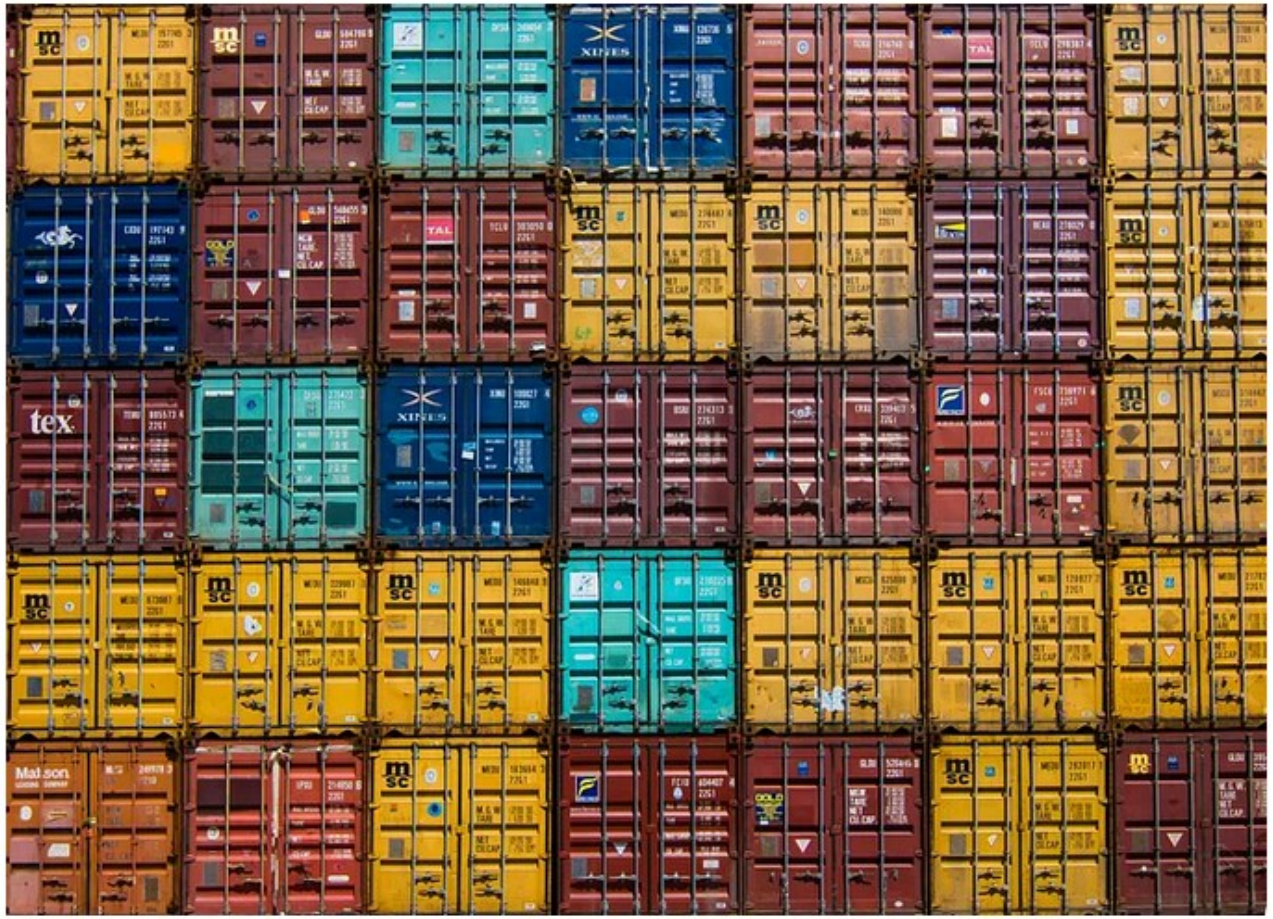
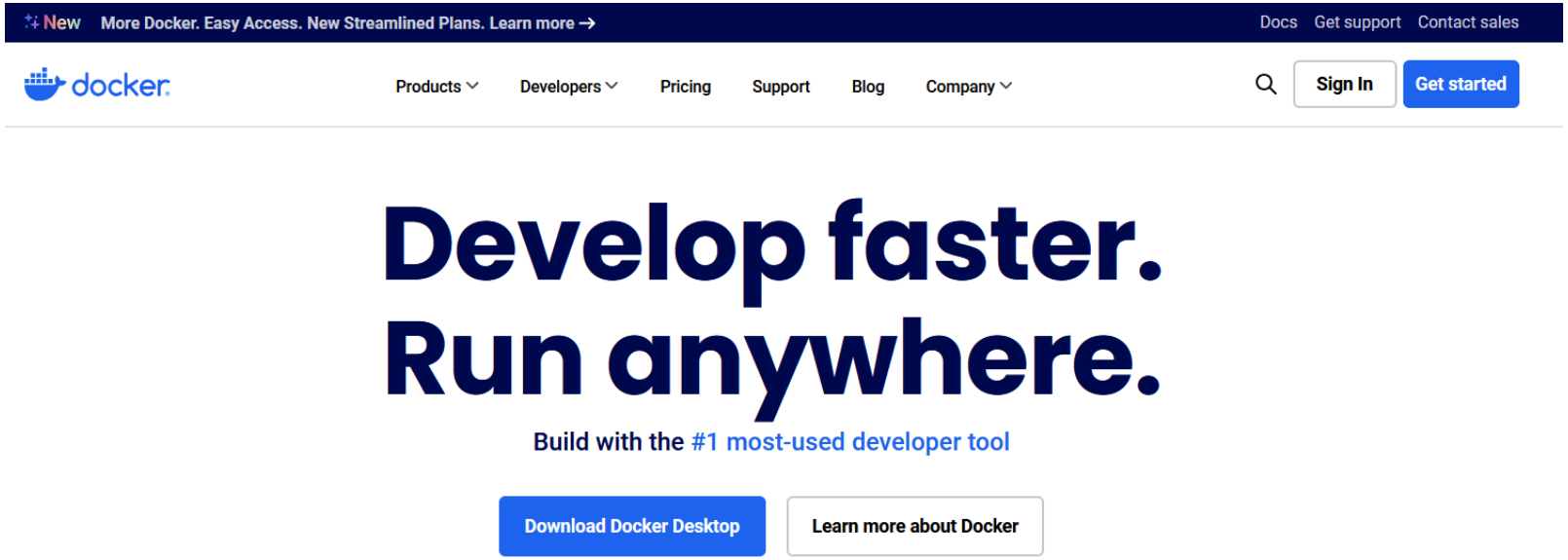


