




# 오픈 소스와 개발 환경

Every developer is welcome!

한국 Microsoft  
최주열 이사



마이크로소프트와  
오픈 소스

Microsoft  
  
Open Source






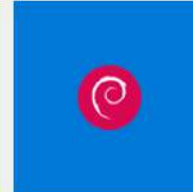
← 홈 게임 엔터테인먼트 생산성 특가

검색

검색 결과: Linux

유형: 모든 부서 | 사용 가능한 대상: PC

앱 (92) 모두 표시

					
Ubuntu ★★★★★ 44 모	Kali Linux ★★★★★ 7 모	Ubuntu 20.04 LTS 모	Ubuntu 18.04 LTS ★★★★★ 16 모	SUSE Linux Enterprise Server... 모	Debian ★★★★★ 5 모
설치됨	무료	무료	무료	무료	무료

## Microsoft: We were wrong about open source



Microsoft president and chief legal counsel Brad Smith has taken his turn at admitting Microsoft's former stance on open source put it on the "wrong side of history". In 2001 former Microsoft CEO Steve Ballmer famously said, "Linux is cancer that attaches itself in an intellectual property sense to everything it touches." Shortly after that and for the same reason, Microsoft co-founder Bill Gates described the open-source GPL (GNU General Public License) as "Pac-Man-like". Ballmer has since made peace with open source, and now



# Microsoft Linux

연도/월	Azure 내 Linux OS 비율 (%)
2019년 6월	>50%
2018년 9월	~50%
2017년 10월	~40%
2015년 10월	~25%

# Microsoft ❤️ Open Source



GitHub



## 2012

TypeScript 출시  
Visual Studio 및 팀  
파운데이션 서버에서  
Git 지원 추가

## 2014

Satya 회장: "Microsoft  
loves Linux"  
GitHub에 Microsoft 조직  
생성  
.NET Foundation 설립

## 2015

Visual Studio Code  
출시  
HDInsight (Hadoop/  
Ubuntu) 발표  
Microsoft: Node.js  
Foundation 공동으로  
구성 & 참여

## 2016

.NET Core 1.0  
PowerShell Core  
Windows 10 내 Linux를  
위한 Windows Subsystem  
Microsoft: Linux  
Foundation 가입  
GitHub에서 Microsoft가  
최대 오픈 소스  
컨트리뷰터 회사로 인정

## 2017

Microsoft  
Azure Kubernetes  
Service 출시 & 시작  
Kubernetes 커뮤니티에  
Draft, Brigade, Kashti  
프로젝트를 제출  
Microsoft: Cloud Native  
Computing & Cloud  
Foundry Foundation에  
가입  
SQL 2017 on Linux  
Windows 소스 코드를  
Git로 이동  
Azure Databricks  
(Apache Spark) 발표

## 2018

Visual Studio Code: 개발자  
도구 1위로 선정  
Azure Service Fabric 오픈  
소스화  
Linux 커널로 동작하는  
Azure Sphere  
GitHub 인수 의사를 공식  
발표  
약 5,000명의 Microsoft  
직원이 GitHub에 오픈  
소스 프로젝트 커밋 활동  
Azure: 거의 절반이  
Linux로 구성  
GitHub에 오픈 소스  
프로젝트를 기여하는  
최대 컨트리뷰터 회사로  
계속 자리매김

