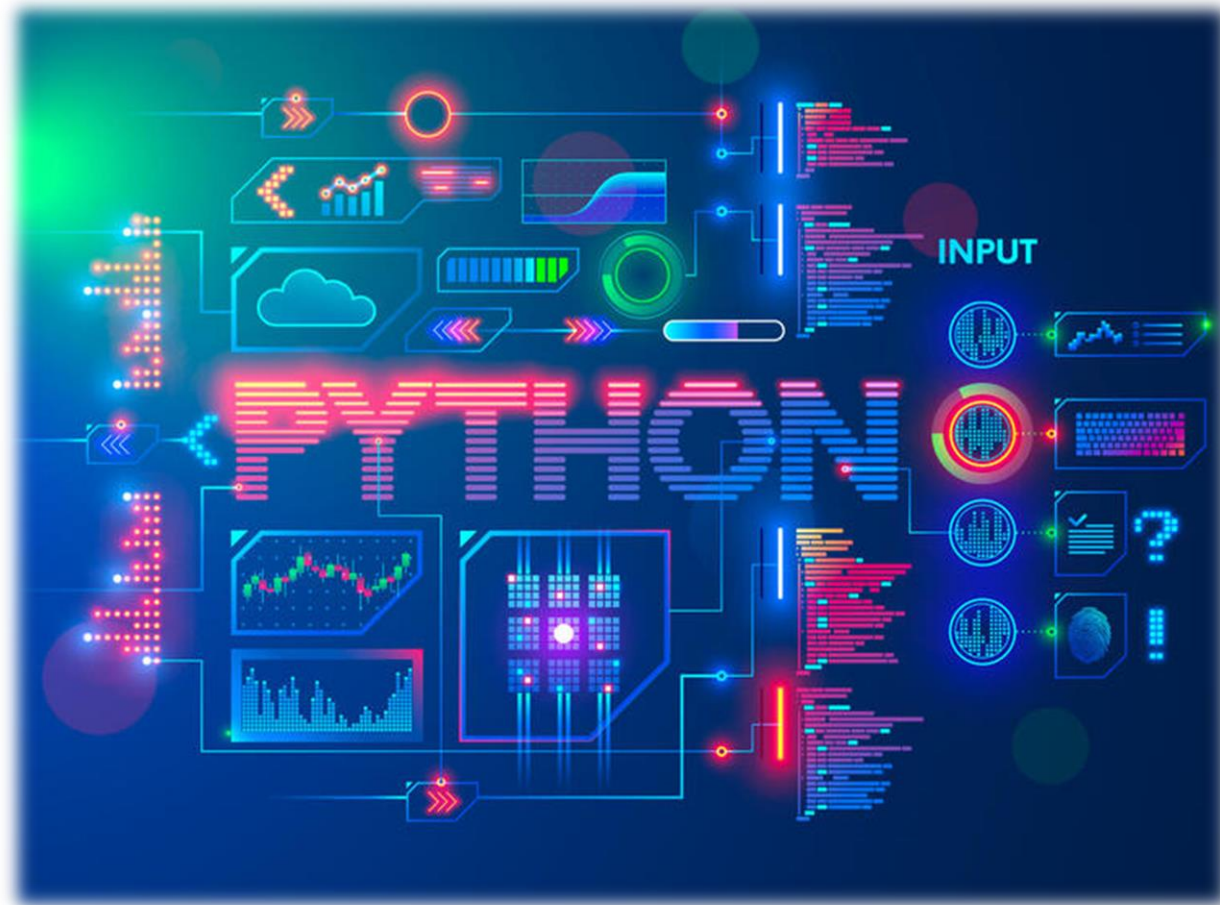


개발환경



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

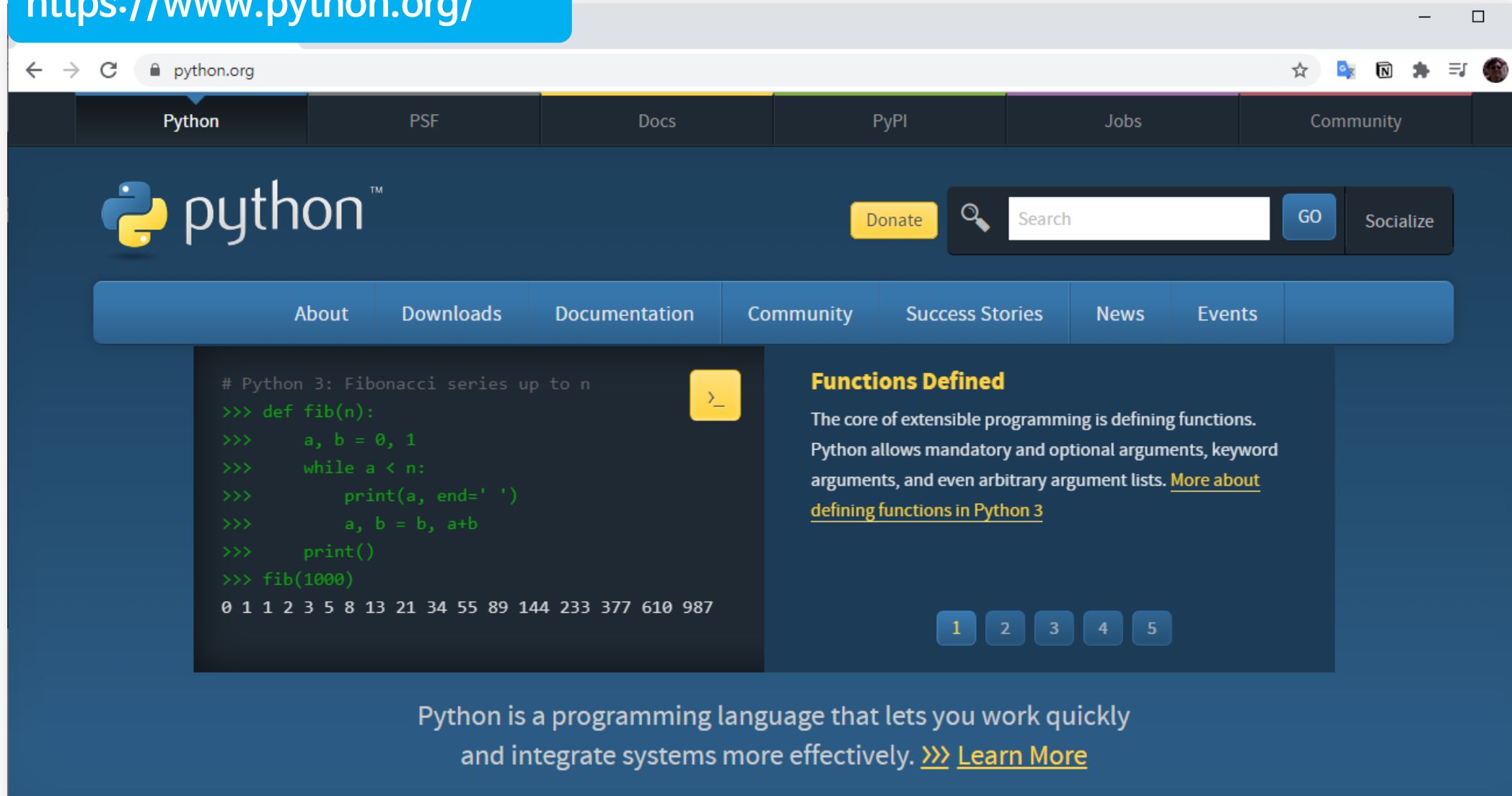
<https://www.kaggle.com/>

Benefits Of Python



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 snippet for a Fibonacci function, a 'Functions Defined' section, and a footer with a brief description of Python and a 'Learn More' link.

