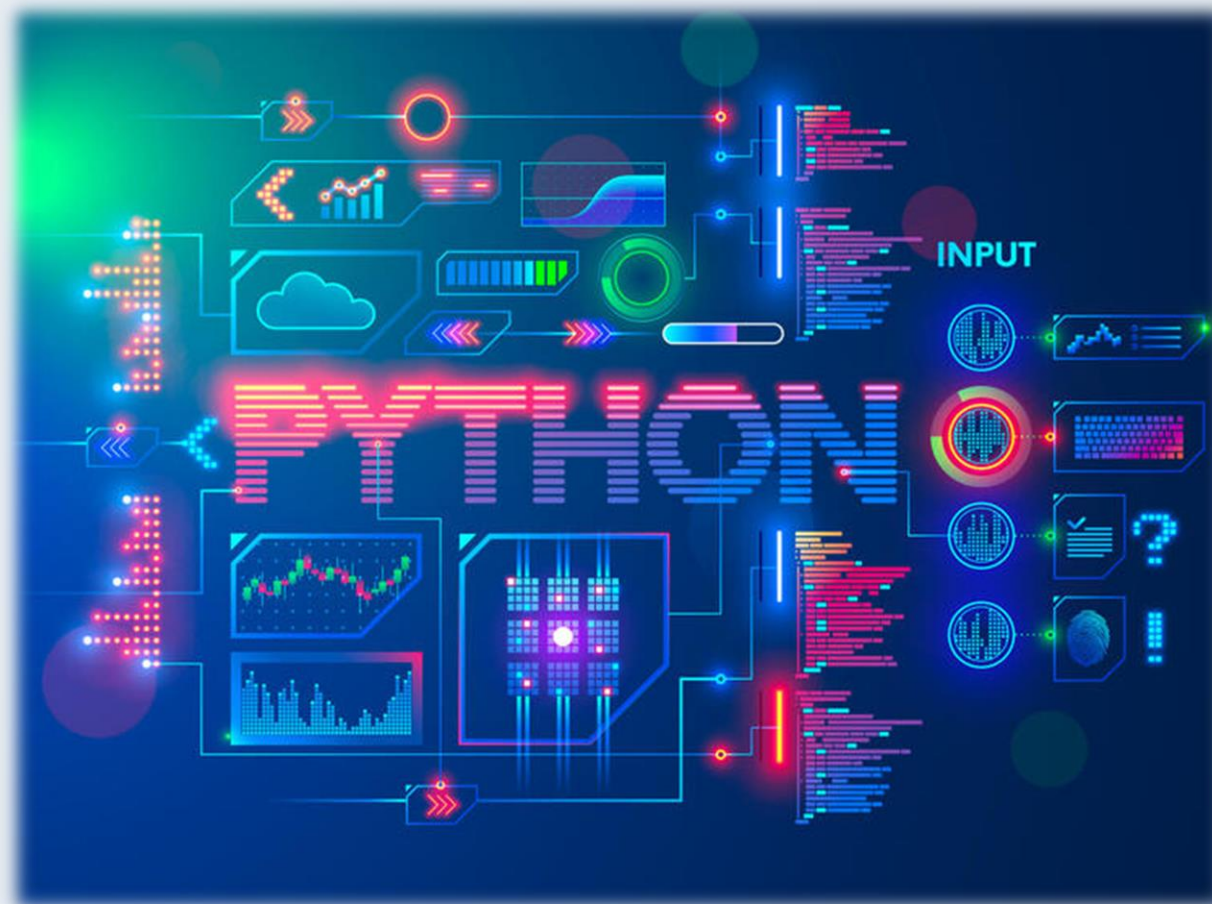


개발환경



개발환경

코드 에디터



Visual Studio Code



Sublime Text

PC



ANACONDA
Powered by Continuum Analytics®



Jupyter Notebook



Jupyter Lab

웹

colab

<https://colab.research.google.com/>

kaggle

<https://www.kaggle.com/>

ChatGPT



ChatGPT

<https://chat.openai.com/>

프롬프트
지니

<https://www.promptgenie.ai/>



크롬 브라우저 확장앱 설치하러 가기

텍스트 이해
질문에 대한 답변
콘텐츠 생성
리스트 생성
코드 작성/디버깅
장단점 비교 제시
교육 지원
창의적인 글쓰기
아이디어 기획
번역
단계별 지침 제공
가상 비서 역할

Reset Thread
Dark Mode
OpenAI Discord
Learn More
Log out

ChatGPT



Examples

"Explain quantum computing in simple terms"

"Got any creative ideas for a 10 year old's birthday?"

"How do I make an HTTP request in Javascript?"



Capabilities

Remembers what user said earlier in the conversation

Allows user to provide follow-up corrections

Trained to decline inappropriate requests



Limitations

May occasionally generate incorrect information

May occasionally produce harmful instructions or biased content

Limited knowledge of world and events after 2021

Free Research Preview: ChatGPT is optimized for dialogue. Our goal is to make AI systems more natural to interact with, and your feedback will help us improve our systems and make them safer.