2012

2014

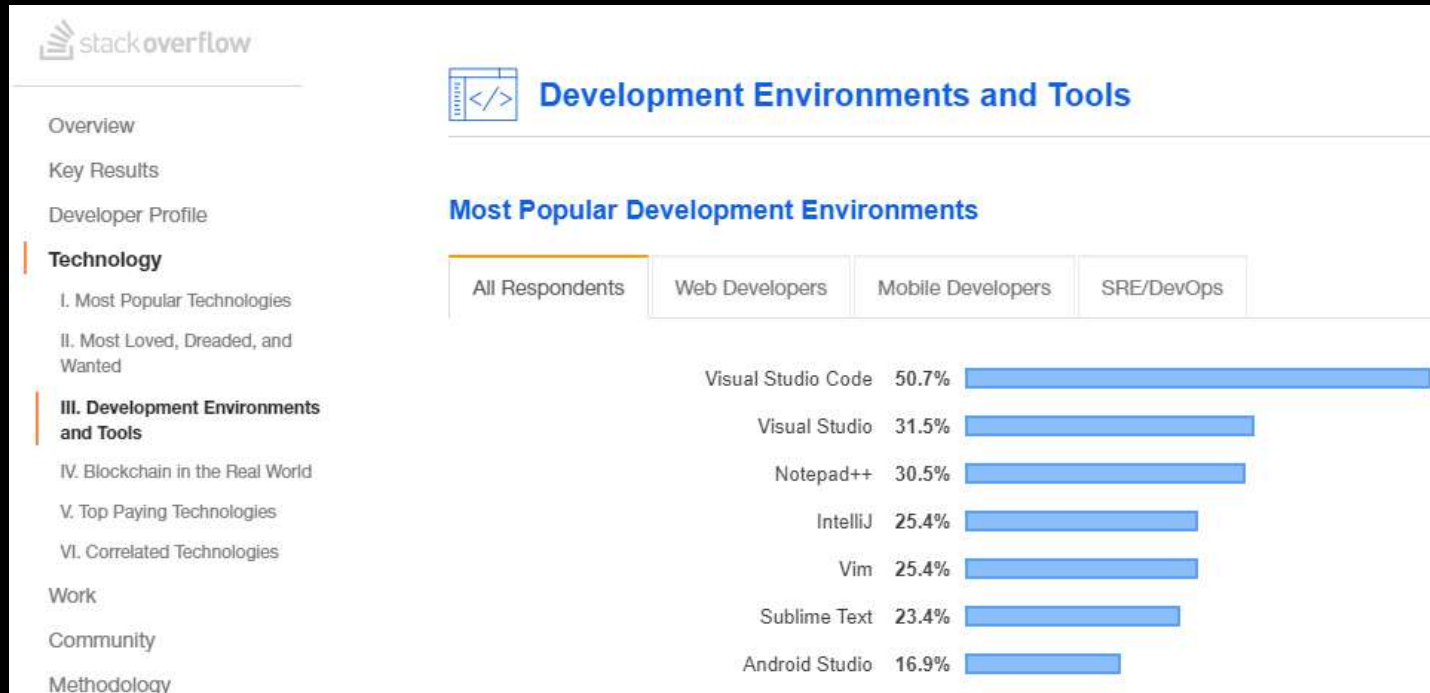
2015

2016

2017

2018

# VSCode: 가장 많이 사용하는 오픈 소스 개발 환경 도구



microsoft / vscode

Watch 2.9k | Star 97k | Fork 15.2k

Code | Issues 4,938 | Pull requests 220 | Actions | Projects 3 | Wiki | Security 0 | Insights

Visual Studio Code <https://code.visualstudio.com>

editor | electron | visual-studio-code | typescript | microsoft

66,259 commits | 423 branches | 0 packages | 155 releases | 1,151 contributors | MIT

[insights.stackoverflow.com/survey/2019/#development-environments-and-tools](https://insights.stackoverflow.com/survey/2019/#development-environments-and-tools) / [github.com/Microsoft/vscode](https://github.com/Microsoft/vscode)



GitHub

**50M**  
developers



The largest developer  
community on the planet

**36M+** developers

**100M+** repositories

**1.1B+** contributions

# 커뮤니티와 함께 하는 마이크로소프트

KubeCon 2019 (11/18-21)

PyCon US 2020 (4/15-23)





KubeCon CloudNativeCon  
North America 2019

This event has passed. Please visit the current [KubeCon + CloudNativeCon North America](#) site.


November 18 - 21 | San Diego Convention Center, San Diego, California | #KubeCon #CloudNativeCon  
November 18: Day Zero Co-located Events + Lightning Talks | November 19 - 21: Conference

