URBAN ROBOTICS LAB

Managing your Dev. Environment: Docker & Docker Hub

AI Seminar (2021.07.01)

Sungwon Hwang
shwang.14@kaist.ac.kr

https://github.com/deepshwang/howtodocker
https://gitlab.com/urobotkaist/howtodocker

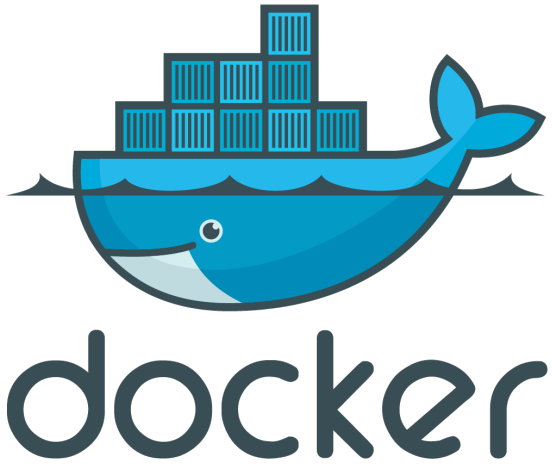
KAIST

URBAN ROBOTICS LAB

What is Docker?

(TL;DR – Virtual Machine(VM) (not quite, but close enough) without UI)

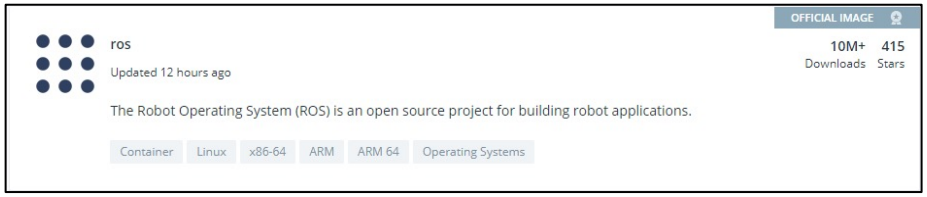
- Open platform for developing, shipping and running applications.
- Enables the separation of your applications from your infrastructure.



Why Docker is Essential?

1. Quick Set-up of Various Environments

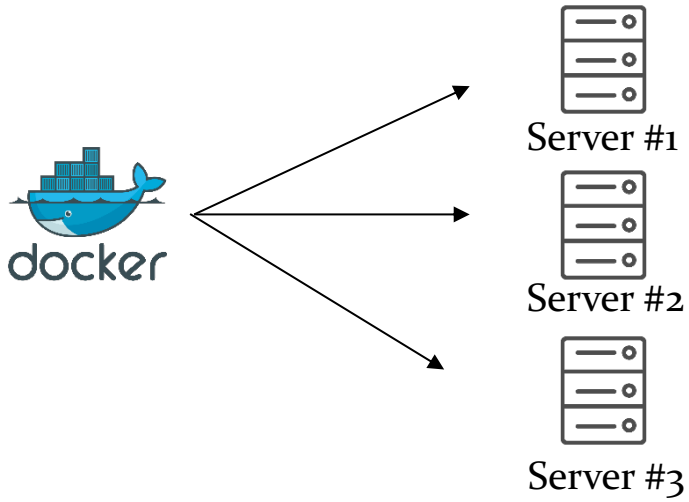
- Docker Hub (https://hub.docker.com/) : Open platform to share different environments
  - *What if the local machine is installed with CUDA 10.0 and a project requires 10.2?*
  - *OpenGL is very cumbersome to install, especially with CUDA…*
  - *What if I want to run ROS2, but I'm scared to install ROS2 on local because it may clash with ROS that's already installed?*



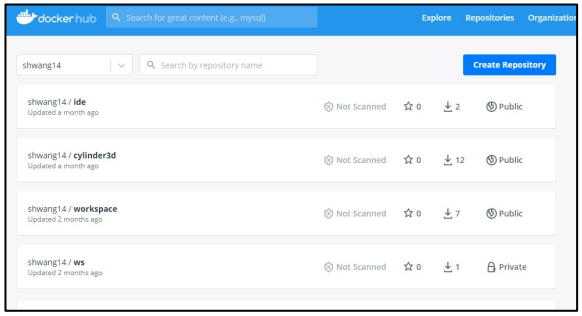
Why Docker is Essential?

2. Easy Distribution of Identical Environments to Different Machines

- *I don't want to install everything over and over again to migrate my projects to different server…!*



Save it as zip file ($ docker save)



Public upload to docker hub

Why Docker is Essential?