파이썬(Python)

Benefits Of Python



<https://medium.com/@ashishgeorge1811/benefits-of-python-bc5da8ef8678>

파이썬(Python) 설치

<https://www.python.org/>



The screenshot shows the Python.org homepage. At the top, there's a navigation bar with links to Python, PSF, Docs, PyPI, Jobs, and Community. Below this is a dark blue header with the Python logo, a 'Donate' button, a search bar, and a 'Socialize' button. A secondary navigation bar contains links to About, Downloads, Documentation, Community, Success Stories, News, and Events. The main content area features a code editor on the left with a Python script for calculating the Fibonacci series up to n. The output of the script is displayed below the code. On the right, there's a section titled 'Functions Defined' explaining the core of extensible programming in Python. At the bottom, a footer states: 'Python is a programming language that lets you work quickly and integrate systems more effectively. >>> [Learn More](#)'.

```
# Python 3: Fibonacci series up to n
>>> def fib(n):
>>>     a, b = 0, 1
>>>     while a < n:
>>>         print(a, end=' ')
>>>         a, b = b, a+b
>>>     print()
>>> fib(1000)
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987
```

Functions Defined

The core of extensible programming is defining functions. Python allows mandatory and optional arguments, keyword arguments, and even arbitrary argument lists. [More about defining functions in Python 3](#)

1 2 3 4 5

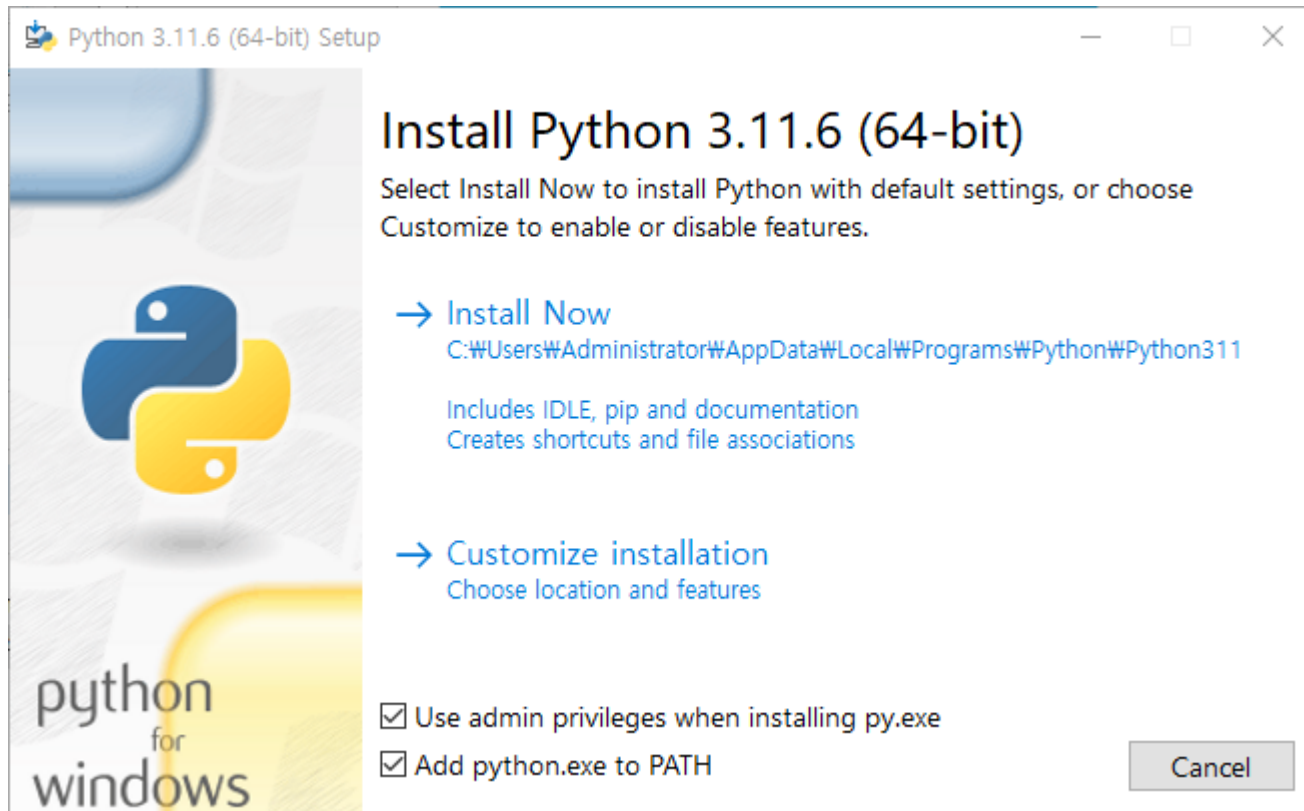
Python is a programming language that lets you work quickly and integrate systems more effectively. >>> [Learn More](#)