## SPONSORS

DIAMOND




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## KEYSTONE

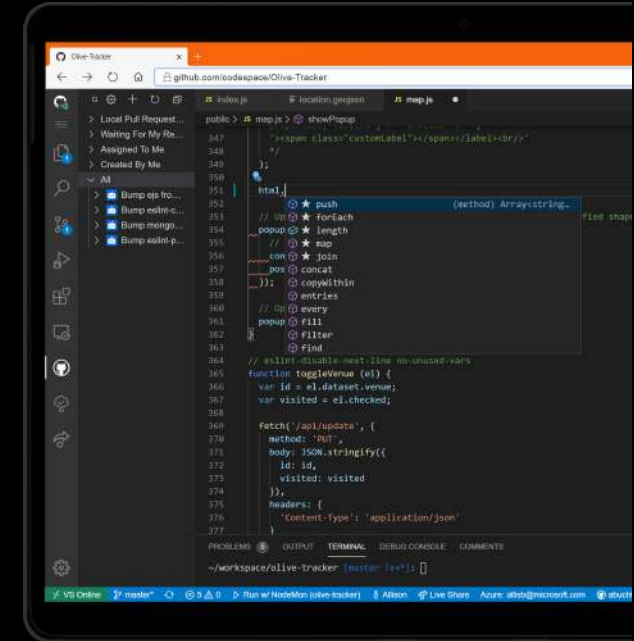
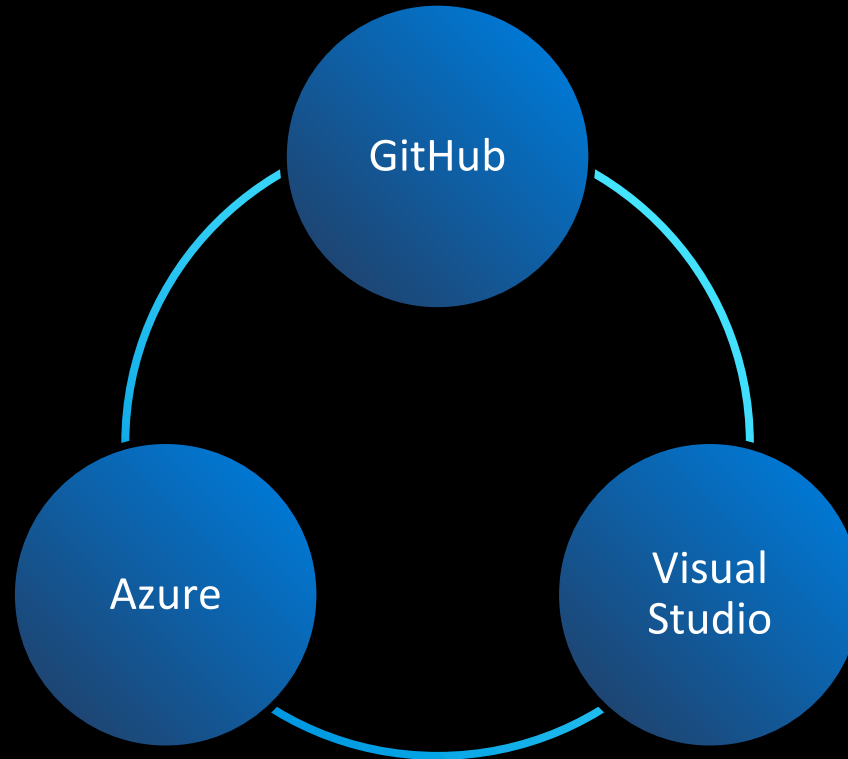


<https://azure.microsoft.com/>

Cloud for all. Microsoft Azure believes that all individuals and groups should be empowered with the full freedom and power of the cloud. The cloud should not be available to only an elite few. Azure offers the trust, transparency, and humanity that all companies need to navigate, thrive, and endure in this increasingly cloud-powered world of business.