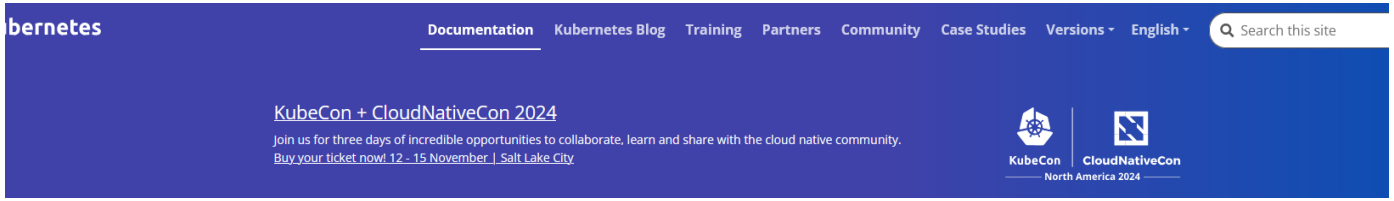
Photo by Guillaume Bolduc on Unsplash

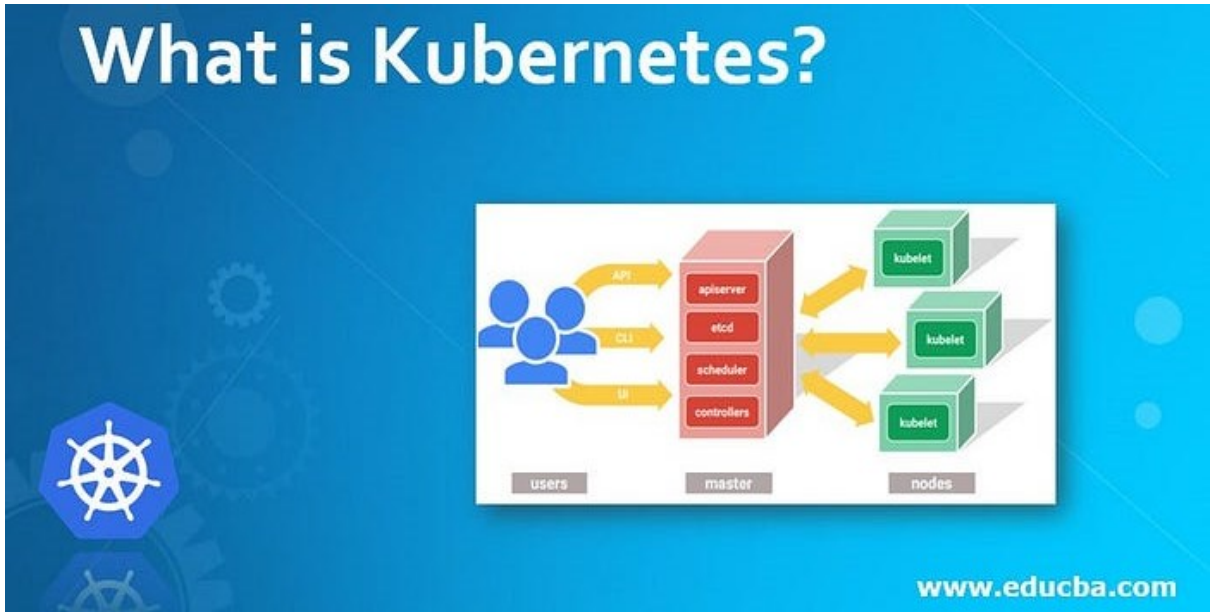
Containers deliver goods to people!

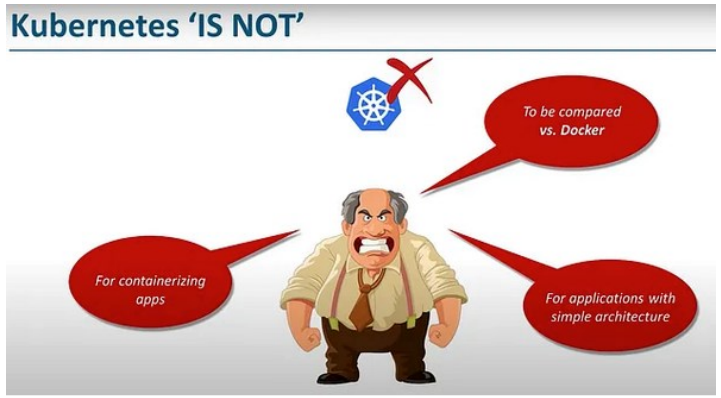
Another ecosystem (that we'll use):

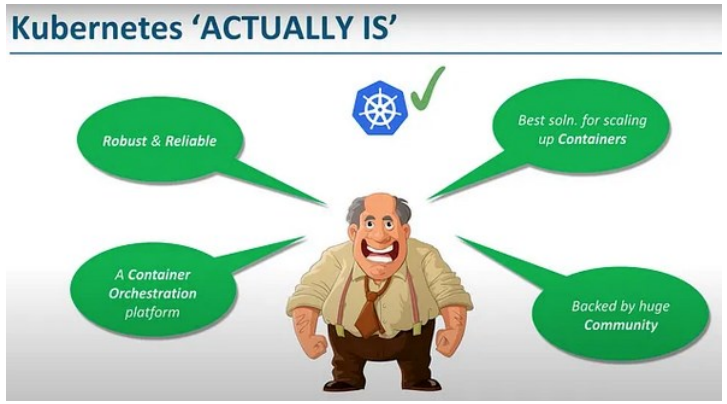


The orchestrator





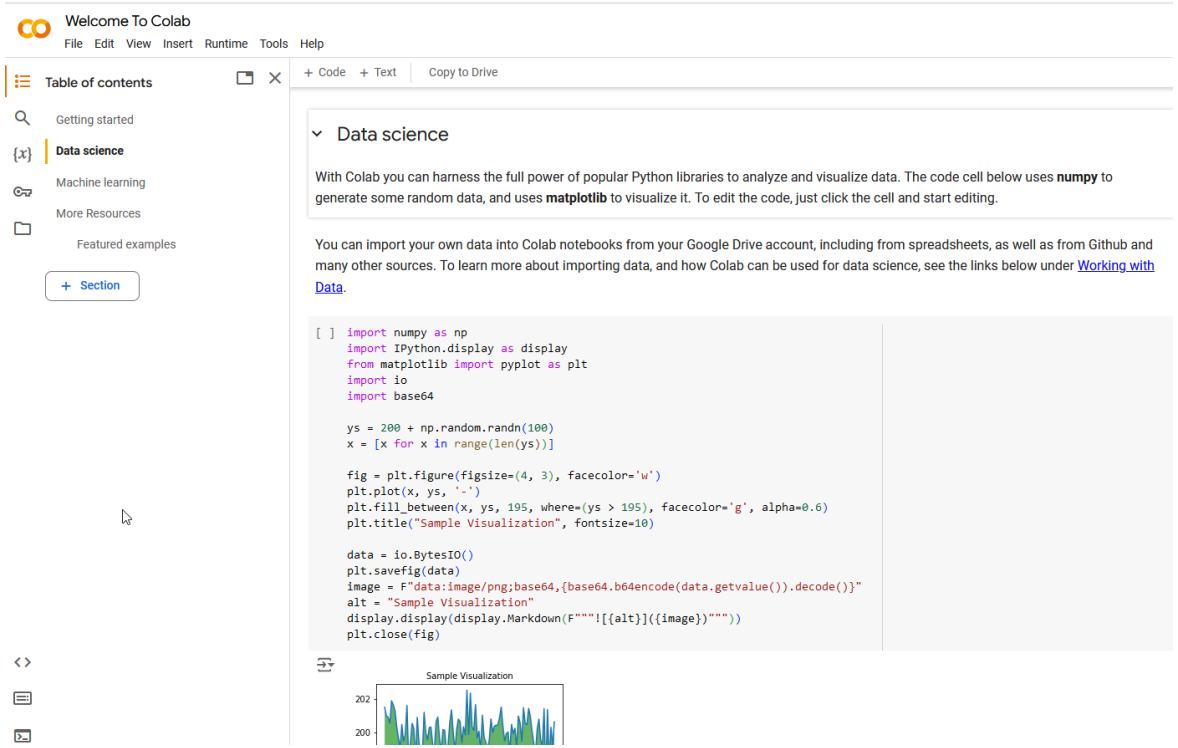




I use docker compose/swarm

Everything runs on their clouds

It’s so confortable …



Summary:

tools that handle any/most job(s) in ML/BigData

Development : (Python) Pytorch

Model hub : Huggingface

Deployment : Docker (containers)