파이썬 설치

■ 파이썬 설치

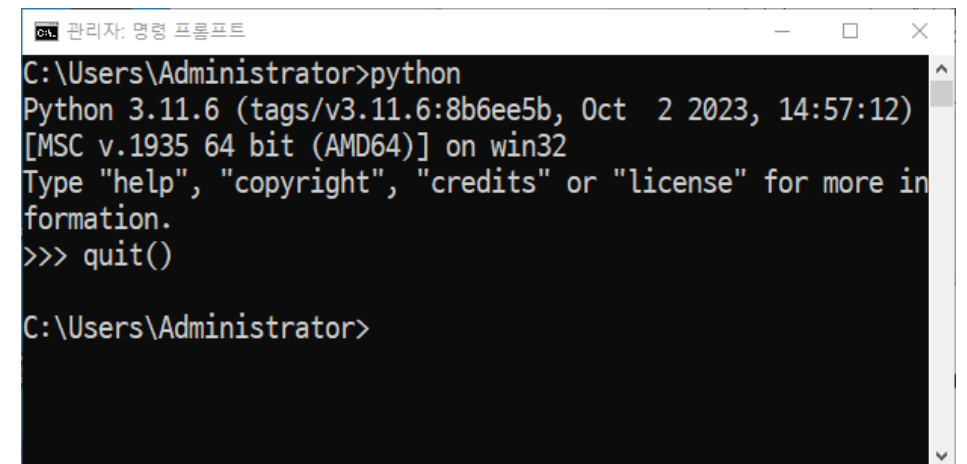
<https://www.python.org/downloads/>

Python 3.11.6



■ 파이썬 실행

- 버전 확인 : `python --version`
- 실행 : `python`
- 종료 : `quit()`



파이썬 가상환경 설치

가상 환경(virtual environment)으로 프로젝트별로 독립된 파이썬 실행 환경을 사용할 수 있습니다.

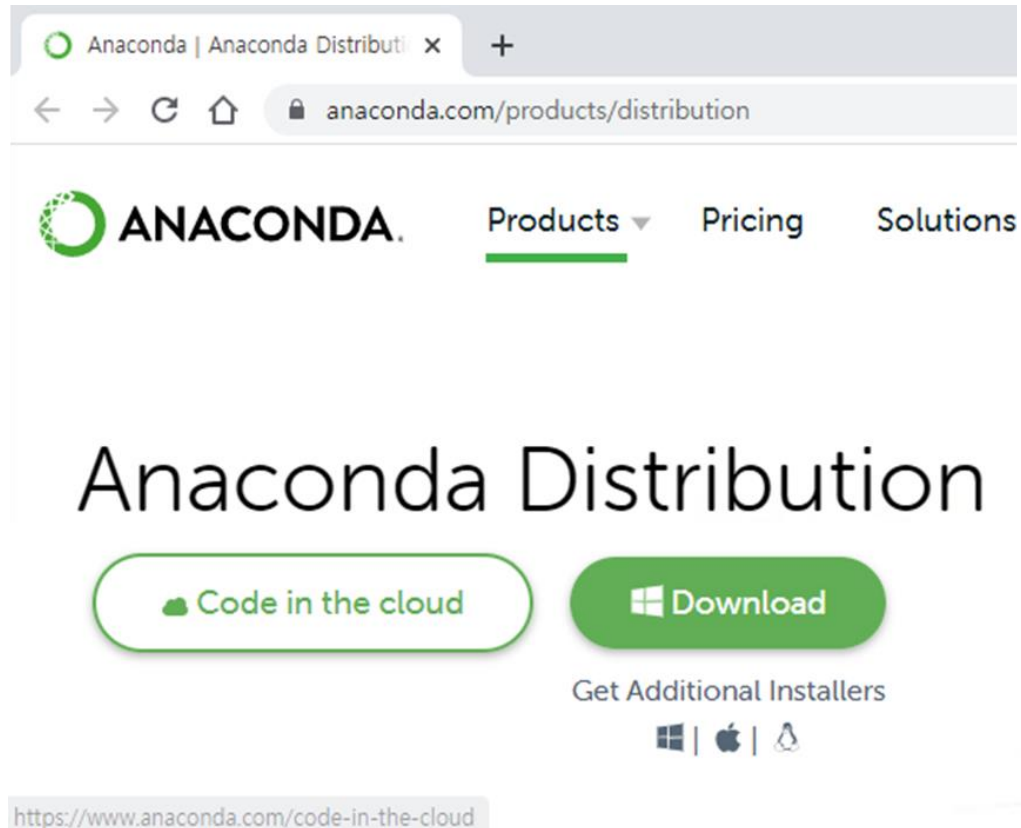
- 가상환경 생성 : `python -m venv myenv`
- 가상환경 실행
windows : `myenv\Scripts\activate.bat`
Linux / macOS : `source myenv/bin/activate`
- 패키지 목록 관리
`pip freeze > requirements.txt`
- 패키지 설치
`pip install streamlit`
`pip install -r requirements.txt`

아나콘다(Anaconda) 설치

Anaconda는 파이썬 기본 프로그램과 많이 사용하는 패키지 그리고, 통합 개발환경을 포함한 배포판입니다.