## PRINCIPAL

# Build 2020 하이라이트

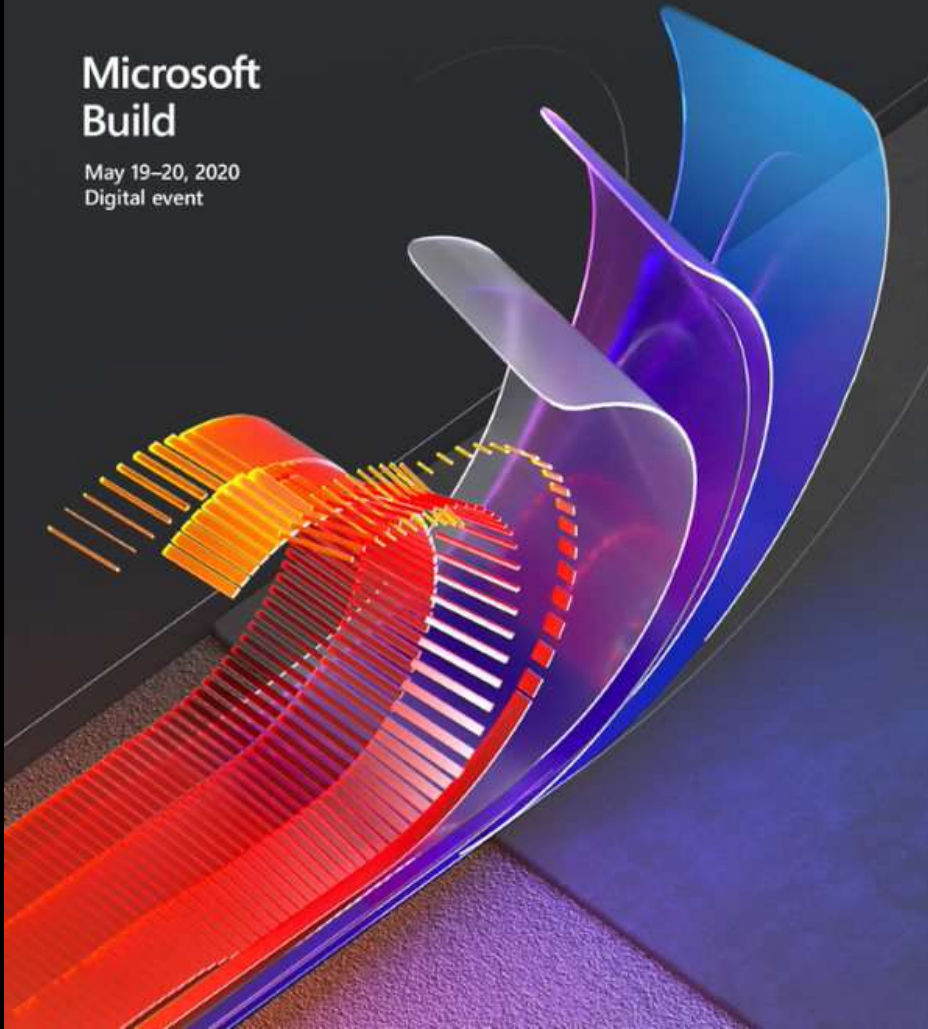




Learn. Connect.  
Code.

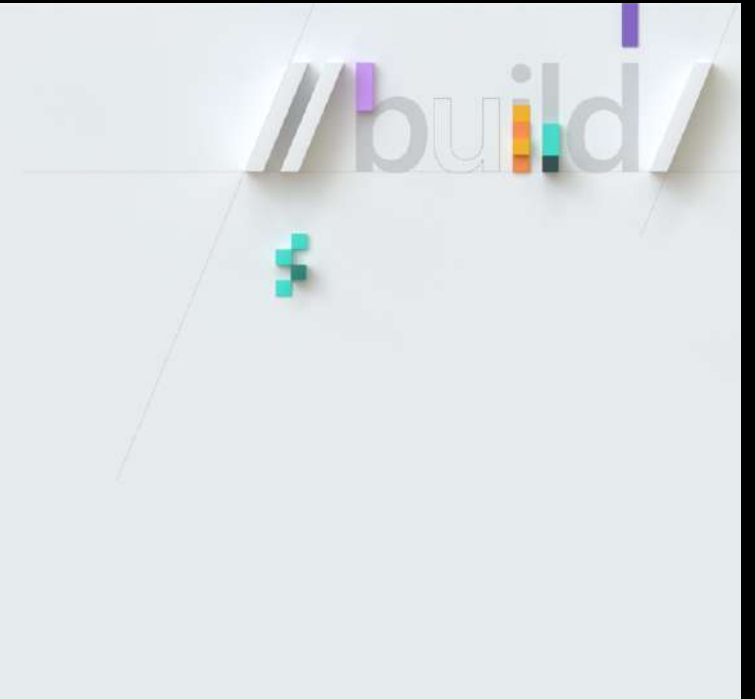
Microsoft  
Build

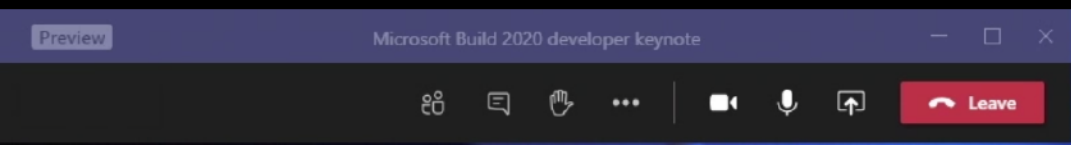
May 19–20, 2020  
Digital event



Microsoft  
Build

May 6–8, 2019





PowerPoint Slide Show - Build 2020 ScottHa Keynote Deck.pptx - PowerPoint

# Windows Subsystem for Linux

Near-native Linux performance with a real Linux kernel

Preview: Hardware accelerated workloads via GPU

WSL2 available today

[aka.ms/wsl](https://aka.ms/wsl)



# Windows Terminal

Optimize workflows with tabs and panes

Fully customizable and open source

Windows Terminal 1.0 available today

[aka.ms/terminal](https://aka.ms/terminal)



