



2019년도 12월 한국생물공학회 교육 워크샵

생물공학×기계학습

- 일시 _ 2019년 12월 19일(목) ~ 20일(금)
- 장소 _ 한국과학기술회관 중회의실 (서울시 강남구)
- 주최 _ 한국생물공학회

튜토리얼 1

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목차

- Docker & Git
 - Python & Biopython
 - Machine learning & Deep learning
-
1. 실습 진행 docker (windows, MacOS) > colab
 2. jupyterlab, colab 실행 끝날때까지 기다리기
 3. 튜토리얼 1 각종 자료 위치:

<https://github.com/greendaygh/bioengml>

딥러닝을 위한 컴퓨터 환경 설정

1. Download Anaconda
2. Install Anaconda & Python
3. Start and Update Anaconda
4. Install CUDA Toolkit & cuDNN
5. Create an Anaconda Environment
6. Install Deep Learning API's (TensorFlow & Keras)

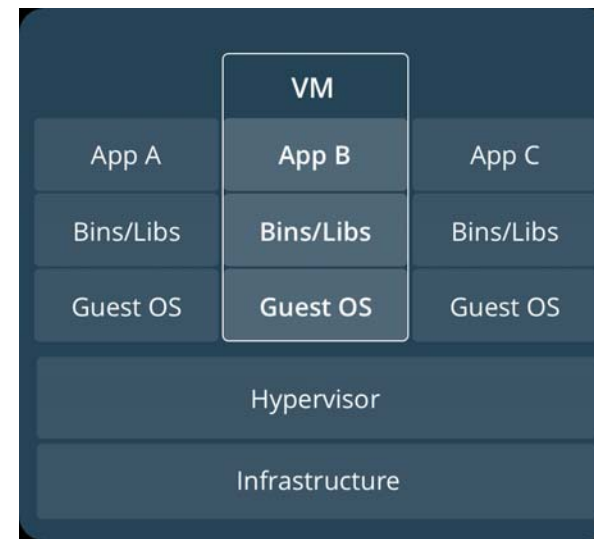
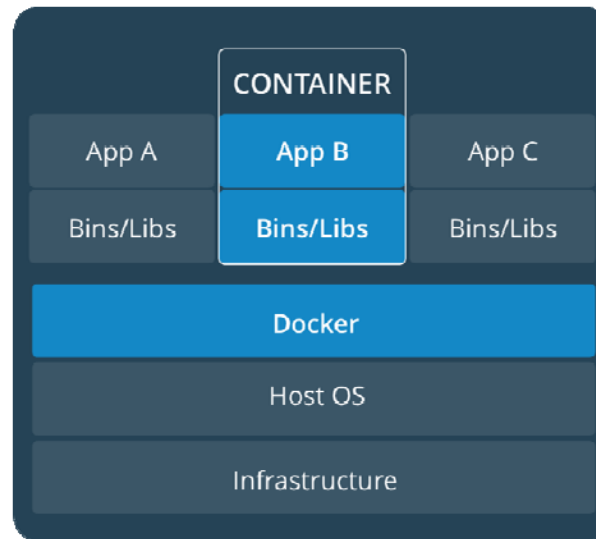