■ 파이썬 설치/실행

<https://www.anaconda.com/download/>

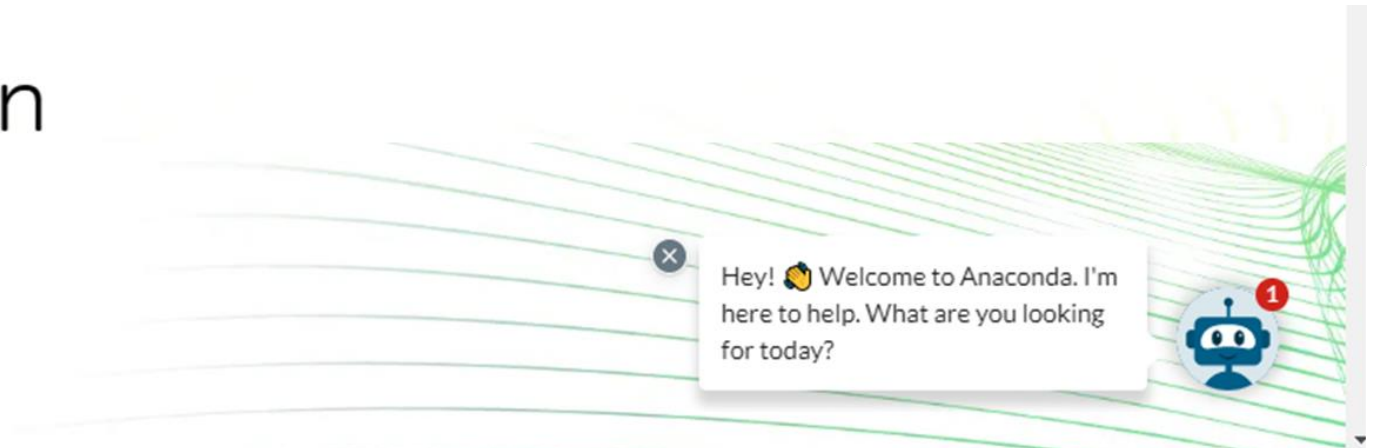


■ 실행

- 윈도우 시작메뉴 -> Anaconda3 -> Anaconda Prompt -> python

■ 가상환경

- `conda create --name myenv`
- `conda activate myenv`



아나콘다(Anaconda)

Anaconda Navigator

File Help

ANACONDA NAVIGATOR

Upgrade Now Sign in to Anaconda.org

Home









Environments

Learning

Community

Documentation


Applications on base (root) Channels Refresh

 CMD.exe Prompt 0.1.1 Run a cmd.exe terminal with your current environment from Navigator activated Launch	 JupyterLab 2.1.5 An extensible environment for interactive and reproducible computing, based on the Jupyter Notebook and Architecture. Launch	 Notebook 6.0.3 Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis. Launch	 Powershell Prompt 0.0.1 Run a Powershell terminal with your current environment from Navigator activated Launch
 PyCharm 2021.1.1 Full-Featured Python IDE by JetBrains. Supports code completion, linting, debugging, and domain-specific enhancements for web development and data science. Launch	 Qt Console 4.7.5 PyQt GUI that supports inline figures, proper multiline editing with syntax highlighting, graphical calltips, and more. Launch	 Spyder 4.1.4 Scientific PYTHON Development Environment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features Launch	 VS Code 1.55.2 Streamlined code editor with support for development operations like debugging, task running and version control. Launch

구글 코랩 (Colab)

개발툴 설치없이 웹상에서 파이썬 프로그램을 할수 있는 환경으로 딥러닝에 필요한 GPU를 사용할 수 있습니다.

<https://colab.research.google.com> **구글 계정 필요**



The screenshot displays the Google Colaboratory web interface. At the top, a blue banner shows the URL <https://colab.research.google.com> and an orange button indicating '구글 계정 필요' (Google account required). Below the banner, the main interface includes a left sidebar with navigation options like 'Colaboratory 소개' (Colaboratory introduction), '시작하기' (Get started), and '추가 리소스' (Additional resources). The central area shows a 'Welcome to Colaboratory' message. A 'Runtime' menu is open, listing various actions such as '모두 실행' (Run all), '이전 셀 실행' (Run previous cells), and '런타임 유형 변경' (Change runtime type). The '런타임 유형 변경' dialog is prominently displayed in the foreground, showing the current runtime type as 'Python 3' and hardware acceleration options: 'CPU', 'T4 GPU' (selected), 'A100 GPU', 'V100 GPU', and 'TPU'. A blue arrow points from the '런타임 유형 변경' option in the menu to the dialog box.