Python

PSF

Docs

PyPI

Jobs

Community

python™

Donate

Search

GO

Socialize

About

Downloads

Documentation

Community

Success Stories

News

Events

```
# 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

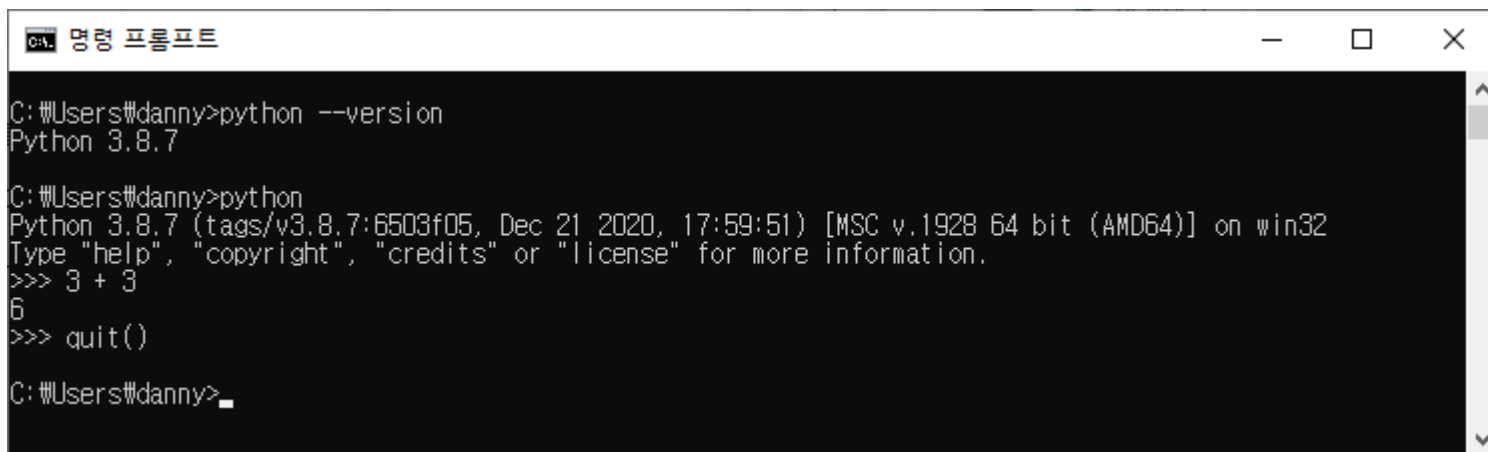
<https://www.python.org/downloads/>

Python 3.8.7

Release Date: Dec. 21, 2020

■ 파이썬 실행

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



```
C:\Users\danny>python --version
Python 3.8.7

C:\Users\danny>python
Python 3.8.7 (tags/v3.8.7:6503f05, Dec 21 2020, 17:59:51) [MSC v.1928 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> 3 + 3
6
>>> quit()