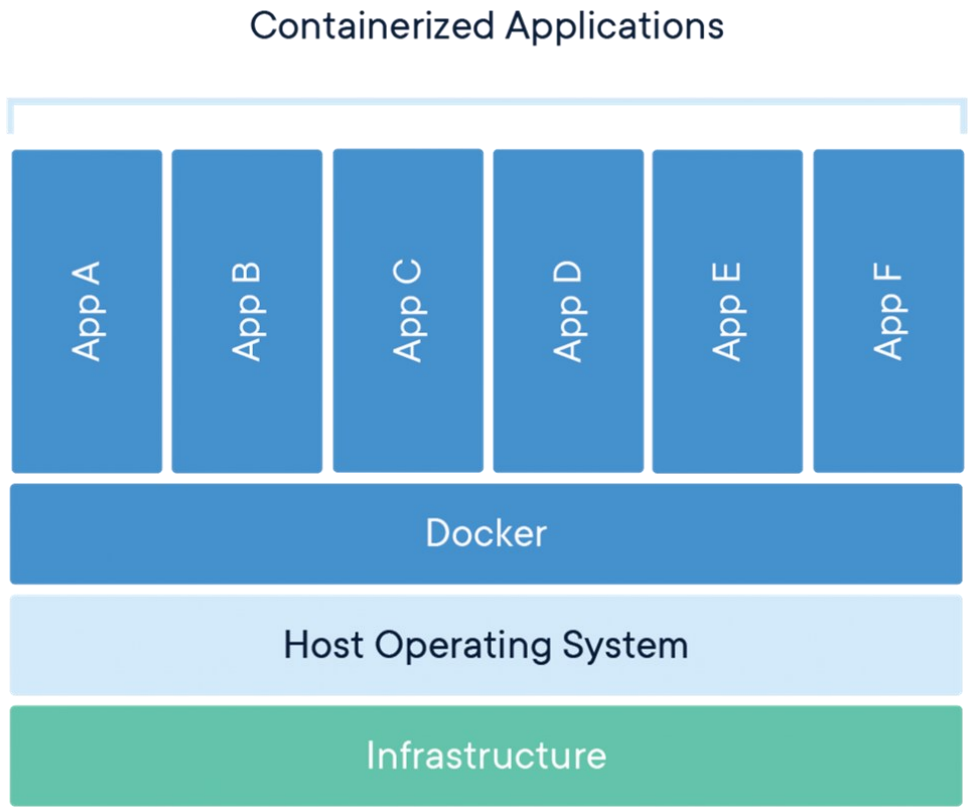
Scheduling, sync and runtime management: Docker-compose, docker-swarm, Kubernetes

Data storage : cloud/dist. file systems (Ceph), private or “usual suspects”. BTW run in containers!

Docker

Introduction to Docker

- Platform to package and publish an application as well as its dependencies
- Run the applications in any system with docker support



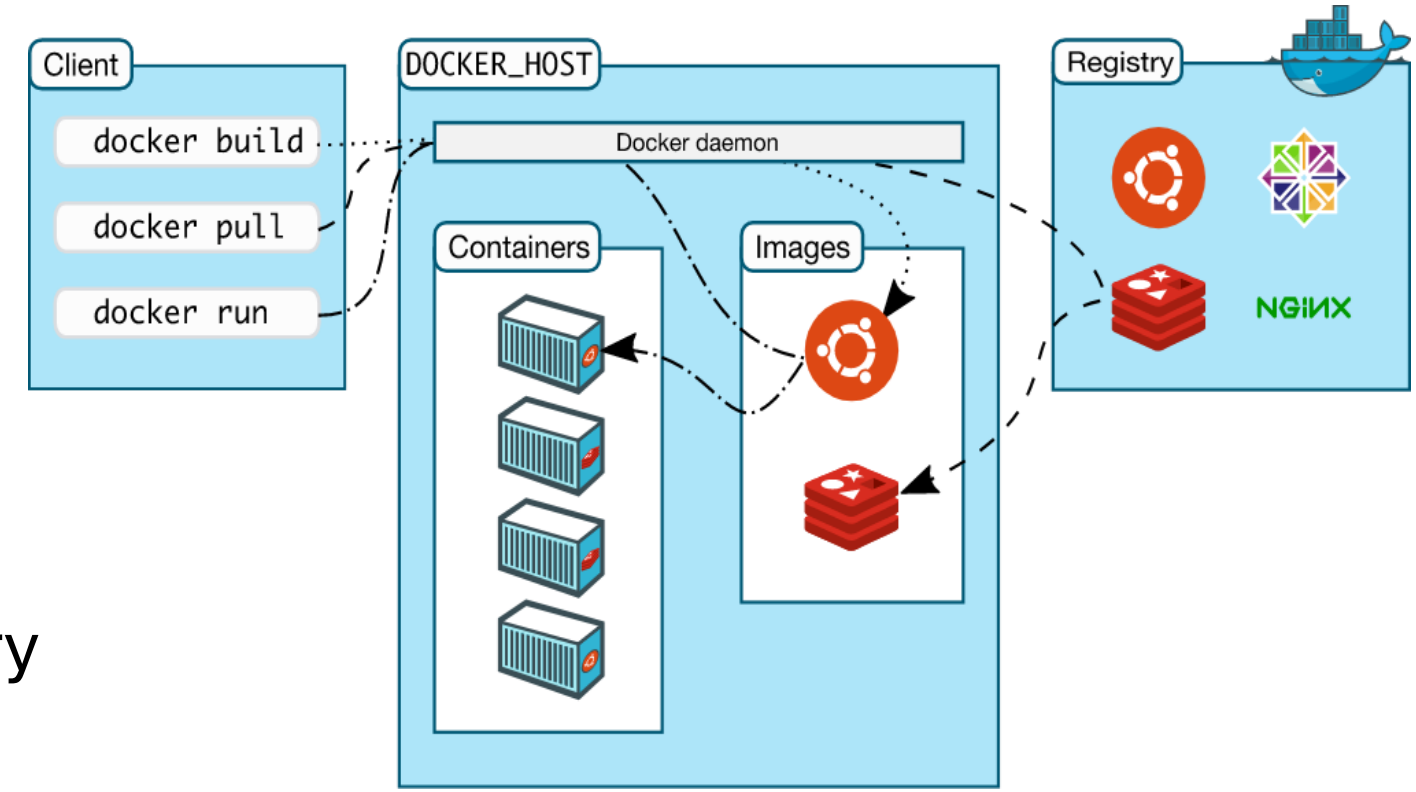
Docker Terminology

- Container: Process that runs isolated from other processes in the host, as well as other containers.
- Image: Read-only template with instructions necessary to create a docker container.
- Dockerfile: Sequence of instructions to build a docker image.

Introduction to Docker

Docker Workflow

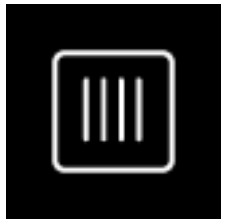
- Create a Dockerfile
- Build the Image
- Run/Test the Container
- Publish the Image to a Registry
- Deploy Anywhere