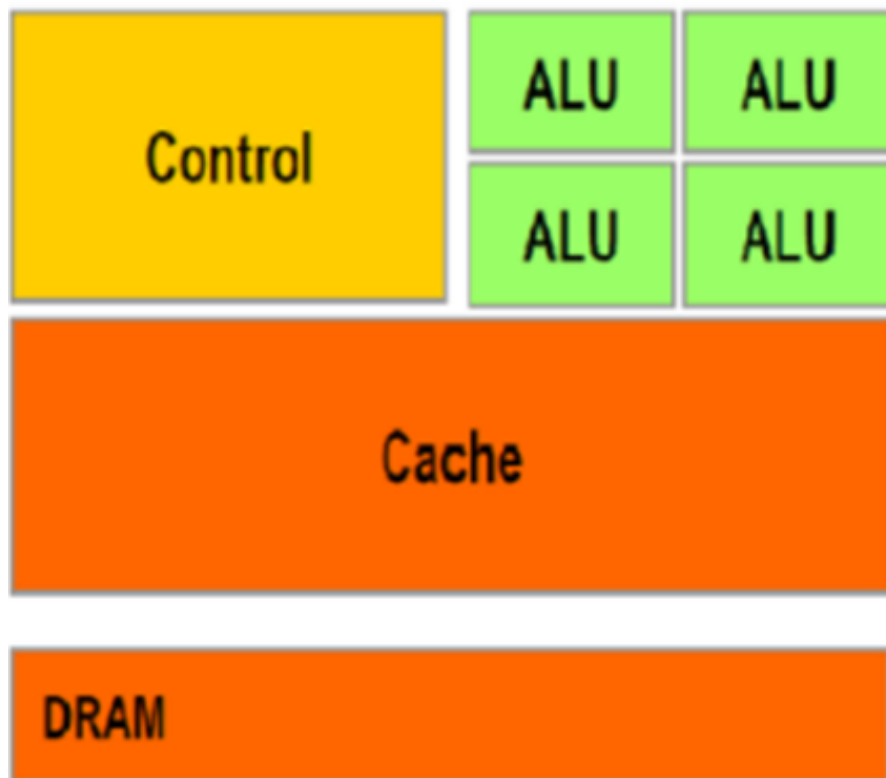
고성능GPU(Graphics Processing Unit)



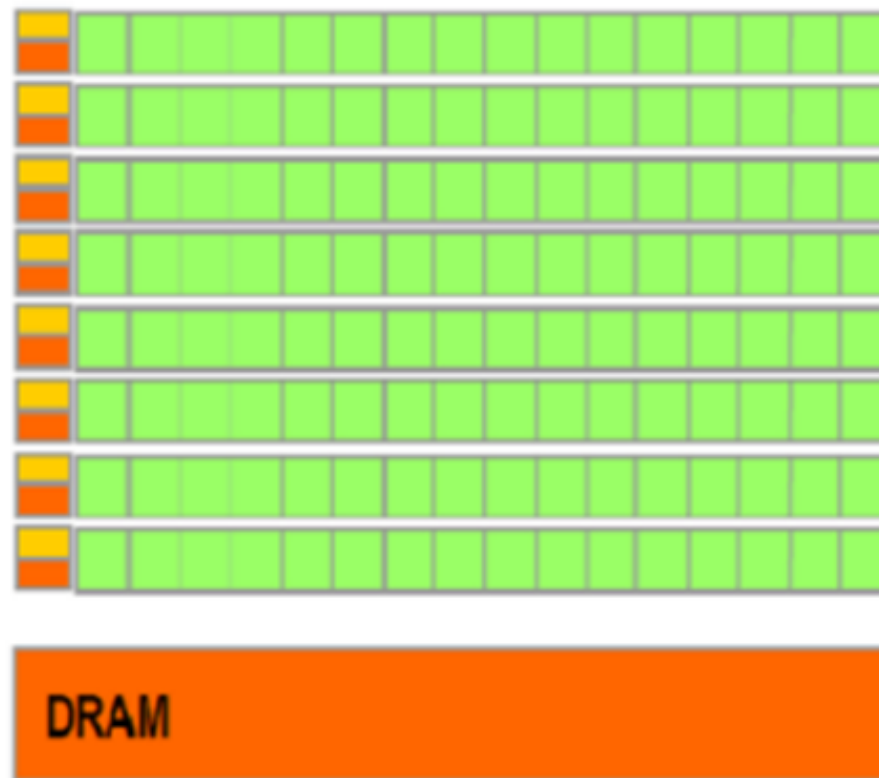
CPU vs GPU

CPU는 제어와 복잡한 연산을 수행하는 구조이며,
GPU는 단순 연산 특화 구조로 병렬로 고속연산 처리를 할 수 있습니다.