C:\Users\danny>
```

파이썬 가상환경 설치

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

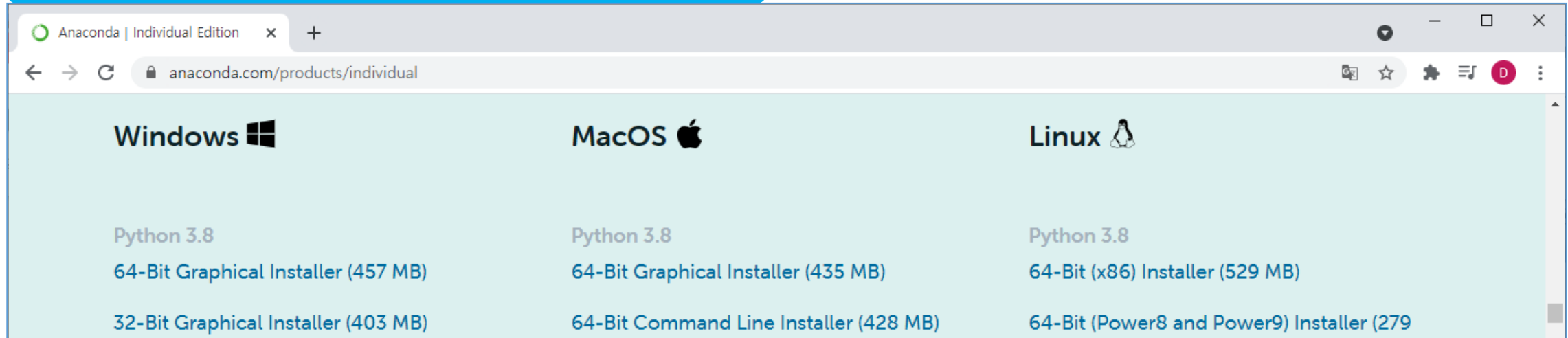
- 가상환경 생성 : `python -m venv myenv`
- 가상환경 실행
windows : `myenv\Scripts\activate.bat`
Linux, macOS : `source myenv/bin/activate`
- 패키지 설치 : `pip install numpy`
- 패키지 목록 관리
`pip freeze > requirements.txt`
`pip install -r requirements.txt`

아나콘다(Anaconda) 설치

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

■ 파이썬 설치/실행

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



■ 파이썬 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

개발환경 - Chrome

컴퓨터에 Chrome이 설치되어 있지 않은 경우, Chrome을 다운로드하여 설치 하고 기본 웹 브라우저를 Chrome로 설정하세요.

Windows 10