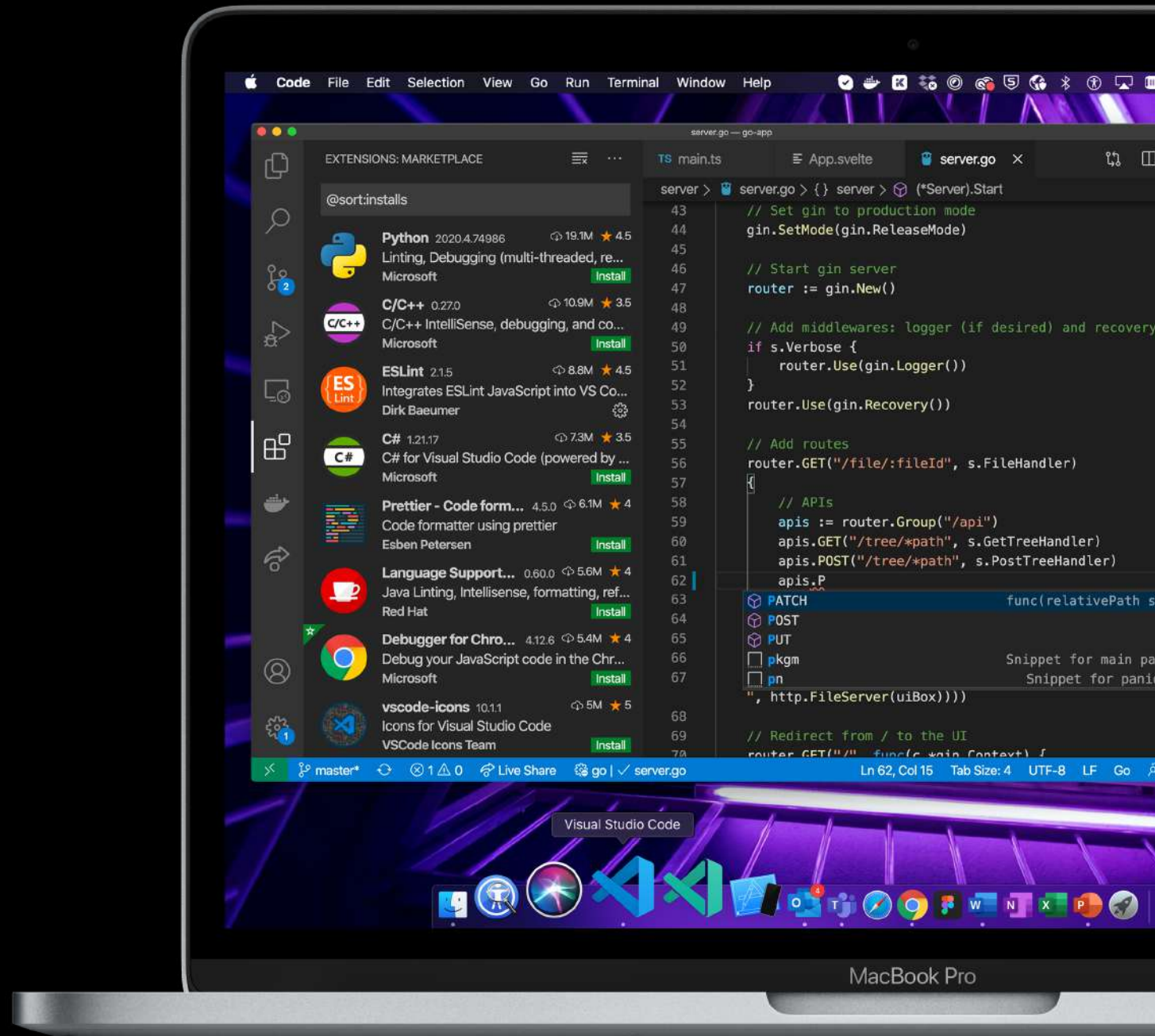
# Visual Studio Code

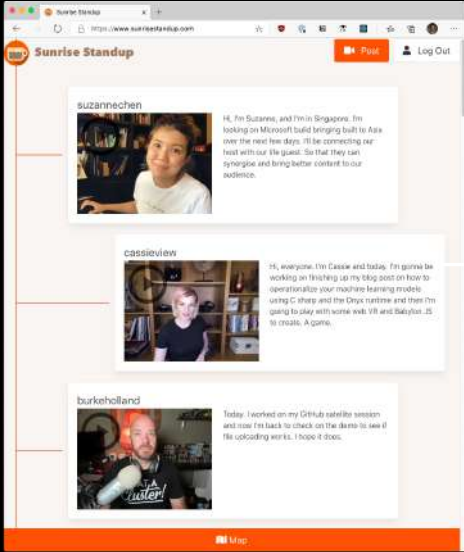
Tailor your editor experience with  
21,000+ extensions

Develop locally, remotely, or even in  
the browser

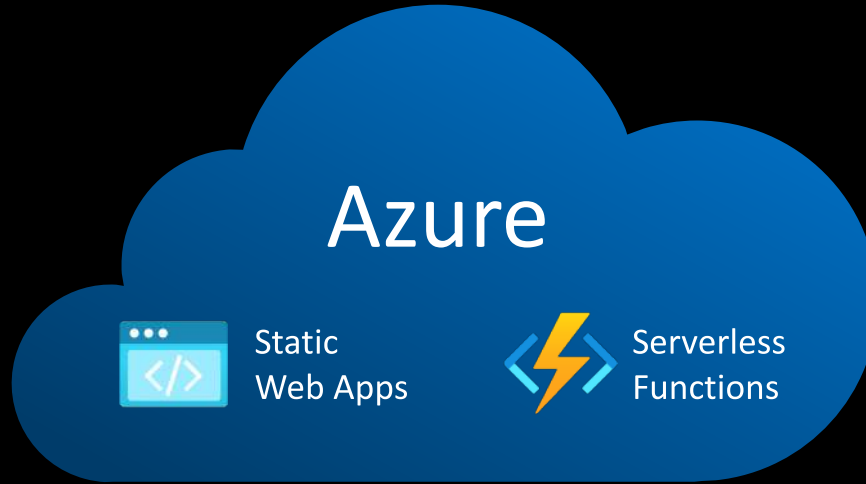
**Preview:** Sync and roam your  
settings and extensions