Some Docker vocabulary

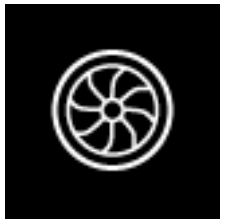
Docker Image

The basis of a Docker container. Represents a full application



Docker Container

The standard unit in which the application service resides and executes

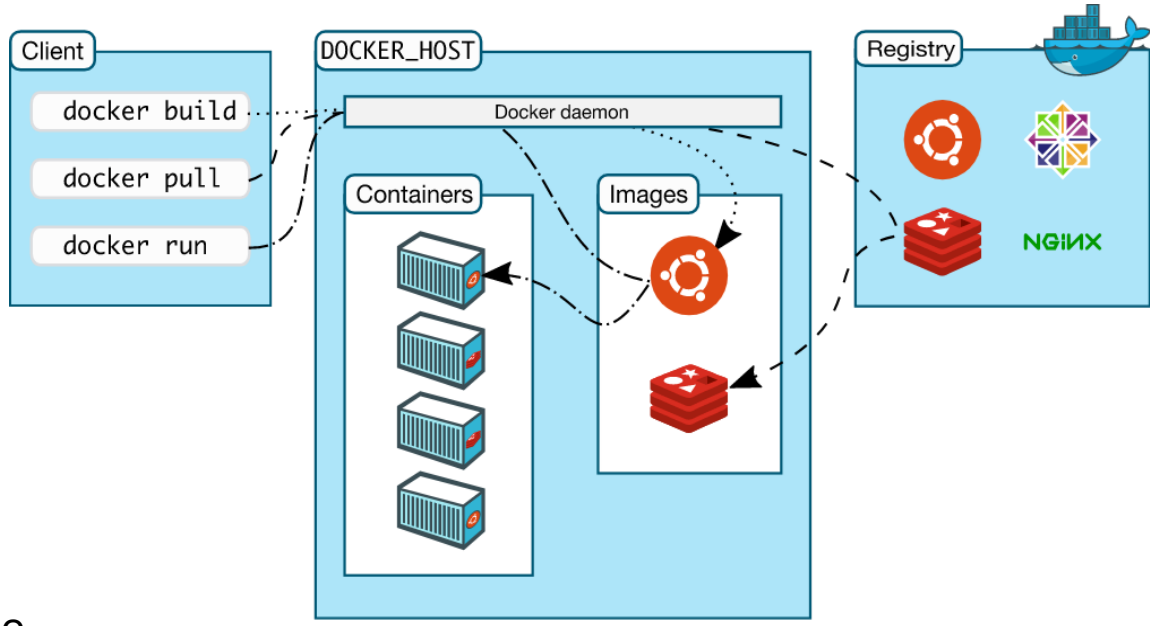


Docker Engine

Creates, ships and runs Docker containers deployable on a physical or virtual, host locally, in a datacenter or cloud service provider

Registry Service (Docker Hub or Docker Trusted Registry)

Cloud or server based storage and distribution service for your images



docker

Basic Docker Commands

```
$ docker pull mikegcoleman/catweb:1.0

$ docker images

$ docker run –d –p 5000:5000 –-name catweb mikegcoleman/catweb:latest

$ docker ps

$ docker stop catweb (or <container id>)

$ docker rm catweb (or <container id>)

$ docker rmi mikegcoleman/catweb:latest (or <image id>)

$ docker build –t mikegcoleman/catweb:2.0 .

$ docker push mikegcoleman/catweb:2.0
```

Dockerfile – Linux Example

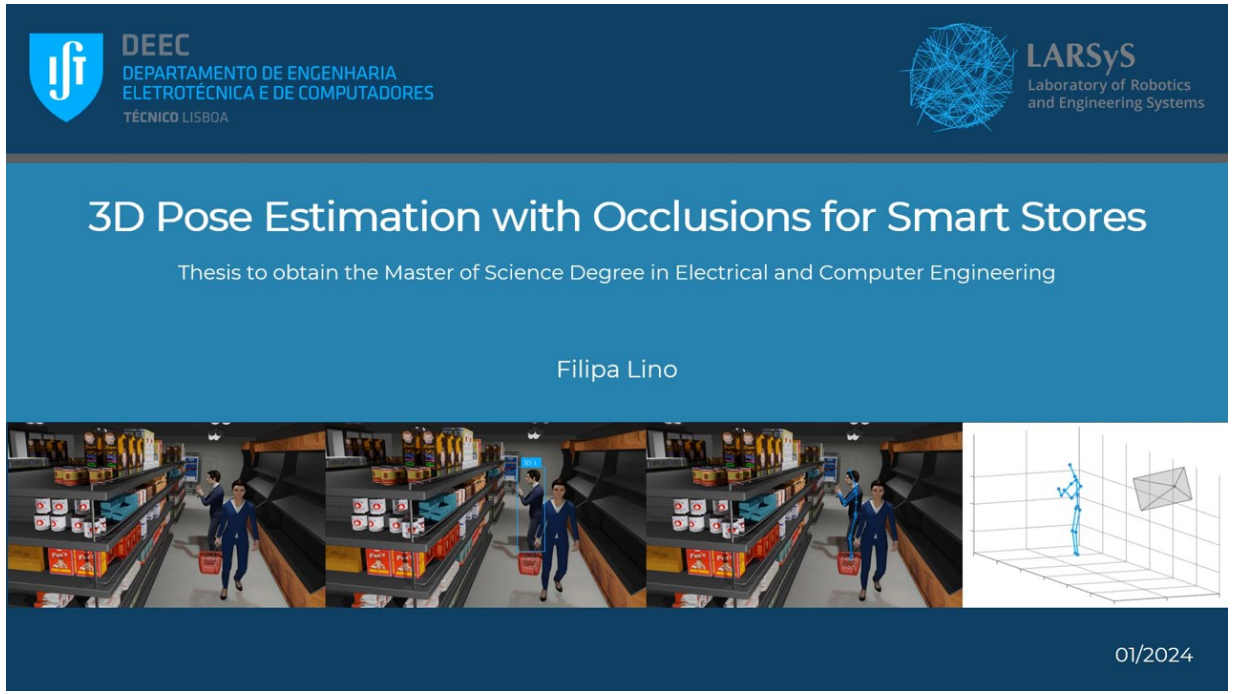
```
1 # our base image
2 FROM alpine:latest
3
4 # Install python and pip
5 RUN apk add --update py-pip
6
7 # upgrade pip
8 RUN pip install --upgrade pip
9
10 # install Python modules needed by the Python app
11 COPY requirements.txt /usr/src/app/
12 RUN pip install --no-cache-dir -r /usr/src/app/requirements.txt
13
14 # copy files required for the app to run
15 COPY app.py /usr/src/app/
16 COPY templates/index.html /usr/src/app/templates/
17
18 # tell the port number the container should expose
19 EXPOSE 5000
20
21 # run the application
22 CMD ["python", "/usr/src/app/app.py"]
```

- Instructions on how to build a Docker image
- Looks very similar to “native” commands
- Important to optimize your Dockerfile