■ CPU 구조



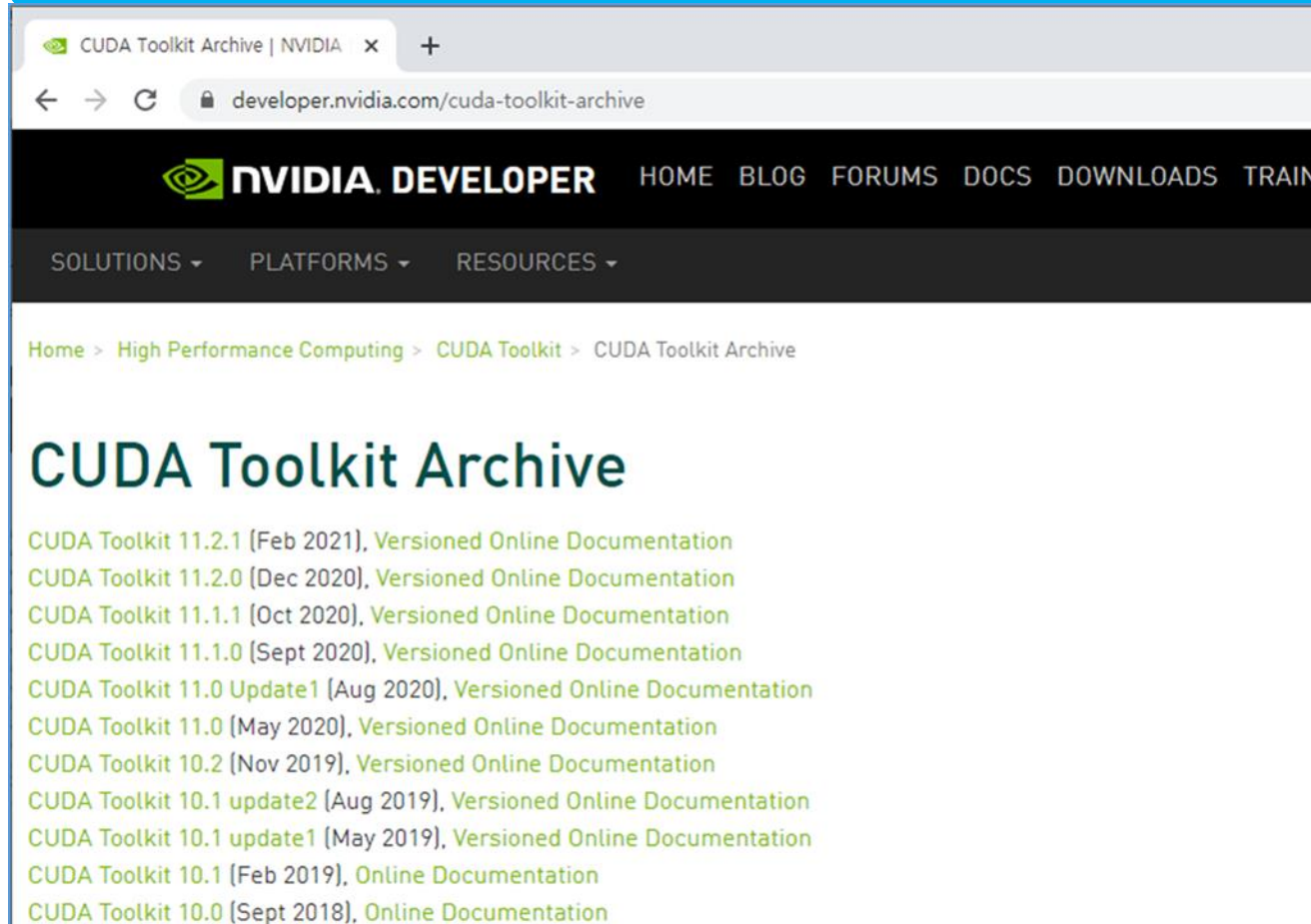
■ GPU 구조



CUDA(Compute Unified Device Architecture) 설치

CUDA는 GPU에서 병렬처리를 수행하는 알고리즘을 사용할 수 있도록 해주는 GPU Computing SDK입니다.