1. 컴퓨터에서 시작 메뉴 를 클릭합니다.
2. 설정 을 클릭합니다.
3. 기본 앱을 엽니다.
 - 기존 버전: 시스템 > 기본 앱을 클릭합니다.
 - 크리에이터스 업데이트: 앱 > 기본 앱
4. 하단의 '웹 브라우저'에서 현재 브라우저를 클릭합니다. 일반적으로 Microsoft Edge입니다.
5. '앱 선택' 창에서 **Chrome**을 클릭합니다.

나중에 손쉽게 Chrome을 열려면 작업 표시줄에 단축키를 추가하세요.

1. 컴퓨터에서 Chrome을 엽니다.
2. 하단의 Windows 작업 표시줄에서 Chrome을 마우스 오른쪽 버튼으로 클릭합니다.
3. 작업 표시줄에 고정을 클릭합니다.

출처 : <https://bit.ly/30DvgKY>

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 a red button indicating '구글 계정 필요' (Google account required). Below the banner, the interface includes a left sidebar with navigation options like 'Colaboratory 소개' (Colaboratory Introduction), '시작하기' (Get started), and '머신러닝 예제: Seedbank' (Machine learning examples: Seedbank). The main area shows a 'Welcome to Colaboratory' message. A 'Runtime' menu is open, listing various execution options with keyboard shortcuts. A 'Note Settings' dialog box is also visible, showing the 'Hardware accelerator' (하드웨어 가속기) set to 'GPU' and a checkbox for 'Save code when saving this notebook' (이 노트를 저장할 때 코드 셀 출력 저장).

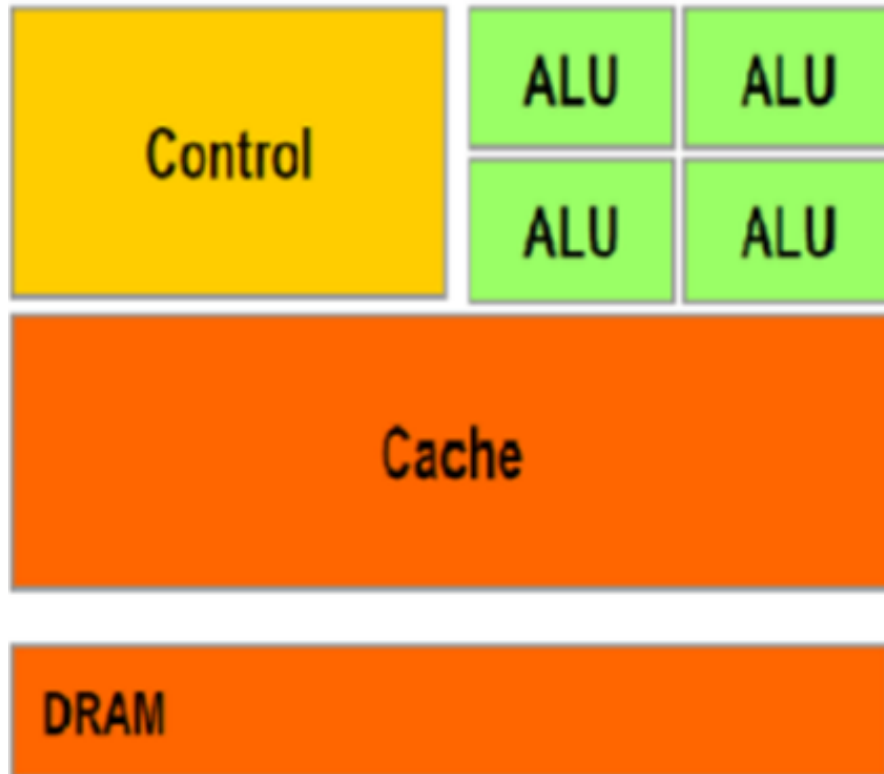


고성능GPU(Graphics Processing Unit)

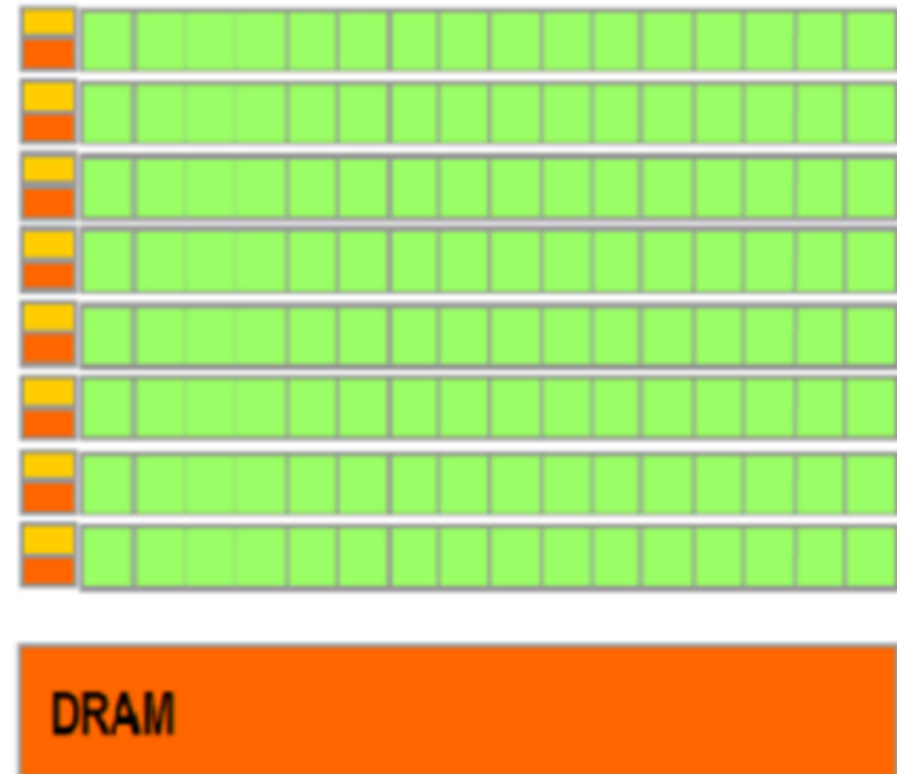
CPU vs GPU

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

■ CPU 구조



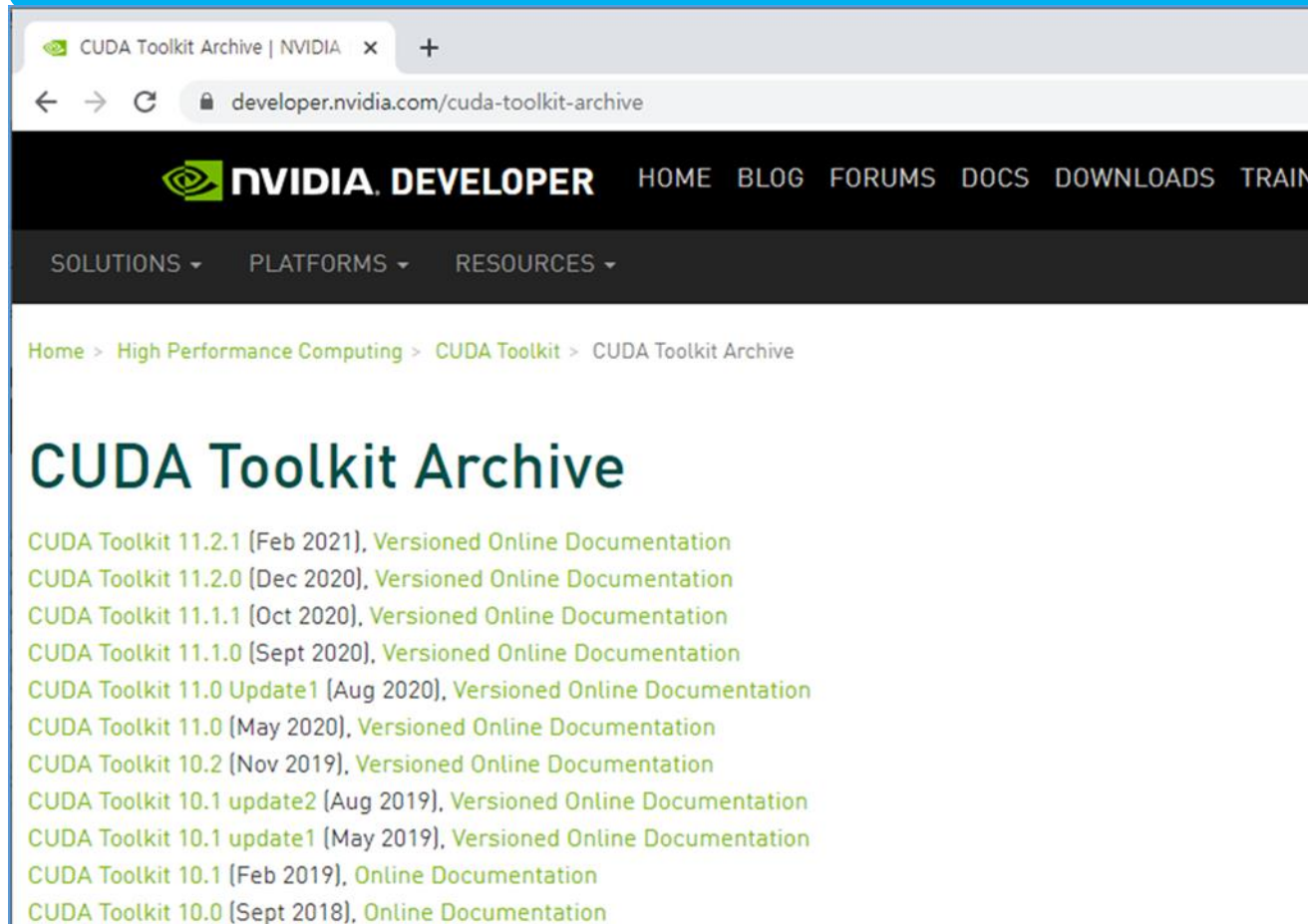
■ GPU 구조



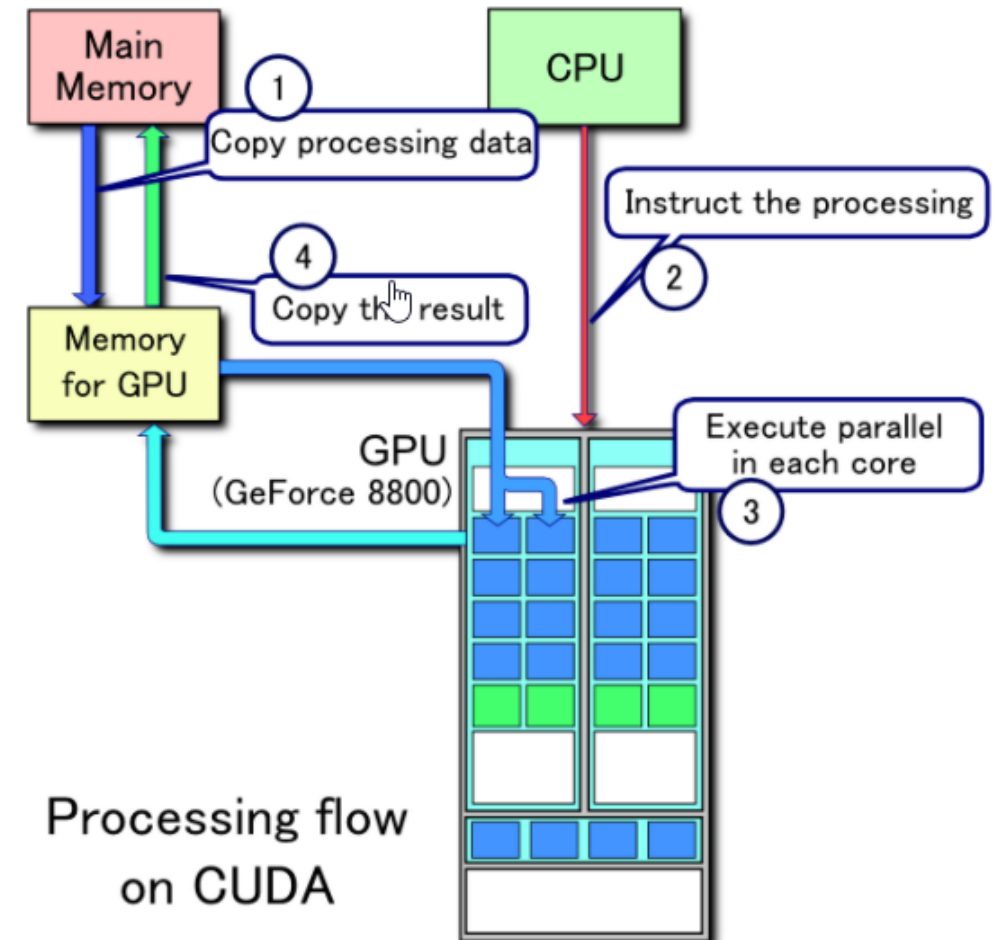
CUDA(Compute Unified Device Architecture) 설치

