



# Dockerize Machine Learning Models

# AGENDA OF THE VIDEO

- Concept of Containerization and Docker
- Alternative to Containerization is “API”
- Real Life Use Cases of Containerization
- Docker Terminology
- Docker Installation
- Docker Commands
- Python and Docker
- Hello World Example of Docker in Python
- Containerization of Machine Learning Model in Python
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# What is Containerization in Software Development?

Containerization of a software or of an application is a term which is a way of bundling an application's source code with all its dependencies.

So, what we do is, we bundle the application in one container and that container can be run across platform.

# Why Containerization?

Idea behind Containerization is simple

We want a way of sharing our application with someone who is probably not interested in doing all sorts of different setup on his/her local system.

# So, what is Docker?

Docker is a platform or a software which enables us to do containerization. In fact, it is not the only softwares which is out there for this purpose.

Other services are: Virtualbox, vagrant, kubernetes etc

## Some more explanations....

Some softwares are only run on a specific platform.

So, Docker works as kind of middleman between the application and non-compliant operating system.

Example: You build a cool Machine Learning Model which has so many different types of requirements and dependencies. You can share it with someone but they will have to go through all the steps of installing these requirements and dependencies.

# API as an alternative to Containerization

One way we might not use Containerization is to Use an API.

With the help of API, instead of making a Docker Container of our Application, we can share it by making an API in Flask.

For example, we have a machine learning model and we want to share it with the world. We can either dockerize this and share it. Or we can make an api and share the URL of the api to the world.

# Use Cases of Containerization and Docker

- Containerization of Softwares meant for running only on Linux. With this, they can run on windows also.
- Docker can containerize any software application and can create a virtual machine around that.
- So, that means with the help of docker, we can run any application which can only run on one of the platforms
- Docker provide a central repository which allow us to share our docker images to others.



# Docker Terminology

1. Image
2. Container
3. Build an image
4. Dockerfile
5. Docker Hub
6. Tag of Images
7. Docker Toolbox
8. Virtual Machine

# Docker Installation

# Docker Commands

`docker --version`

`docker images`

`docker build -t <Name of Docker Image> <Path of DockerFile>`

`docker container stop <Id or name>`

`docker run <Name of the image or id>`

`docker image rm <Name of Image or Id> -f (use it to delete it forcefully)`

# Python and Docker

With the help of docker, we can share our Python Program to the world in the form of docker images without having other people to install all the requirements and dependencies.

The process of dockerizing a python program does not differ much than dockerizing any other application.

# Dockerizing Python Hello World Program

# Dockerizing Python Machine Learning Model

## Task For You.....

1. Install Docker Toolbox for Windows.
2. Run all the commands that we have discussed in the docker quickstart terminal to make sure you understand everything.
3. Make a Hello World Image in Docker.
4. Build a Machine Learning Model of your Choice (say spam detection, sentiment prediction etc) and dockerize this model.
5. (Advanced) Dockerize Flask Application