github  
jupyter labextension install @jupyterlab/github  
:: CPU+RAM Monitor  
pip install nbresuse  
jupyter labextension install jupyterlab-topbar-extension jupyterlab-system-monitor  
:: File Tree Viewer  
jupyter labextension install jupyterlab_filetree  
:: Download Folder as Zip File  
conda install --yes jupyter-archive  
jupyter lab build  
jupyter labextension update --all  
:: End
```



Q&A

Thank You