데이터 분석 자체 보다 더 복잡하고 까다로움

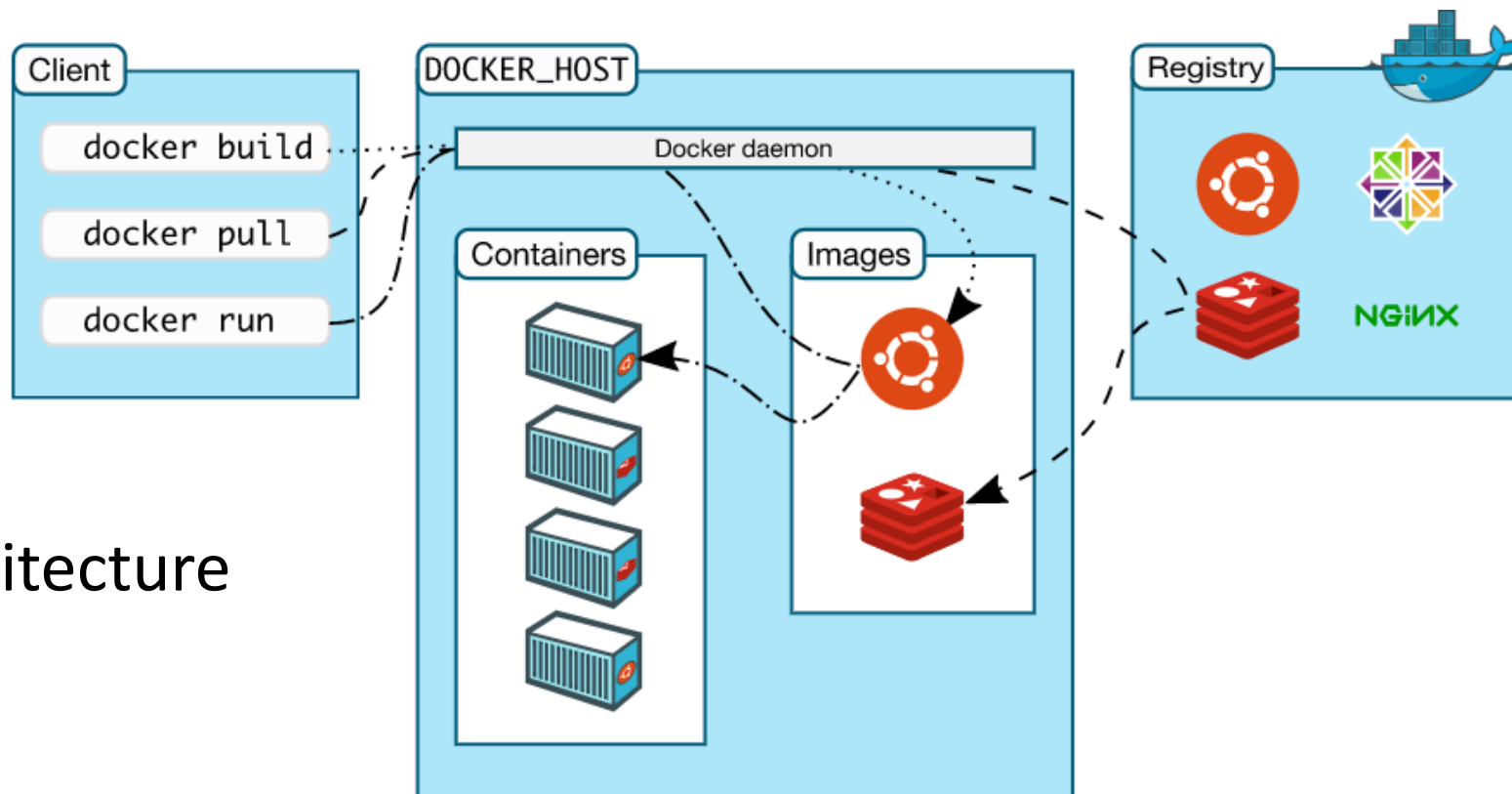


- 리눅스 컨테이너 기반 오픈소스 가상화 플랫폼
 - 컨테이너 - 격리된 리소스 이용 프로세스 동작
 - 기존 가상화 기술 - 하드웨어 > Guest OS > 프로세스
 - Docker - 하드웨어 > OS > 도커엔진 > 프로세스
 - 개발환경 == 배포환경 (App + OS)
- ➔ 다른사람 개발환경 == 내 개발환경

Container vs. VM



Architecture



Example



NCBI Resources ▾ How To ▾

ORFfinder PubMed ▾

Open Reading Frame Finder


ORF finder searches for open reading frames (ORFs) in the DNA sequence you enter. The program returns the range of each ORF, along with its protein translation. Use ORF finder to search newly sequenced DNA for potential protein encoding segments, verify predicted protein using newly developed SMART BLAST or regular BLASTP.


This web version of the ORF finder is limited to the subrange of the query sequence up to 50 kb long. Stand-alone version, which doesn't have query sequence length limitation, is available for [Linux x64](#).





Examples (click to set values, then click Submit button) :

- [NC_011604](#) Salmonella enterica plasmid pWES-1; genetic code: 11; 'ATG' and alternative initiation codons; minimal ORF length: 300 nt
- [NM_000059](#); genetic code: 1; start codon: 'ATG only'; minimal ORF length: 150 nt


Try the two-factor authentication beta. [Learn more >](#)

 **docker hub**


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Filters 1 - 2 of 2 results for **orffinder**. [Clear search](#) Most Popular ▾

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unlhcc/orffinder
By [unlhcc](#) • Updated 2 months ago

Container Linux x86-64

98 Downloads

```
PS C:\bioengml\datasets> docker pull unlhcc/orffinder
Using default tag: latest
latest: Pulling from unlhcc/orffinder
d8d02d457314: Pull complete
388cf7f58f53: Pull complete
a62e8a8a05cd: Pull complete
e7d70c76806b: Pull complete
Digest: sha256:cbe18a0055fa41074af946d40fb7da1fe8c683b2e5dc35115d165e9047e06e27
Status: Downloaded newer image for unlhcc/orffinder:latest
docker.io/unlhcc/orffinder:latest
PS C:\bioengml\datasets>
```

docker run with ORFfinder

```
PS C:\bioengml\datasets> docker run --rm -v c:\bioengml:/home/bioengml -w /home/bioengml un  
lhcc/orffinder:latest ORFfinder -in ./datasets/NC_005816.fna -out ./datasets/orf  
PS C:\bioengml\datasets> dir
```

디렉터리: C:\bioengml\datasets

Mode	LastWriteTime	Length	Name
-a----	2019-12-07 오후 11:15	235482	ls_orchid.gbk
-a----	2019-12-13 오후 9:33	1022	my_seq_records.fa
-a----	2019-12-07 오후 9:20	9853	NC_005816.fna
-a----	2019-12-07 오후 10:04	31838	NC_005816.gb
-a----	2019-12-13 오후 9:33	12932	opuntia.aln
-a----	2019-12-13 오후 9:33	352	opuntia.dnd
-a----	2019-12-08 오전 10:12	7292	opuntia.fasta
-a----	2019-12-18 오전 12:46	15842	orf
-a----	2019-12-08 오후 11:47	1055056	PF14532_full.txt



버전 관리 도구