3. Ready-to-use Environments are Sharable in Developing Communities

traveller59 / spconv

<> Code | Issues 207 | Pull requests 6 | Actions | Projects | Wiki | Security | Insights

SpConv: PyTorch Spatially Sparse Convolution Library

This is a spatially sparse convolution library like SparseConvNet but faster and easy to read. This library provide sparse convolution/transposed, submanifold convolution, inverse convolution and sparse maxpool.

2020-5-2, we add ConcatTable, JoinTable, AddTable, and Identity function to build ResNet and Unet in this version of spconv.

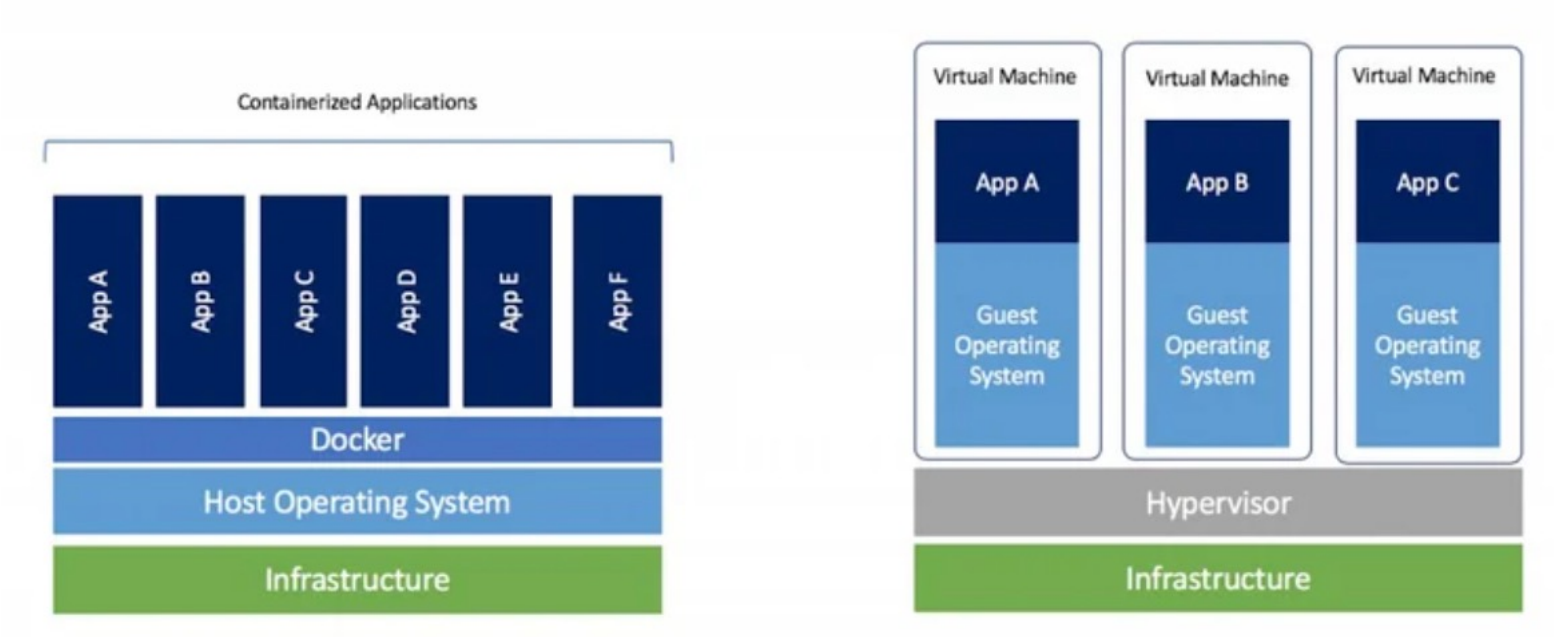
Docker:

`docker pull scrin/dev-spconv` , contains python 3.8, cuda 10.1, fish shell, newest pytorch and tensorflow.

Why Docker is Essential?

4. Clean Environment & Dependency Control in Server

Knowing how to use DOCKER = Knowing how to use SERVER



Overview of Comparison between Docker and VM

Why Docker is Essential?

5. COMFORTABLE!

- *Many of us experiences…*
  1. *Dependencies broke while installing a new software*
  2. *Things start to break apart…*
  3. *Re install OS*
  4. *Repeat 1-3*
- *With Docker,*
  1. *Download an image with a software ALREADY INSTALLED*
  2. *IF things broke, just delete the container and start again (with one line of command, "$ exit")*