[code.visualstudio.com](https://code.visualstudio.com)





Single-page app



GitHub



Visual Studio Code

Announcing

# Azure Static Web Apps

Serverless hosting for dynamic scaling

GitHub native workflow

Unified hosting and management

# AI에서 살펴보는 오픈 소스와 개발 환경



# 참고: 오픈 소스 AI/딥러닝 프레임워크

2010

  
theano  
(Nov 2010)

2013



2014



2015



2016



2017



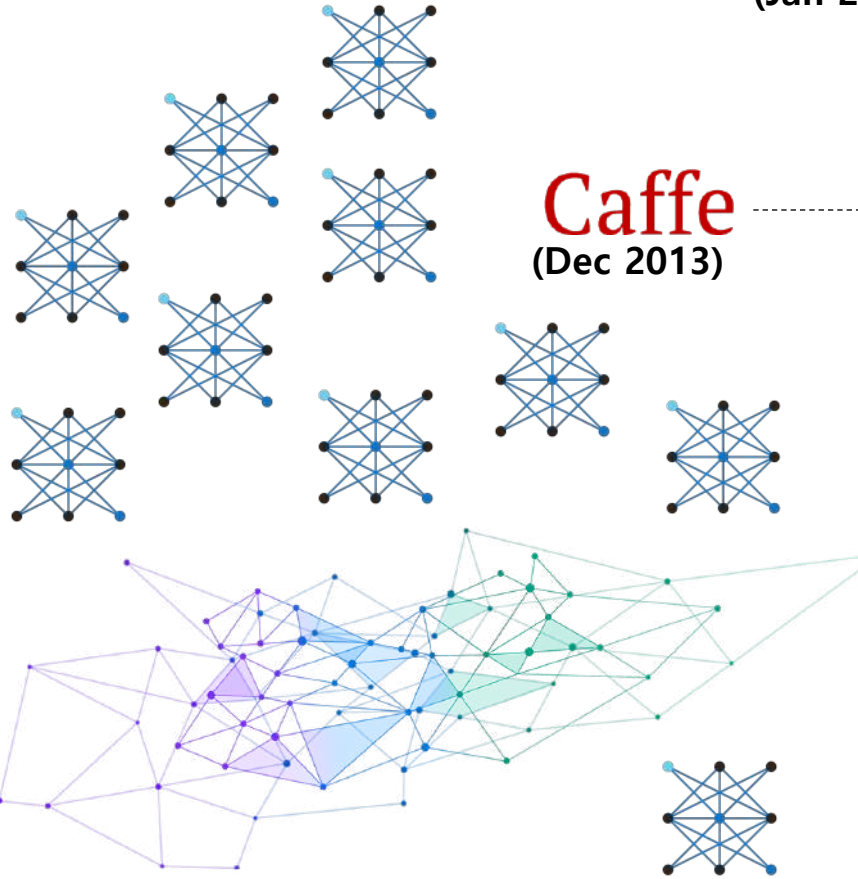
2018



2019



2020



  
torch  
(Jan 2015) Facebook open sources deep learning modules

  
Chainer  
(Jun 2015)

**Caffe**  
(Dec 2013)

CNTK (Computational Network Toolkit)  
(Apr 2015)

  
Microsoft Cognitive Toolkit  
(Jan 2016)

  
Keras  
(Mar 2015)

  
mxnet  
(May 2016, 0.7.0)

  
TensorFlow  
(Nov 2015)

  
PaddlePaddle  
(Aug 2016)

  
PyTorch  
(Oct 2016)

  
Caffe2  
(Apr 2017)

  
ONNX  
(Sep 2017)

(May 2018)

v1.0  
(Dec 2018)

(Mar 2018)

(Apr 2019)

Graduate project in Linux Foundation AI  
(Nov 2019)

  
TensorFlow 2.0  
(Sep 2019)