Critical Example

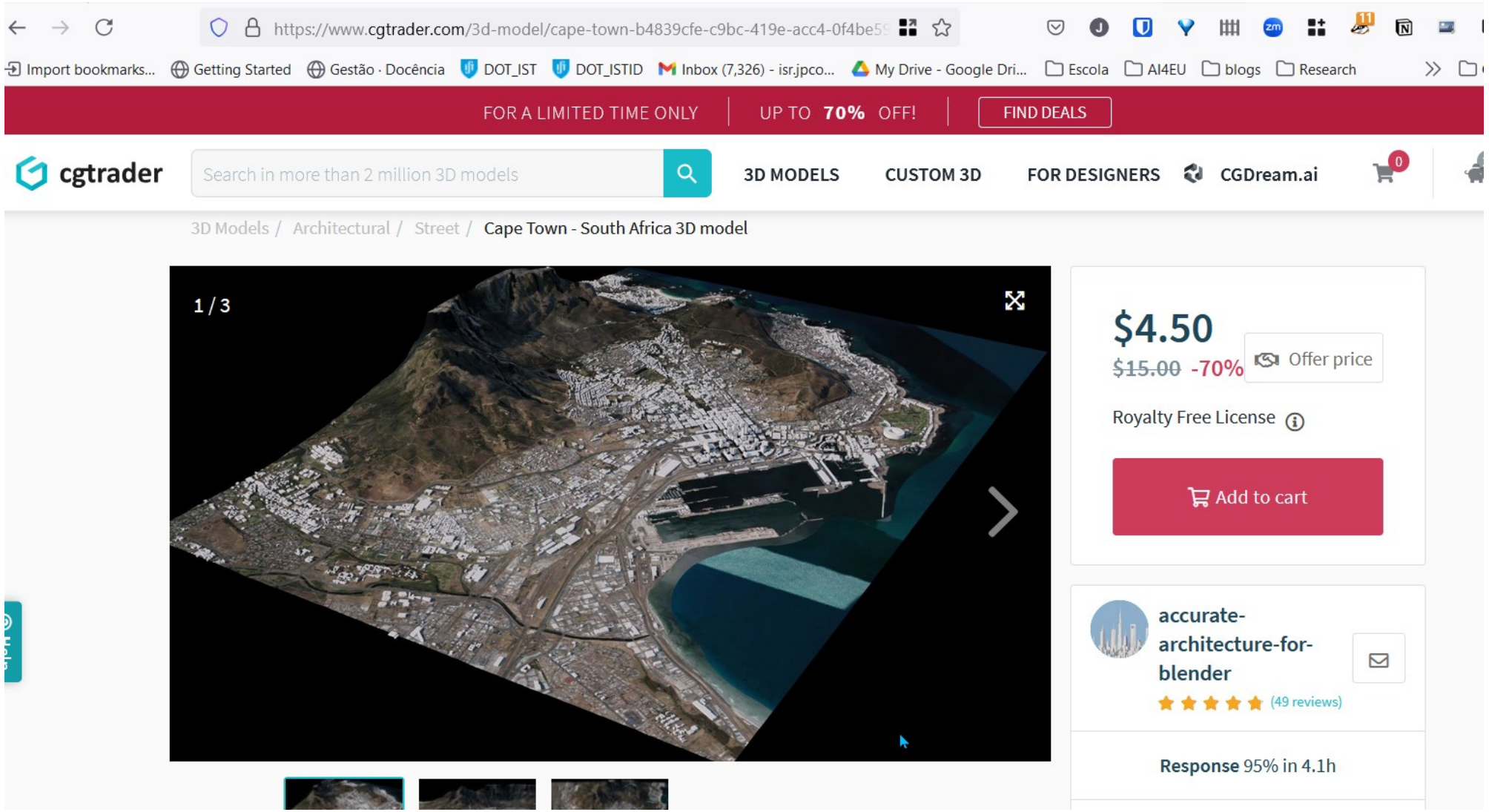
- photoprism

https://blendmimic3d.github.io/BlendMimic3D/

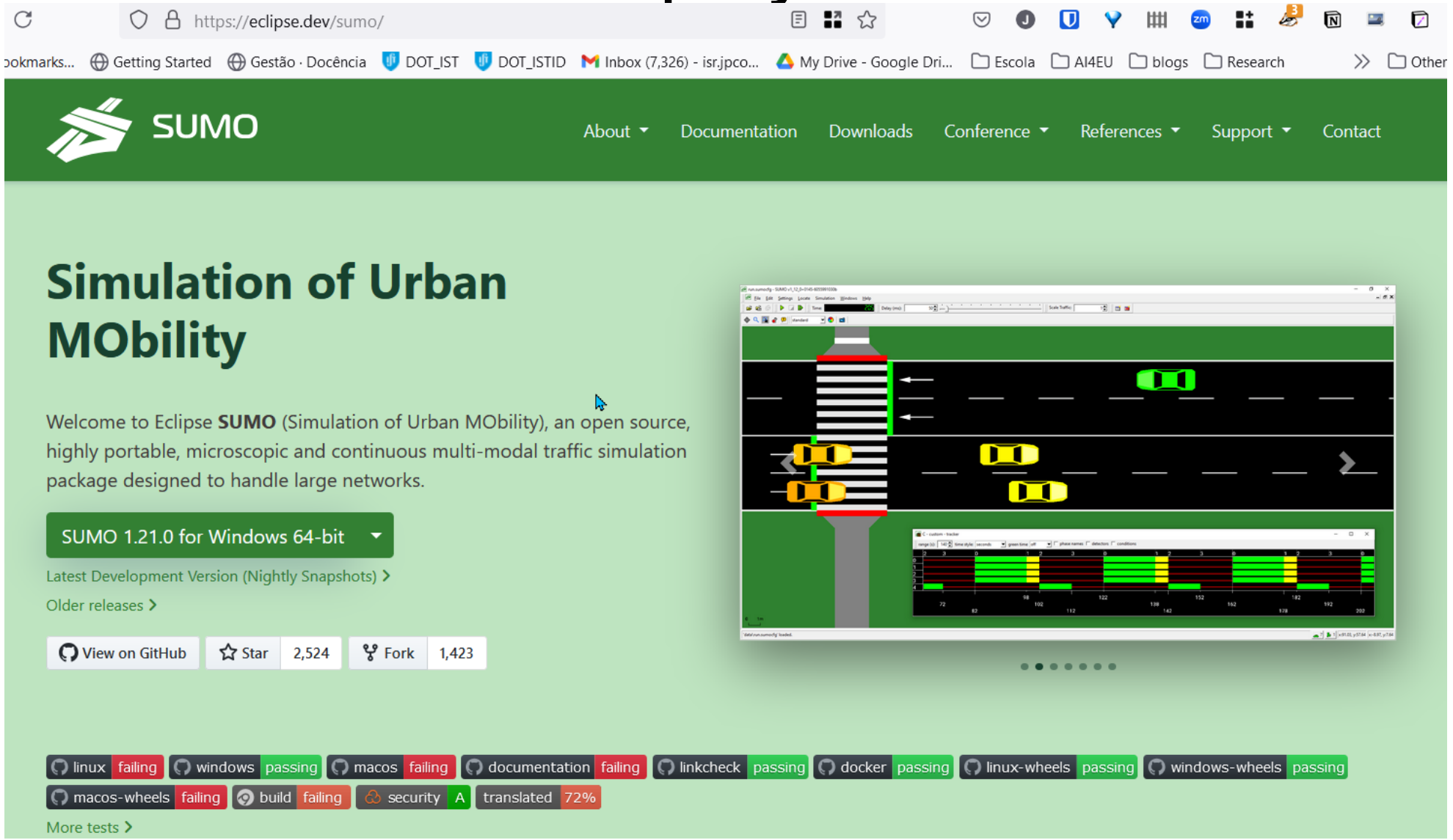


http://smartretail.tecnico.ulisboa.pt/

City modeling ?