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 `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 features a breadcrumb trail: Home > High Performance Computing > CUDA Toolkit > CUDA Toolkit Archive. The title "CUDA Toolkit Archive" is prominently displayed. A list of available CUDA Toolkit versions is provided, each with its release 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).

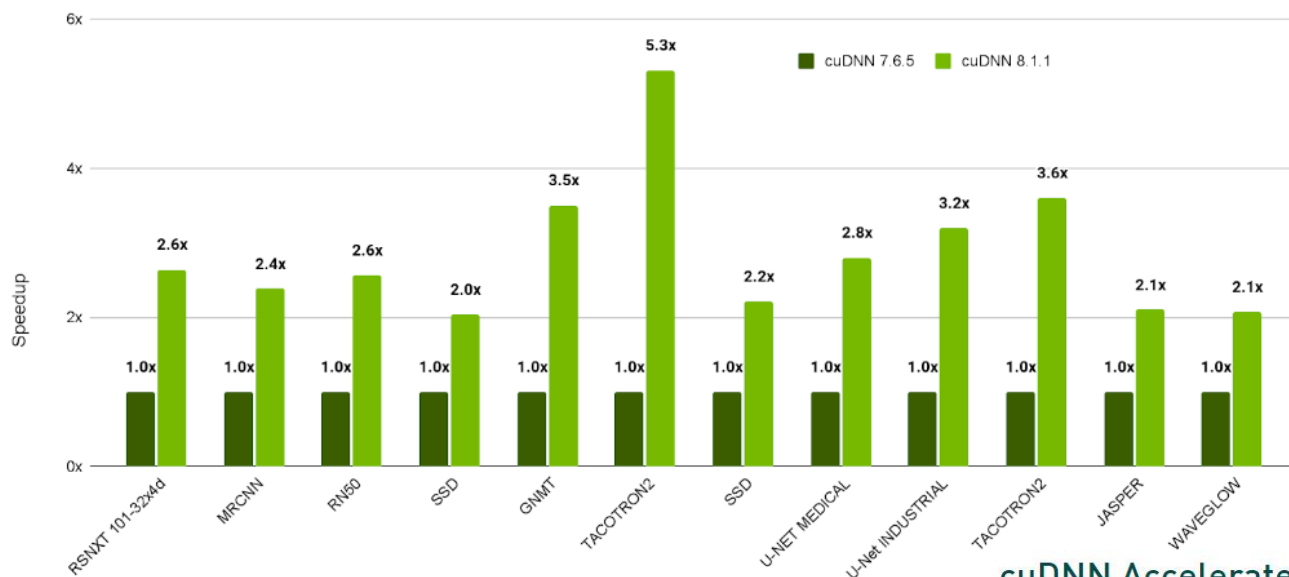


CuDNN(CUDA Deep Neural Network Library) 설치

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



matplotlib을 기반으로 다양한 색상 테마와 통계용 차트 등의 기능을 추가한 시각화 패키지



교육 및 실무를 위한 머신러닝 패키지



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`

Thank you