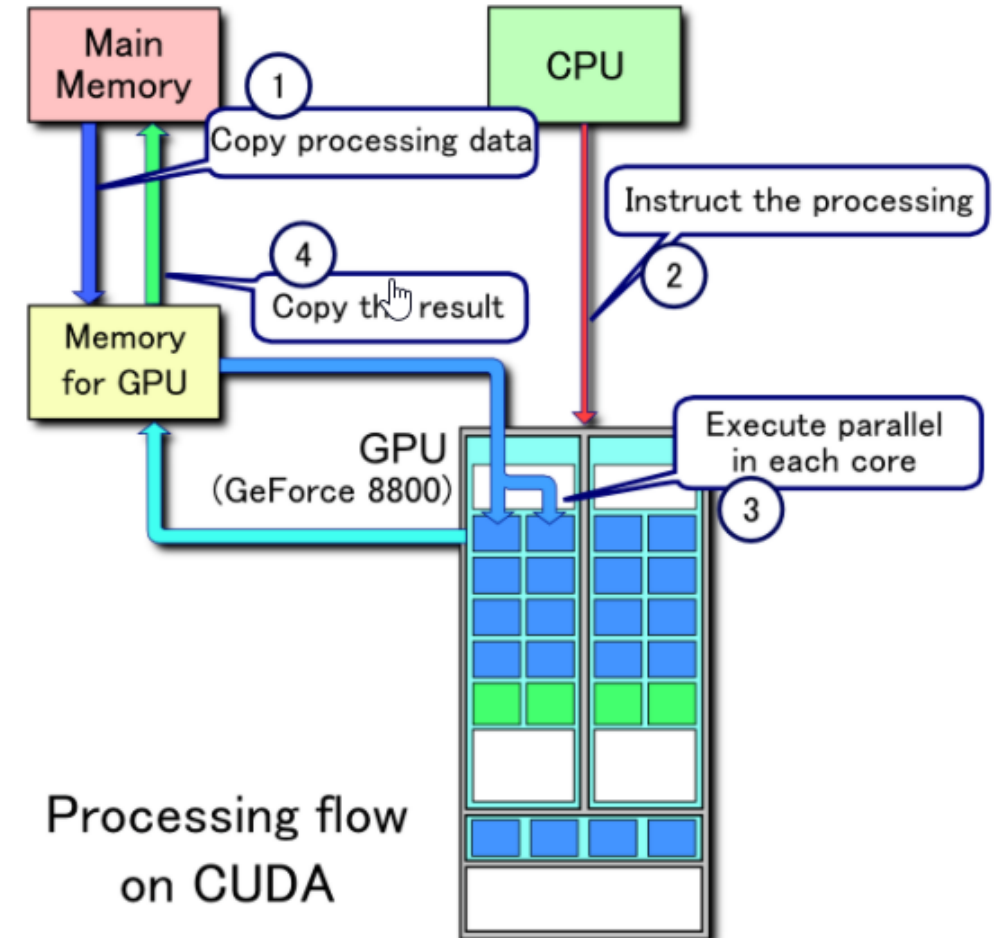
<https://developer.nvidia.com/cuda-toolkit-archive>



The screenshot shows the NVIDIA Developer website's CUDA Toolkit Archive page. The browser address bar displays the URL <https://developer.nvidia.com/cuda-toolkit-archive>. The page header includes the NVIDIA Developer logo and navigation links: HOME, BLOG, FORUMS, DOCS, DOWNLOADS, and TRAIN. Below the header, there are dropdown menus for SOLUTIONS, PLATFORMS, and RESOURCES. The main content area shows the breadcrumb path: Home > High Performance Computing > CUDA Toolkit > CUDA Toolkit Archive. The title "CUDA Toolkit Archive" is prominently displayed. A list of CUDA Toolkit versions is provided, each with a date and a link to the "Versioned Online Documentation". The versions listed are: CUDA Toolkit 11.2.1 (Feb 2021), 11.2.0 (Dec 2020), 11.1.1 (Oct 2020), 11.1.0 (Sept 2020), 11.0 Update1 (Aug 2020), 11.0 (May 2020), 10.2 (Nov 2019), 10.1 update2 (Aug 2019), 10.1 update1 (May 2019), 10.1 (Feb 2019), and 10.0 (Sept 2018).

CUDA Toolkit Archive

- CUDA Toolkit 11.2.1 (Feb 2021), [Versioned Online Documentation](#)
- CUDA Toolkit 11.2.0 (Dec 2020), [Versioned Online Documentation](#)
- CUDA Toolkit 11.1.1 (Oct 2020), [Versioned Online Documentation](#)
- CUDA Toolkit 11.1.0 (Sept 2020), [Versioned Online Documentation](#)
- CUDA Toolkit 11.0 Update1 (Aug 2020), [Versioned Online Documentation](#)
- CUDA Toolkit 11.0 (May 2020), [Versioned Online Documentation](#)
- CUDA Toolkit 10.2 (Nov 2019), [Versioned Online Documentation](#)
- CUDA Toolkit 10.1 update2 (Aug 2019), [Versioned Online Documentation](#)
- CUDA Toolkit 10.1 update1 (May 2019), [Versioned Online Documentation](#)
- CUDA Toolkit 10.1 (Feb 2019), [Online Documentation](#)
- CUDA Toolkit 10.0 (Sept 2018), [Online Documentation](#)