Traffic simulators ... deploy in 5 secs



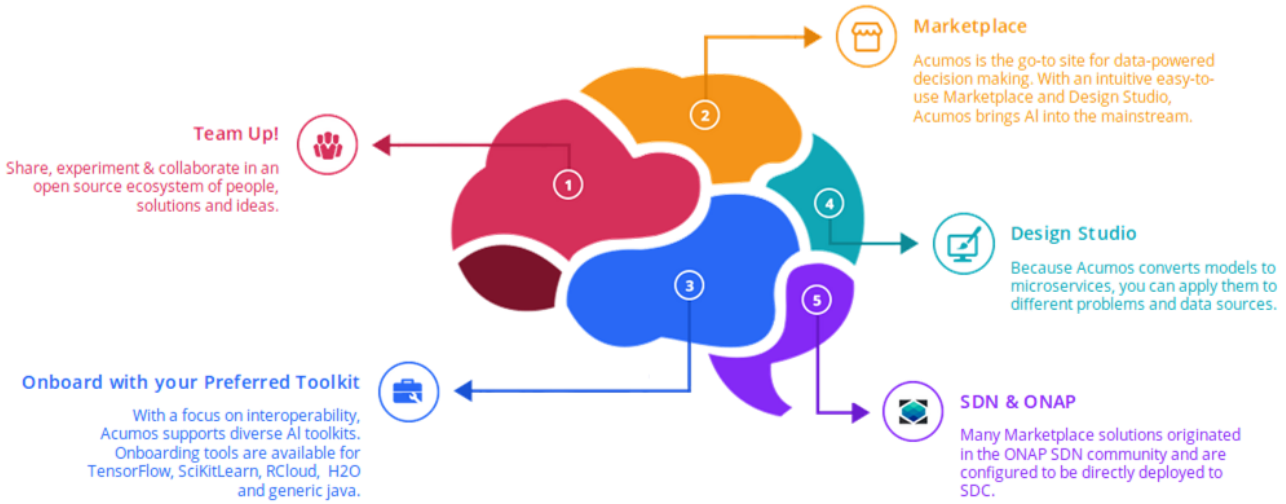
http://ai4europe.eu

https://aiexp.ai4europe.eu/

- Framework to build, share and deploy AI applications

- Standardizes infrastructure and other components to run AI environments

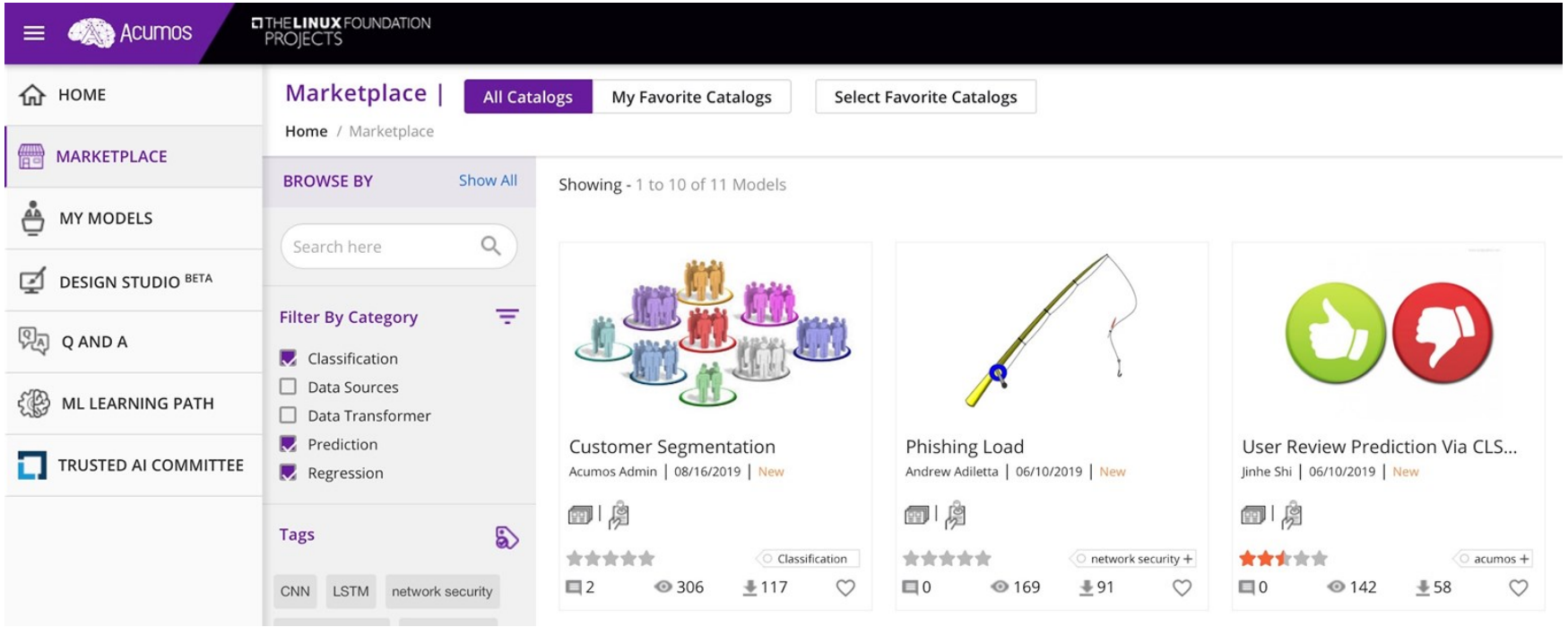
Acumos AI



Acumos

Marketplace

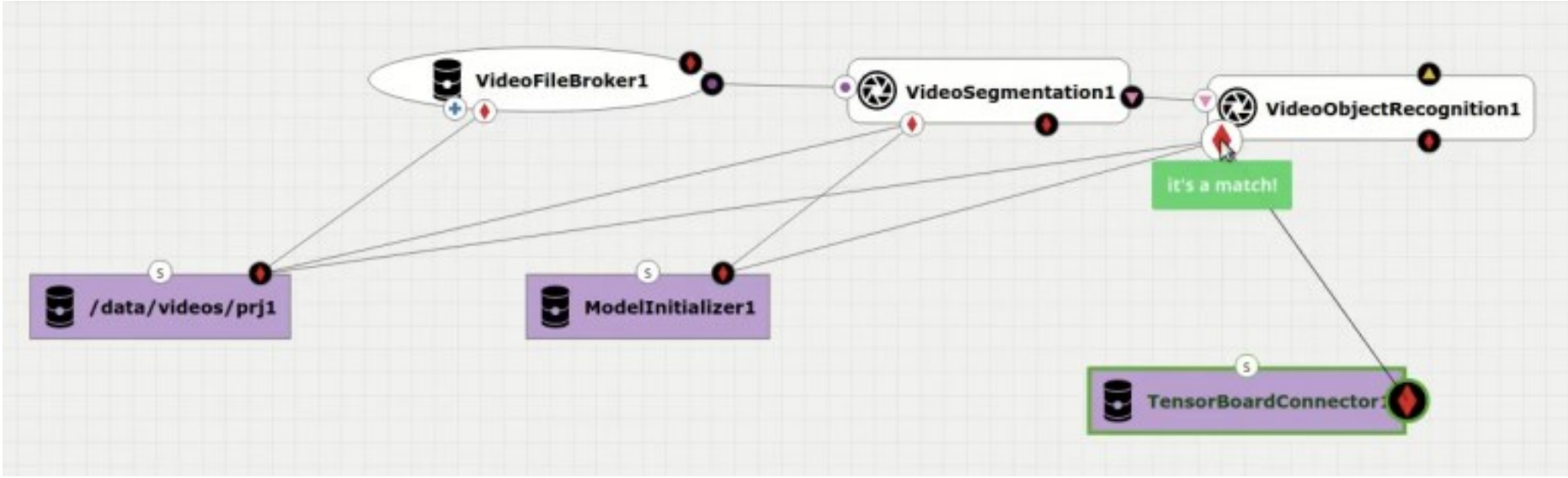
- Place to publish generic AI algorithms in the form of “assets”