# AI 개발자를 위한 다양한 Azure & 개발 도구

**정교하게 미리 학습된 도메인별 모델**  
솔루션 개발을 손쉽게 구현하기 위한 방법



Vision



Speech



Language



Search

**익숙한 IDE / 데이터 과학자 도구 사용**  
쉽게 모델 개발 및 테스트를 하기 위한 방법



Visual Studio Code



Azure Notebooks



Jupyter



Command line

**유용한 프레임워크 활용**  
고급 딥러닝 솔루션을 구축하기 위한 방법



PyTorch



TensorFlow



Scikit-Learn



ONNX

**다양한 서비스 활용을 통한 생산성 향상**  
데이터 사이언스와 개발 팀을 위한 역량 강화



Azure Databricks

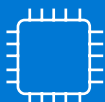


Azure Machine Learning

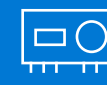


Machine Learning VMs

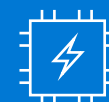
**강력한 인프라스트럭처**  
효율적이고 원활한 딥러닝 환경 제공



CPU



GPU



FPGA

```

Microsoft Azure Notebooks Preview My Projects Help ianychoi
Powered by jupyter computervisiontest (autosaved)
computervision-api-demo-test
Python 3.6

# Async SDK call
rawHttpResponse = client.batch_read_file(url, mode, custom_headers, raw)

# Get ID from returned headers
operationLocation = rawHttpResponse.headers["Operation-Location"]
idLocation = len(operationLocation) - numberOfCharsInOperationId
operationId = operationLocation[idLocation:]

# SDK call
while True:
    result = client.get_read_operation_result(operationId)
    if result.status not in ['NotStarted', 'Running']:
        break
    time.sleep(1)

# Get data
if result.status == TextOperationStatusCodes.succeeded:
    for textResult in result.recognition_results:
        for line in textResult.lines:
            print(line.text)
            # print(line.bounding_box)

```

CLOSED  
WHEN ONE DOOR CLOSES, ANOTHER  
OPENS ALL YOU HAVE TO DO IS WALK IN

```

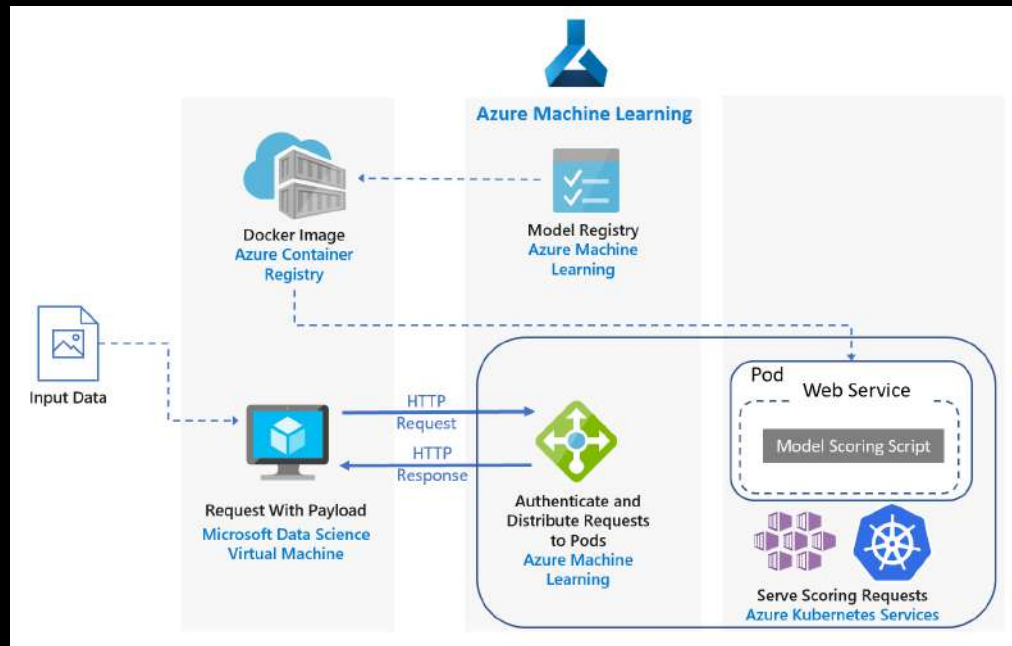
File Edit Selection View Go Debug Terminal Help Python Interactive Demo Visual Studio Code
+ howDataScience.py
Run Cell | Run All Cells
1 #%% [markdown]
2 # ## This is markdown.
3
Run Cell | Run All Cells
4 #%%
5 # Let's load and review some data
6 import pandas as pd # pandas is a dataframe
7 df = pd.read_csv("./data/pima-data.csv") #
8 df.head(5)
9
Run Cell | Run All Cells
10 #%% Let's plot the correlation between dat
11 import matplotlib.pyplot as plt # matplotl
12 import matplotlib.style as style
13 style.use('dark_background')
14
15 def draw_corr(df, size = 11):
16     corr = df.corr() # data frame correlat
17     fig, ax = plt.subplots(figsize=(11, 11
18     ax.matshow(corr) # color code the rect
19     plt.xticks(range(len(corr.columns)), c
20     plt.yticks(range(len(corr.columns)), c
21
22 draw_corr(df)

```

This is markdown.

	num_preg	glucose_conc	diastolic_bp	thickness	insulin	hmi	dia
0	6	140	72	35	0	33.6	
1	1	85	66	29	0	21.6	
2	8	183	64	0	0	23.3	
3	1	89	66	23	94	28.1	
4	0	137	40	35	168	48.1	

Let's plot the correlation between data columns...