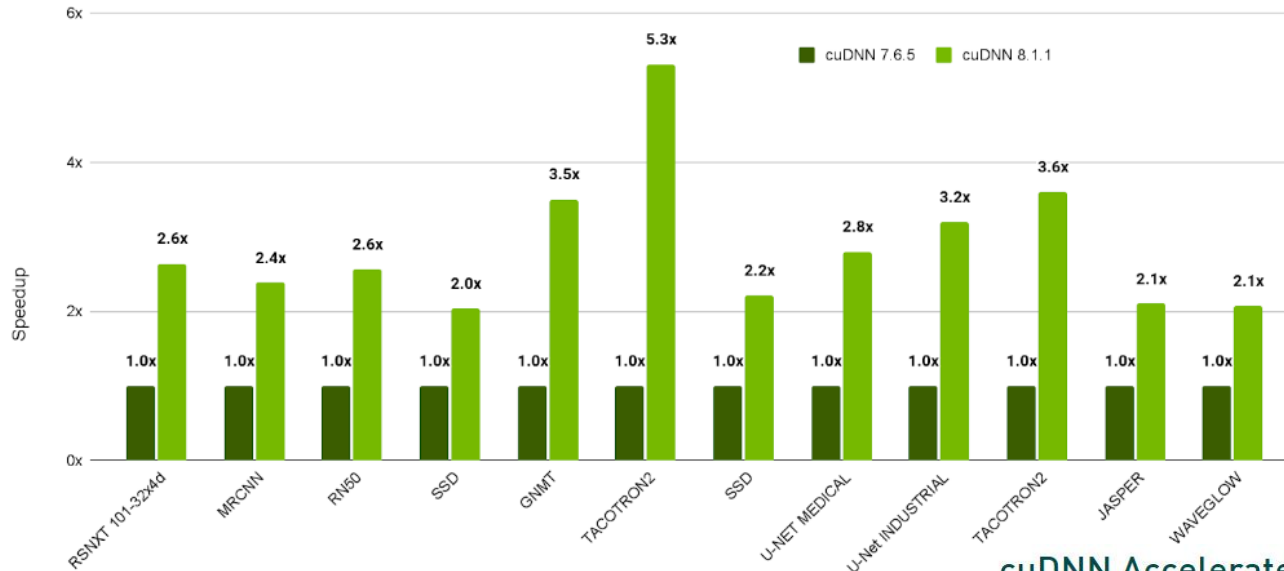


CuDNN(CUDA Deep Neural Network Library) 설치

DNN(Convolution, Pooling, Normalization, Activation) 루틴을 빠르게 수행하는 GPU 가속화 라이브러리입니다.

<https://developer.nvidia.com/cudnn>

A100 OVER 5X FASTER THAN V100 WITH CUDNN 8.1



cuDNN Accelerated Frameworks

Caffe

Caffe2

Chainer

Microsoft
Cognitive
Toolkit

MATLAB

mxnet

PaddlePaddle

PyTorch

TensorFlow

torch

Wolfram
Language

파이썬 주요 패키지(라이브러리)



행렬과 다차원 배열을 쉽게 처리 할 수 있게 해주는 라이브러리

pandas

데이터를 처리하고 분석하는 데 효과적인 패키지



데이터를 차트나 플롯(Plot)으로 그려주는 시각화 패키지



Matplotlib 기반으로 다양한 색상 테마와 통계차트 등의 기능을 추가한 시각화 패키지



교육 및 실무를 위한 머신러닝 패키지



TensorFlow 구글에서 만든 오픈소스 딥러닝 프레임워크



페이스북에서 만든 오픈소스 딥러닝 프레임워크

파이썬 기초

■ 변수 할당(Variable Assignment)

```
x = 2
y = 3
z = x + y
```

```
x = 'hello'
```

Single Quotation
작은 따옴표

```
x = "hello"
```

Double Quotation
쌍 따옴표

```
x
```

```
[Out] 'hello'
```

■ 출력

```
print(x)
```

```
[Out] 'hello'
```

■ 리스트(List)

```
[1, 2, 3]
```

```
['a', 'b', 'c']
```

```
my_list = [1, 2, 'apple', True]
```

Bracket
대괄호

```
my_list.append(100)
```

```
my_list[0]
```

```
my_list[:-1]
```

```
my_list[-1]
```

■ 딕셔너리(Dictionary)

```
d = {'key1': 'item1', 'key2': 'item2'}
```

Brace
중괄호

```
d['key1']
```

```
[Out] 'item1'
```


파이썬 실습



`python_essence.ipynb`

`python_tutorial.ipynb`

The screenshot shows the OpenAI ChatGPT web interface. The browser tab is titled '에너지 데이터 분석' and the address bar shows 'chat.openai.com/?model=text-davinci-002-render-sha'. A sidebar on the left contains a 'New chat' button and a list of previous chats, including '에너지 데이터 분석'. The main chat area shows a conversation with a user (D) asking '파이썬으로 코딩을 하는 방법을 알려줘.' (Tell me how to code in Python). The assistant (GPT) responds with a friendly greeting and an introduction to Python, followed by a list of topics including '변수와 데이터 타입' (Variables and Data Types). A code block is displayed with Python code for variable declaration and usage. The code is as follows:

```
python
# 변수 선언과 할당
name = "Alice"
age = 30
height = 5.8

# 변수 사용
print(name)
print("나이:", age)
print("키:", height)
```

Below the code block, the assistant continues with '조건문 (Conditional Statements)'. At the bottom, there is a 'Send a message' input field and a 'Regenerate' button. The footer of the interface includes a link to 'Upgrade to Plus' and a version notice: 'Free Research Preview. ChatGPT may produce inaccurate information about people, places, or facts. ChatGPT August 3 Version'.

THANK YOU

kgpark88@gmail.com