Acumos

Design Studio

- Build pipelines with multiple assets and deploy to the cloud



Conclusion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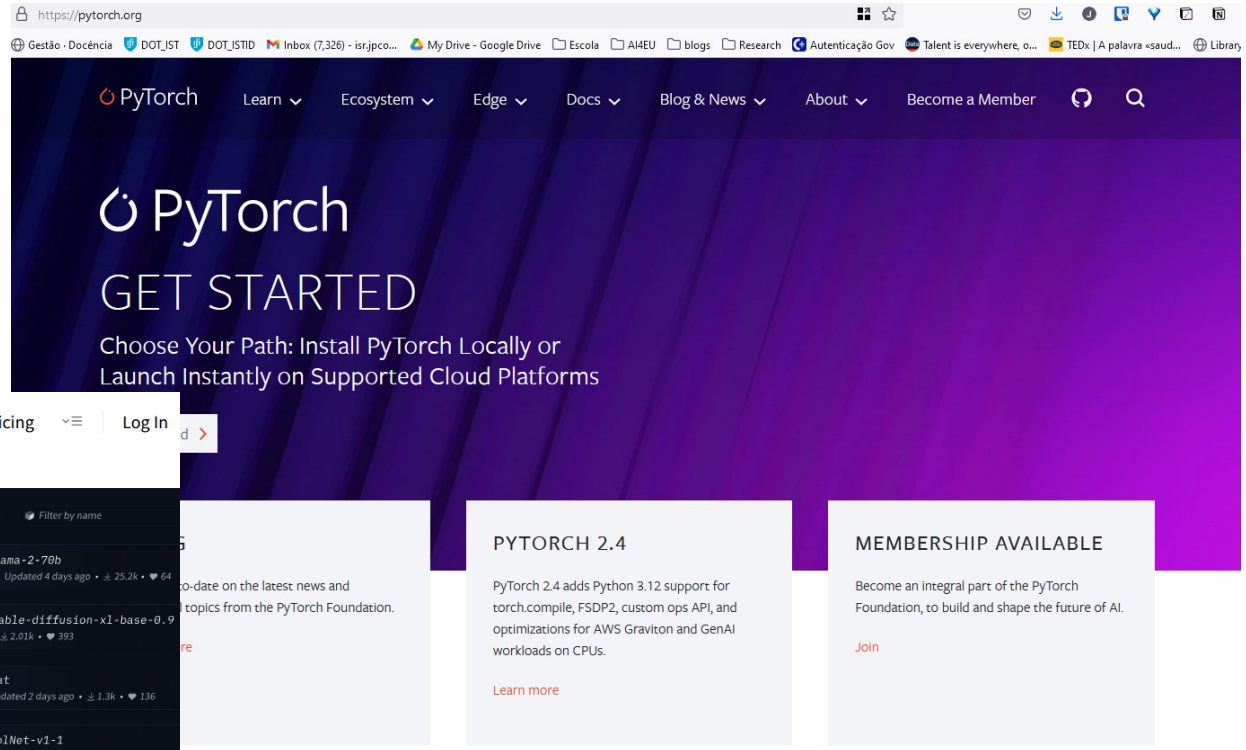
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Launch Instantly on Supported Cloud Platforms
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PyTorch 2.4 adds Python 3.12 support for torch.compile, FSDP2, custom ops API, and optimizations for AWS Graviton and GenAI workloads on CPUs.
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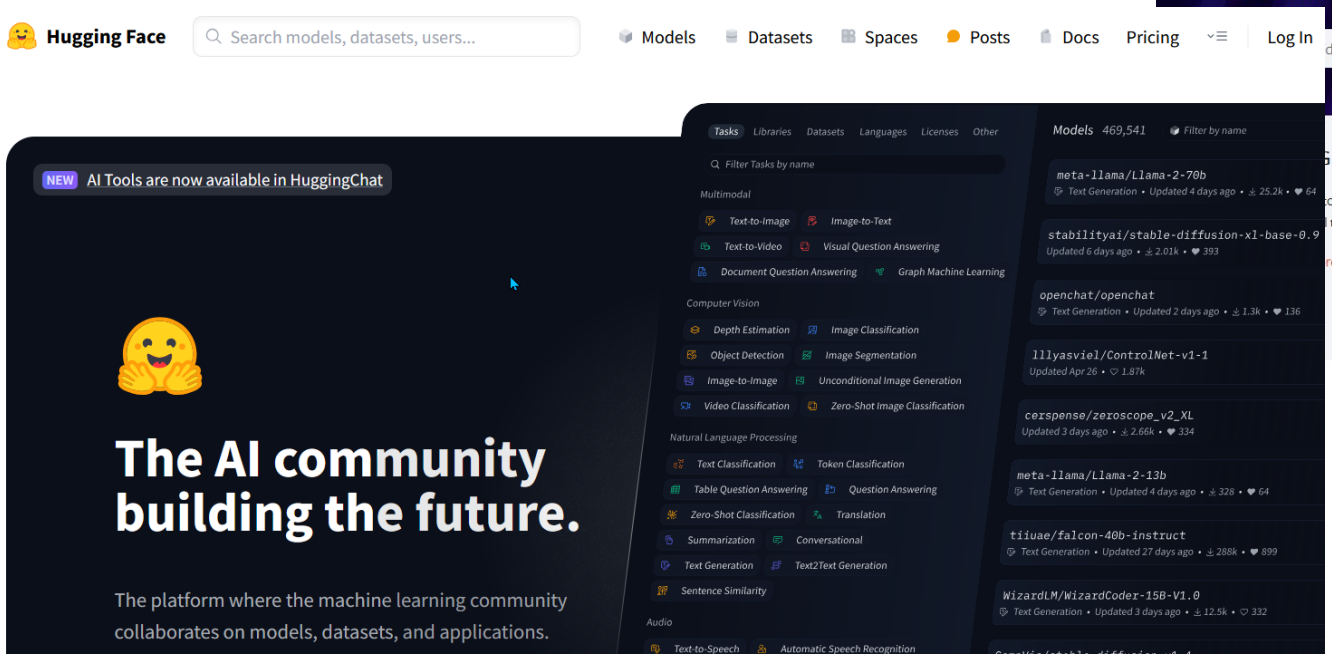
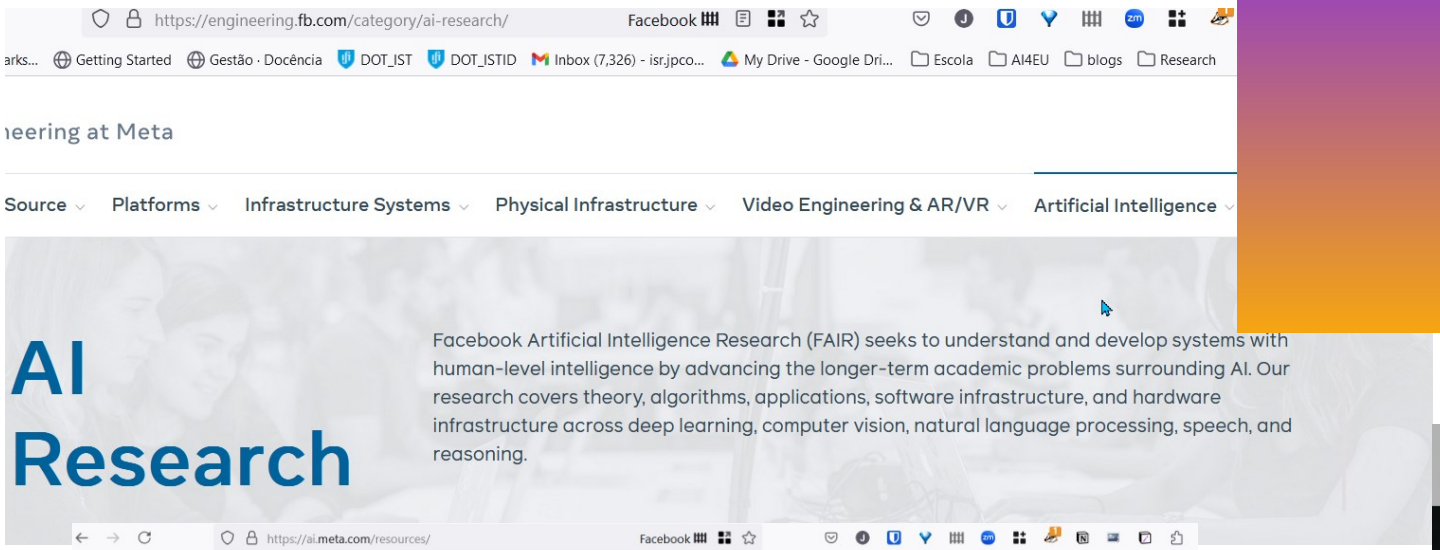
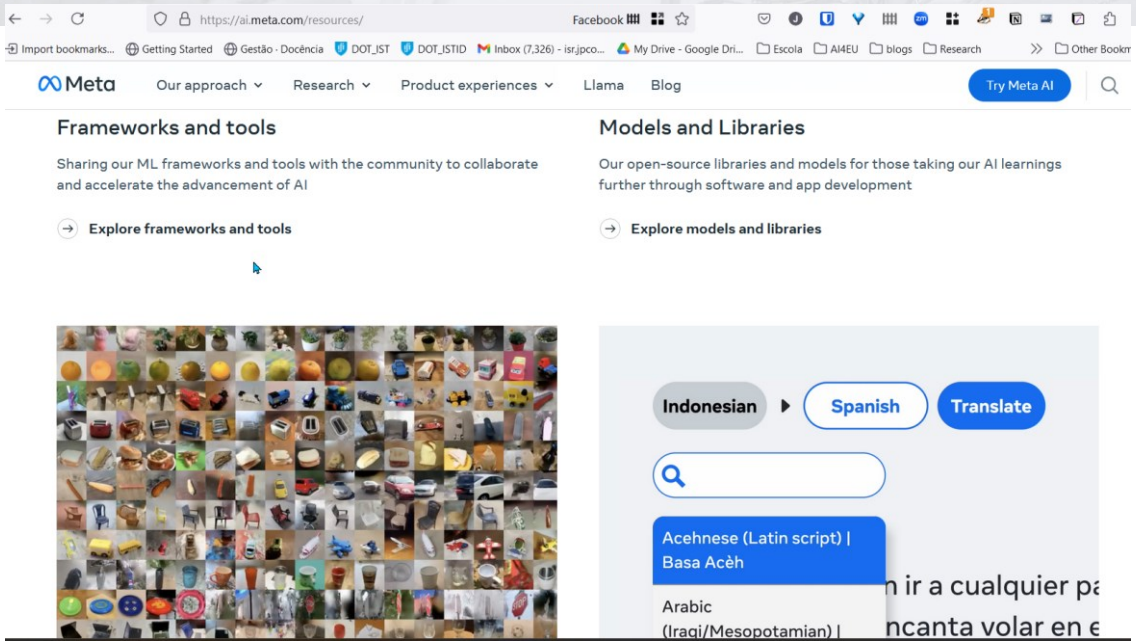
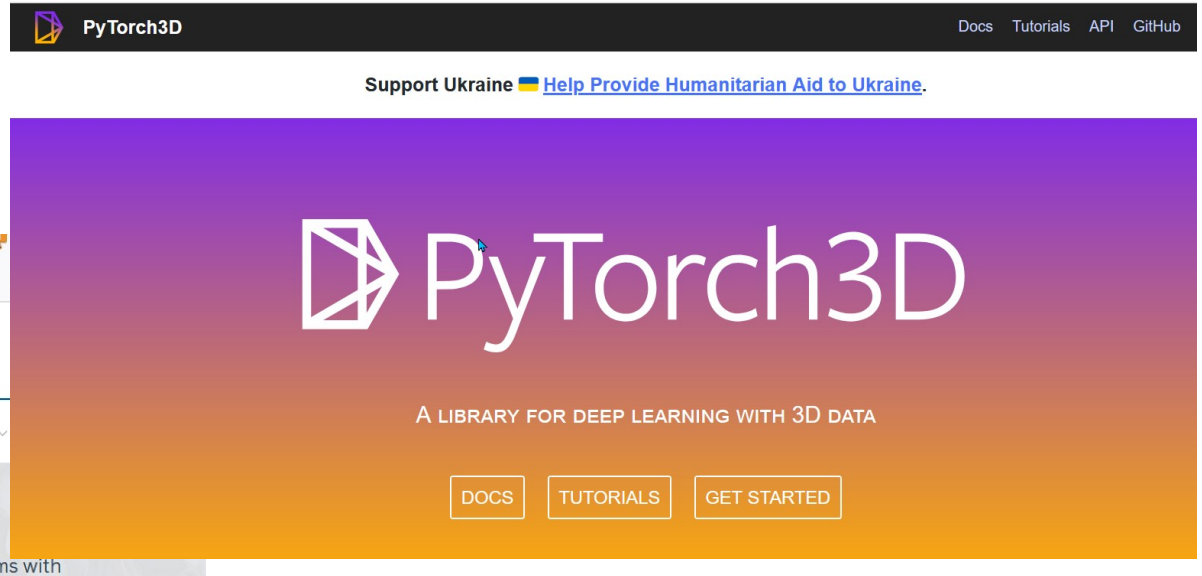