Microsoft Azure Marketplace Marketplace: 검색

### Data Science Virtual Machine - Windows 2016

개요 계획 검토

AI, 데이터 과학 및 분석을 개발 및 모델링 도구

Data Science Virtual Machine(DSVM)은 실행머신기 호환된 Windows Server 2016 VM이며 데이터 분석, 분석, 모델링 및 계산을 주요 도구를 제공합니다.

주요 사용:

- Azure Machine Learning SDK
- Microsoft ML Server - Dev Edition(확장성 있는 R 및 Python)
- Anakonda Python
- SQL Server 2017 Dev Edition - 데이터베이스 내부 및 Python 분석 포함
- Microsoft Office 365 ProPlus 86X - 공유 클라우드 통합의
- Julia Pro - Julia 런타임기

# 다시 WSL2로 돌아와서.. WSL2 + GPU?!

## WSL will support GPU Compute workflows

Adding [CUDA](#) and/or [GPU Compute support](#) to WSL has been our #1 most requested feature since our first release! Over the last 3+ years, the WSL, Virtualization, DirectX, Windows Driver teams, and our silicon partners have been working hard on a complex engineering feat to deliver this capability.

This is why we're thrilled to announce that we will start previewing GPU compute support for WSL in Windows 10 Insider builds within the next few months!

Initially, the GPU compute capability will support two scenarios:

- [NVIDIA CUDA](#)
  - Supports existing Linux tools & workflows used by professionals
- [DirectML](#)
  - Initially targeting beginners and students, leveraging DirectX 12 capable GPUs from several vendors
  - The team will be releasing a preview package of TensorFlow with a DirectML backend enabling hardware agnostic acceleration of AI & ML workloads across the breadth of Windows hardware – DirectML will also support native Windows too, including TensorFlow on Windows!

# TensorFlow on WSL2 with GPU!

```
clarker@DESKTOP-50QJ7CF: ~/ x + v - □ X
(directml) clarker@DESKTOP-50QJ7CF:~/tfmodels/squeezenet$ python train.py
WARNING:tensorflow:From /home/clarker/miniconda3/envs/directml/lib/python3.6/site-packages/tensorflow_core/python/autogr
aph/converters/directives.py:119: The name tf.FixedLenFeature is deprecated. Please use tf.io.FixedLenFeature instead.

WARNING:tensorflow:From /home/clarker/miniconda3/envs/directml/lib/python3.6/site-packages/tensorflow_core/python/autogr
aph/converters/directives.py:119: The name tf.parse_single_example is deprecated. Please use tf.io.parse_single_example
instead.

WARNING:tensorflow:From /home/clarker/miniconda3/envs/directml/lib/python3.6/site-packages/tensorflow_core/python/autogr
aph/converters/directives.py:119: The name tf.image.resize_images is deprecated. Please use tf.image.resize instead.

WARNING:tensorflow:
The TensorFlow contrib module will not be included in TensorFlow 2.0.
For more information, please see:
* https://github.com/tensorflow/community/blob/master/rfcs/20180907-contrib-sunset.md
* https://github.com/tensorflow/addons
* https://github.com/tensorflow/io (for I/O related ops)
If you depend on functionality not listed there, please file an issue.

Train Step 0 : 0.1562
Evaluation Step 0 : 0.1
|
```

# (NVIDIA에서도 발표)

[Home](#) > [High Performance Computing](#) > [CUDA ZONE](#) > GPU in Windows Subsystem for Linux (WSL)

## CUDA on Windows Subsystem for Linux - Public Preview

Microsoft Windows is a ubiquitous platform for enterprise, business, and personal computing systems. However, industry AI tools, models, frameworks, and libraries are predominantly available on Linux OS.

Soon all users of AI - whether they are experienced professionals, or students and beginners just getting started - can benefit from innovative GPU-accelerated infrastructure, software, and container support on Windows.

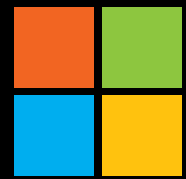
The **Microsoft GPU in WSL** and **NVIDIA CUDA on WSL Public Preview** brings NVIDIA CUDA and advanced AI together with the ubiquitous Microsoft Windows platform to deliver advanced machine learning capabilities across numerous industry segments and application domains.

NVIDIA will make a CUDA on WSL preview version available soon for [Microsoft Windows Insiders](#) program members who have registered in the [NVIDIA Developer Program](#).





Every developer is welcome!



# Microsoft Azure

Invent with purpose