Hugging Face
Search models, datasets, users...
Models Datasets Spaces Posts Docs Pricing Log In
NEW AI Tools are now available in HuggingChat
The AI community building the future.
The platform where the machine learning community collaborates on models, datasets, and applications.
Tasks Libraries Datasets Languages Licenses Other
Models 469,541
Filter by name
meta-llama/Llama-2-70b
stabilityai/stable-diffusion-xl-base-0.9
openchat/openchat
lllyasviel/ControlNet-v1-1
cerspense/zeroscope_v2_XL
meta-llama/Llama-2-13b
tiiuae/falcon-40b-instruct
WizardLM/WizardCoder-15B-V1.0

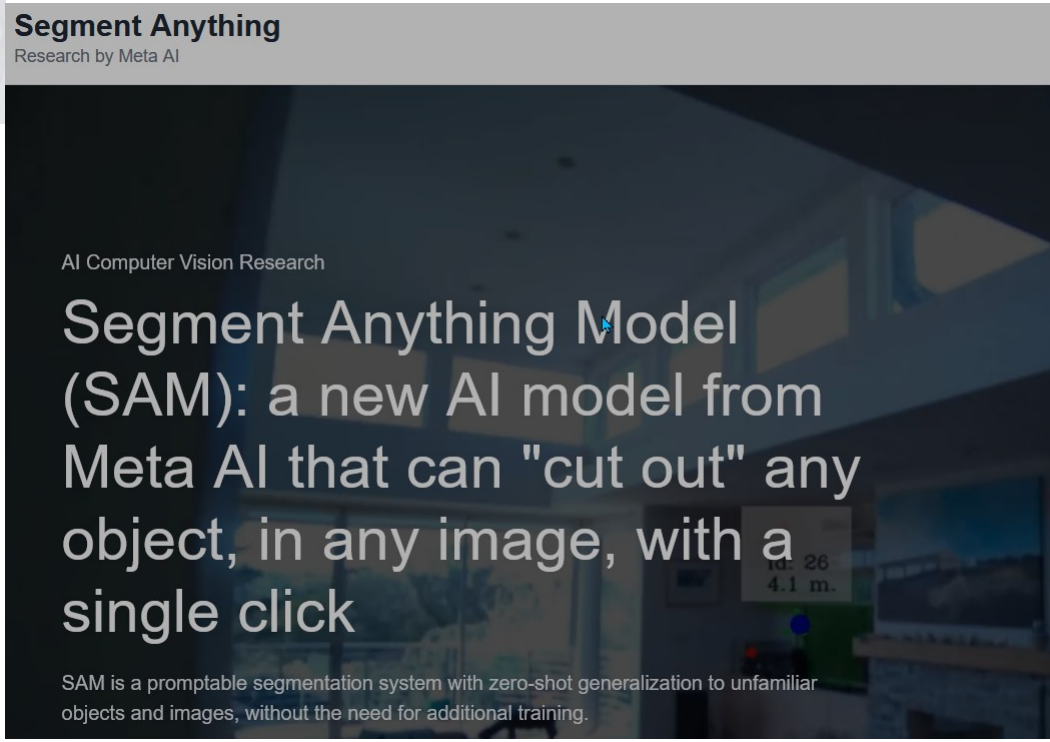
Unavoidable ...

foundation models









YOLO on Docker !